

The logo for ISOCARP 2015 is a blue square with a white circular emblem containing the letters 'I', 'A', 'U', 'I', 'G', 'S', 'R', 'P', 'P' around the perimeter and 'S', 'O', 'C', 'A', 'R', 'P' in the center. Below the emblem, the text 'ISOCARP 2015' is written in white.

ISOCARP
2015

CITIES SAVE THE WORLD. LET'S REINVENT PLANNING.
19/10/2015 – 23/10/2015 – GRONINGEN, ANTWERP, SCHIPHOL,
MAASTRICHT, DORTMUND, BRUSSELS, **ROTTERDAM**, DEVENTER,
DELFT/THE HAGUE, AMSTERDAM, WAGENINGEN, EINDHOVEN

51st ISOCARP Congress

Proceedings

Rotterdam, 19-23 October 2015

#ISOCARP2015



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ISOCARP
Knowledge for better Cities

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Workshop 1 Amsterdam

How to build the city in a cooperative way?

Chinis, Ioannis, Aristotle University of Thessaloniki, Thessaloniki, Greece

An anarchist approach on urban planning: the case study of Thessaloniki

The aim of this thesis is an anarchist glance on urban planning. Practically it examines the possibility of city planning for a society in a state of anarchy, through relevant literature and practical experiment, realized through the process of an alternative workshop, taking place of an occupied social space.

Chopra, Divya, New Delhi, India

Collective imaginations for everyday realities: city building through 'creative' cooperation

This paper articulates the need for collective engagement and conversations as a significant aspect of the 'creative' and cooperative city building framework while investigating the role of public art and co-design as necessary ingredients that could contribute towards a re-defined and inclusive way of building our cities for the future.

Davidovich, Ronit, DMR Planning & Development, Tel Aviv, Israel

An integrated and empowering service model for children and youth at risk – as a base for cooperative and activist management

Development of an integrated and empowering service model for children and youth at risk and the range of services that they need as infrastructures aimed to integrate and even leverage the quality of the public space for the community as a whole.

Featherstone, Jeffrey; Temple University, Ambler, Pennsylvania, United States

Addressing flooding issues in an environmental justice community: a complicated and multi-layered case study

This paper addresses flooding issues in an Environmental Justice community near Philadelphia, USA.

Gential, Oscar, Urbaplan, Lausanne, Switzerland

Creative workshops

Urbanism is a creative practice. Through comparisons of realized experiences (led by the office Urbaplan in Switzerland) and references, we aim to theorize an approach praising uncertainty and process, revealing a critical issue in any collaborative and creative approach: how to bring out the ideas of a group?

Giupponi, Noemi, Glasgow, United Kingdom

The development of a conceptual and physical model of a spatial data infrastructure for inclusive planning using critical GIS: a case study in the Gorbals, Glasgow

The design and implementation of planning support systems are key to the enhancement of learning in spatial decision making. By developing a socially inclusive conceptual model of space, a spatial data infrastructure including geographic information of people's life spaces is presented using critical GIS techniques for a neighbourhood in Glasgow.

Hanzl, Malgorzata, Lodz University of Technology, Lodz, Poland

Ksiezy Mlyn in Lodz, Poland - an example of a successful rehabilitation thanks to social engagement

The rehabilitation project of the 19th century industrial estate of Ksiezy Mlyn, Lodz Poland was carried out successfully thanks to the initial public acceptance generated by the impact of the social rehabilitation project. The strategy of the regeneration of the estate was created in collaboration with local citizens and NGOs.

Huguenin, João Paulo, Federal University of Goiás; Ghilardi, Flávio Henrique, Institute of Research and Urban and Regional Planning, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

Housing cooperative movement as an alternative way of thinking, planning and designing residential neighborhoods

Analysing the genealogy of the cooperative housing production in Latin America and Brazil and accompanying a pilot experience – in which families make decisions collectively – we tried to show that solidarity and participation on management of the city are the way to the construction of fairer and democratic cities.

Kabali, Hema Priya, IDE Bangladesh, Dhaka, Bangladesh

Shared Amsterdam - affordable housing through cooperative urbanism

Affordable housing is fundamental to urban well-being and social sustainability. This paper analyses participatory planning and affordable housing practices across European housing sector drawing focus on Amsterdam and proposes strategic recommendations emphasized on public-private partnerships and mixed urban communities for greater social cohesion, inclusiveness and better quality urban environment.

Marozas, Martynas, MMAP, Vilnius, Lithuania; Jonauskis, Tadas; Muliulyte, Justina, Pupa - Strategine Urbanistika, Vilnius, Lithuania

New public participation practices for revitalizing Klaipeda's Old Market neighborhood

Public participation vacuum in Lithuanian planning system called for a new participatory planning standard in Klaipeda's Old Market development vision and plan. Public involvement and long hours of mediation resulted in a creation of the first "informal" planning document appreciated by local community and formally approved by the city council.

Monardo, Bruno, Sapienza University of Rome, Rome, Italy

Cooperation and mediation. The flexible geometry of public participation. Comparing US and France evolutionary approach.

The paper is focused on comparing the innovation of participation models in US and France through the concept of 'flexible geometry'. Reflexions and remarks consider the hybridization of original cultures into a cooperative approach to local redevelopment, based on the emerging styles and roles of community managers and facilitation professionals.

Mwang'a, Keziah Mwelu, Gran Sasso Science Institute, L'aquila, Italy

Building equitable cities through inclusive practices: case studies from the US partnership for sustainable communities initiative (SCI)

Changing city dynamics such as stagnant economic growth and the increased presence of diverse groups require that cities seek ways of fostering collaboration in the planning process. This paper demonstrates several practices that cities can adopt to bolster cooperation between communities, civil society and business towards equitable growth.

Okitasari, Mahesti, United Nations University IAS/Keio University, Tokyo, Japan

Governing the urban infrastructure in Indonesian cities: the role of institutional structure and policy instruments in collaborative policymaking and resource exchange

This paper discusses the governing of urban infrastructure through collaborative policymaking and resource exchange based on Indonesian experiences. It explores and compares cases of intergovernmental and cross-sectoral collaboration at the local level through analysis on the institutional architecture and policy instruments.

Pancewicz, Lukasz, Municipal Planning Office of Lodz, Gdansk, Poland

Sharing planning power as a way out of planning legitimacy crisis - why it matters for the CEE countries

Paper reviews the potential opportunities to reinvent planning system, brought about by devolution of planning via increased collaboration and participation in the context of Central European countries. First experiences in collective, participatory planning processes are reviewed as well as their political and societal context.

Zagow, Maged, Illinois Institute of Technology, Chicago, United States of America

Enhancing urban socio-economic needs, activities, and facilities, looking beyond conventional mixed-use development model

This study investigates how planners can implement successful mixed-use development, given Social justice as fundamentally approach, in terms of the distribution of wealth, opportunities, and privileges within a society, using multi-level data from location point to county level representing Chicago Metropolitan area with contrasting implementation methods of mixed-use development.

Workshop 1 Antwerp

How to rework the productive city?

Ahmadipour, Zahra, Tehran, Iran

Investigating the effects of industrial cluster development policy on the performance of urban and regional old industries (case study: leather products cluster)

The purpose of this paper is to discuss the effects of policies based on development of industrial clusters. The paper analyses and compares cases of conditions of small and medium manufacturers of leather that are located in Tehran before and after implementation of this policy.

Choo, Li Jie, JTC Corporation, Singapore, Singapore

Creating future-ready industrial estates: case studies from Singapore

This paper seeks to argue that industrial estates of the future should be planned as workplaces with strong connections to the rest of the city, rather than merely places for machinery; industrial estates should be guided by key principles of city-planning: 1) Compactness, 2) Mixed-uses, 3) Connectivity, 4) Managing Proximity.

Custers, Lieve; Dooghe, David, Buro Boris, Antwerp, Belgium

Urban circular economy

In the research project 'urban circular economy' will explore three models: business almost as usual, sustainability as pocket money and sustainability as life style. This exploration will give insight in the potential and positive or negative effects of an urban circular economy on the city and the future urban development.

Ferm, Jessica; Jones, Edward, University College London, London, United Kingdom

Reworking the productive city? Challenges of implementation

This paper provides a reality check to some of the optimistic, aspirational dialogues around the question of re-integrating production to support liveable and vibrant cities of the 21st century. Using London as an example of a successful, growing post-industrial city, it identifies concrete challenges, which need to be overcome.

Gheysen, Maarten Leiedal, Kortrijk, Belgium

Economic freckles in urban tissue, the case of South-West Flanders.

In a territory where available space is limited, it is crucial to evaluate and reuse as much as possible. Zoning for industry is no longer tenable. In order to evaluate and reuse, a shift in attitude, thinking and instruments is needed. Knowledge by design is a major input for this.

Neumayer, Vincent, TINA Vienna Urban Technologies & Strategies, Vienna, Austria

City logistics Vienna – transport challenges in urban areas within a disordered institutional framework

Production moved out of cities and goods distribution takes place on nearby green-fields. This paper examines in the context of the City of Vienna ways of both, bringing production and (green) logistics operations back into the city and defining opportunities for urban brownfields with regard to urban cargo distribution centres.

Pajevic, Filipa; Shearmur, Richard G., McGill University, Montréal, Canada

Intra-urban labour mobility: new perspectives for the use of big data in urban analysis

Labour mobility is linked in complex ways to ICT: it is both enabled by these new technologies and tracked by them. Labour mobility is a good example of a lens that, if looked through using big data, could produce a more informative portrait of the city and its daytime geography.

Prochnow, Simone, Uniritter Laureate International Universities, Porto Alegre, Brazil

Heterochrony in architecture

This study rethinks architectural project as an important tool for heritage preservation. Analysing cases done in some parts of the world, along with projects in the city of Porto Alegre, South Brazil, that now faces the question of the reuse of important old industrial areas as real state production sites.

Qiao, Jing; Geng, Hong, Huazhong University of Science and Technology, Wuhan, China

The plight of the 'Chinese-style peasant economy' in the transformation of the urban industry

Although, 'Chinese-style peasant economy' structure has the features of informal economy, it has made great contribution to the transformation of the urban industry in China. We explore how we can protect it to guarantee the farmer's interests in the development of rural industry which is the significant branch of service industry.

Quintana Malubay, Haydee Jacklyn, University Of The Philippines, Manila, Philippines

Reinventing a Philippine city through Vision 2020 plan

The planning story of reinventing Candelaria's desiccated coconut industry via Vision 2020, the five-year comprehensive land use planning process, mandated by Philippine law, sheds light on the many lessons planners can learn in upholding values towards sustainability for this and the coming generations.

Sergi, Giovanni; Rosasco, Paolo, Genoa University, Genoa, Italy

A feasibility study for a technological park undertaken in 2011 by the municipality of Falconara Marittima, province of Ancona-Italy.

The Municipality of Falconara Marittima decided in 2011 to undertake a feasibility study for a new Technological Park to promote the rehabilitation of a wide and complex brown area. This proposal puts together a project for new productive areas with new investments in the cultural sector and tourism.

Dhote, Meenakshi; Lata, Kusum; Singh, Gargi, School of Planning and Architecture, Delhi; India

Rejuvenation of the Productive Area in the City: E4 Subzone of Delhi

The paper elucidates the inherent problems of unplanned and unregulated industrial development and its social and environmental implications on the quality of life of a city in developing countries.

Sliwa, Marcin, Norwegian University of Science and Technology, Trondheim, Norway; Wiig, Henrik, Norwegian Institute for Urban and Regional Research, Oslo, Norway

Should I stay or should I go: The role of Colombian free urban housing projects in IDP return to the countryside

New apartments and houses given by the Colombian government for free to the displaced households 'cement' their choice to stay in urban areas. At the same time, they potentially contribute to the lack of success of the Land Restitution program, which fosters return of the victim population to the countryside.

Zaman, Jan, Brussels, Belgium

Industrious Flanders and Brussels – the northern area case

Two regional governments are taking the first steps in territorial cooperation through research and design proposals.

Workshop 3 BRUSSELS

How to match local expectations with strong international challenges?

Daneshmandian, Mahsa Chizfahm; Fattahi, Kaveh, Shiraz University, Shiraz, Iran

Shiraz small residential gardens

Shiraz is a city in Iran, famous for its Persian Gardens. We believe Shiraz as a city could save its region by renovate not in public Gardens/Parks but with its small Gardens within all residential houses. We propose evolving the old method of courtyards can regenerate the Shiraz city.

Ede, Precious; Owei, Opuenebo, Institute of Geosciences and Space Technology, Rivers State University of Science and Technology, Port Harcourt, Nigeria

Are cities in Nigeria keeping up with challenges for global competition?

Nigerian cities have been growing very rapidly resulting in a gradual decline in the quality of life. This study relies on published information on cities in Nigeria. The top ten cities where it is most conducive to do business were enumerated and the major factors militating competitiveness also highlighted.

Geambazu, Serin, University of Architecture and Urban Planning 'Ion Mincu', Bucharest, Romania

Dimensions of urban waterfront regeneration: Case study of Halic / The Golden Horn - an assessment of obstacles and opportunities for inclusiveness

The study reveals the dimensions of an urban waterfront regeneration project in which the rights of the future users of the space are lost behind a fight between the government and strong opposition parties gaining ground of governance landscape, motivated by their stake in the development.

Jin, Xin; Wang, Jianguo, Southeast University, Ministry of Education, Nanjing, China

Research on Landscape Promotion Strategy of the Grand Canal (Hangzhou Section) based on Landscape Visual Evaluation

This paper, using visualization as an operation method, constructed the dynamic tour system for the Grand Canal (Hangzhou section) based on the diversity of visual perception among different motion states and the concept of sustainable development.

Oikonomopoulou, Eirini, Lund, Sweden

New Mahalle – an urban green, inclusive neighbourhood

Strategies are presented to upgrade a poor-quality historic neighbourhood towards a qualitative, green, inclusive public life in a historic central district.

Papamichail, Theodora, ETH Zurich, Zurich, Switzerland

The test planning process and the case of Patras

In last decades the urban redevelopment of cities requires top-down policies complemented with bottom-up approach. A new informal procedure, called Test Planning, provides a collaboration basis among numerous stakeholders. It is examined in the complex task of railway redevelopment in Greece, specifically in the case of Patras.

Pisman, Ann, Ghent University, Gent, Belgium

A place based spatial policy in the multi-actor arena in Flanders

A place based environmental policy was already introduced in Flanders in the Flemish Mina-2 plan 1997-2001 and is more recently developed within the context of spatial planning. Different actors are experimenting with area development in Flanders. In this article two cases in Flanders are described and results are presented.

Rijpma, Jelle, Jelle Rijpma Advies, Heeze, Netherlands

Smart managing the city

Looking for new forms of cooperation within cities, in a continuous project called 'Open City'. Through pilot projects and practical examples, a conceptual framework for the Open City is developed. This framework reflects the changes and dynamics of the society. The conceptual framework consists of three leading cornerstones.

Shih, Wanyu, Ming-Chuan University, Taipei, Taiwan

Optimising green infrastructure to cool built environments: a case study of the Taipei basin

This research found that increasing greenspace size and vegetation density (trees) in a more compact and simple shape; and enhancing tree proportion on the adjacent areas of greenspaces will contribute better cooling effect of greenspaces to surrounding built environments.

Souza Cruz, Andrea, Unisuam, Rio de Janeiro, Brazil

Case study to urban regeneration on sustainable basis: Bonsucesso - Rio de Janeiro

The city of Rio de Janeiro - Brazil is the city with the largest population living in substandard clusters in the country, about 22% of the city population lives in slums. This research presents some recommendations to obtain socio economic growth on sustainable basis in this region.

Stupar, Aleksandra; Grujić, Aleksandar; Grujić, Biljana, University of Belgrade, Belgrade, Serbia

Toward the urban transition of Kragujevac: a new life of old urban generators

The focus of this paper is the city of Kragujevac (Serbia), which is facing numerous problems and challenges related to the shift of production and development priorities, changing urban identity, the recent production of urban space and a questionable or delayed reactivation of abandoned urban sites and ex-industrial facilities.

Taheri Moosavi, Somayeh, University of Manchester, Manchester, United Kingdom

A systematic approach to regenerate neighbourhoods with an activity-based approach

We should shift our focus from people-based and area-based regeneration to activity-based regeneration which encompasses the complex interaction between people and places. An activity-based approach shows how existing urban policies, service programmes and regeneration proposals work, and envisions what their future effects will be with considerably high level of certainty.

Tasyara, Fisqa, Directorate General of Spatial Planning and Development, Jakarta, Indonesia

Ecosystem service-based green space allocation planning: a new way to construct urban spaces

Green spaces are often developed based on land availability and without taking notice how the benefit can be delivered to the human population. Ecosystem service-based green space allocation planning answers this need to ensure that the location of an ecosystem service provider is most effective to provide the needed benefit.

Tillner, Silja, Architects Tillner & Willinger, Vienna, Austria

A new planning culture - cooperative planning processes; case studies in Vienna

Cooperative planning workshops have replaced planning studies and masterplans in Vienna, which has experienced a transformation of its planning culture from a closed to an open process. These recent changes in planning have had a positive impact on the public debate, yet the results vary and are some-times controversial.

Van Herck, Tine, PTArchitecten BVBA, Brussel, Belgium

Working within the human context

We are developing a method for a human based design process. This means a design method that enables to improve the social relevance of projects. It can be applied to projects of different scale : from interior architecture to landscape strategies. The research uses projects of our office PTArchitecten.

Vickery Hill, Adrian, BUUR, St Gilles, Belgium; Kaethler, Michael, KU Leuven, Leuven, Belgium; Kampelmann, Stephan, Université Libre de Bruxelles, Brussels, Belgium

Creative stakeholder engagement: the curatorial model

Planning and planners are increasingly accepting complexity as a fundamental challenge to bottom-up planning processes but struggle to identify tools and approaches accommodating it. Adopting the notion of the curatorial from art and design, we are exploring a new approach that celebrates complexity as intrinsic to its form of function.

Wang, Xi; Han, Feng, Tongji University, Shanghai, China

Historic urban landscape research of the canal heritage city Yangzhou

In 2014, Grand Canal (China) included on the World Cultural Heritage List. As the canal's cradle city, Yangzhou is now facing the challenge of conserve heritage value in rapid urbanization context. The research uses the approach of UNESCO Historic Urban Landscape Recommendation (2011) to interpret debates and propose solutions.

Yang, Jianqiang, Southeast University, Nanjing, China

Centre redevelopment of productive city based on system coupling and function optimization

City centre redevelopment is one of the important subjects at a time of global urbanization. This paper analyses the situation of China's city centre redevelopment and gives suggestions on how to improve it in the aspects of basic theories, technology and methods.

Yinan, Dong, Southeast University, Nanjing, China

An exploration of architectural inheritance and innovation methods in urban fringe belt based on typo-morphological research-- a case of expansion project of the second middle school in Xuancheng, China

Like Brussels, Xuancheng, a small historic city in South-East China has to combine the expectations of maintaining its traditional urban form and the necessity to develop its international dimension. We are lucky to get a chance to expand an old middle school in the urban fringe belt in Xuancheng.

Yuen, Belinda, Singapore University of Technology and Design, Singapore, Singapore

To be inclusive is to be age-ready: perspective from Singapore

This paper dives deep into the Asian city of Singapore to illustrate key examples of reinventing ageing-ready neighbourhoods in practice.

Workshop 4 Delft/The Hague

How to create a sustainable knowledge region?

Brouwer, Jan, ABF Cultuur, Delft, Netherlands

A new approach in planning of European cities

European cities are entering a new phase. In the past there was continuous growth. Planning was the management of growth. In the future there will be more emphasis on transformation and redevelopment. Every city has built up values. Steering based on these values is important to achieve the right choices.

Gong, Bin; Zhuang, Jie, Guangdong Urban & Rural Planning and Design Institute, Guangzhou, China

Landscape design promotes sustainable development of cities - case of 'Sino-Singapore Guangzhou knowledge city' urban design

Based on the research findings of 'Sino-Singapore Guangzhou Knowledge City', this paper introduces the practice of urban design which applies with the theory of Landscape Urbanism. This paper is focused on how to promote sustainable development of the city by shaping landscape.

Hulshof, Ineke, Hulshof Architects, Delft, Netherlands

DelftEDesign - bottom up approach towards a sustainable existing housing stock

DelftEDesign, is a cooperative of ten firms specialized in sustainable techniques, architecture and consultancy. DED is supported by Delft Technical University, Woonbron and the City of Delft. DED aims to realize a bottom-up movement to achieve large scale user powered energy saving and production in the existing housing stock.

Ma, Chao; Yun, YingXia, Tianjin University China, Tianjin, China

Research on the strategies of cultural heritage in villages and towns characterised by aboriginal participation

Two new methods (aboriginal participation and aboriginal autonomy) used to seek for the strategies of cultural heritage with planning formulation mode are proposed in this paper.

Reiss-Schmidt, Stephan, City of Munich, München, Germany

City planning between decline and emergence

After 50 years of CARP, it is time to reflect on the continuing decline of our profession. Nowadays, with globalization and digitalization, planning seems to become a “dying craft”. A cooperative transformation of the city gives the opportunity for a renaissance of planning.

Santamaria, Mar; Martinez-Diez, 300.000 Km/s, Barcelona, Spain

How urban fabric fosters knowledge transfer and innovation: the example of Barcelona

The innovation ecosystem of Barcelona, based on a diverse and compact urban fabric that enables positive transference of innovation and knowledge to different parts of the city, could become a reference for Delft which is actually transforming its university campus for a better integration between innovation tissue and the city.

Thadani, Dhiru, Thadani Architects + Urbanists, Washington DC, United States

Rediscovering the college town

Nothing matches the energy and pulse of a college town. These places continue to attract a diverse socio-economic population. The research documents 40 college towns in North America and identifies common spatial characteristics, land-uses proportions, and sustainable development opportunities.

Vaillant, Philippe, University of Lorraine, Charleville-Mézières, France

Let's reinvent convivial regions: in Bill Twittchet's memory

The world is limited. Our cities grow. In contrast nature is destroyed. Now we are faced with a balancing act between nature and city. A new organic approach to planning is developed on Bill Twittchet's notion of convivial regions. This approach shows how to create a sustainable knowledge region.

Zhu, Hua, Urban Planning Design and Research Institute of Southeast University, Nanjing, China

Opening and closure – two methods of how the college help to create a knowledge city

The paper illustrates the possibility and necessary of reinforcing the connection between college and city by a series of history traces and case studies. Following the typological research and deconstruction of modern colleges, a new conceptual urban design strategy (opening and closure) will be presented.

Workshop 5 Deventer

How to implement a (national) legal framework through local integrated planning?

Ayrancı Onay, Irem, London, United Kingdom; Gülersoy, Zeren, Istanbul Technical University, Istanbul, Turkey

Reinventing the planning process: monitoring and evaluation Istanbul case study

This paper will become a guide for cities that experience similar problems centred on the integration of different plans and coordination of different planning institutions; for creating an easier, better and faster decision making structure by using the provided Monitoring and Evaluation model in reinventing the planning process.

Beriatos, Elias, University of Thessaly, Volos, Greece

Interaction between national planning and local spatial plans in Greece

The paper tries to examine the interaction between local and national planning in order to make the appropriate suggestions for improving the efficiency of planning policy. Furthermore, there is an approach of the recent reform at local level in an attempt to measure compatibility between administrative and spatial structures.

Du, Shu; Zhou, Ruoqi, China Centre for Urban Development, Beijing, China

Pattern of multiple plans integration — study of Shunde planning system construction

This paper is an introduction to a study regarding how to solve planning excess and conflict by creating a coordinated planning system for the Shunde local government in China.

Goldie, Stephen, Abu Dhabi Department of Municipal Affairs, Al-Ain, United Arab Emirates

The impending revolution in urban planning practice: intelligent and automated, but will it be garbage in, garbage out?

New technologies promise plans for new cities in months and planning permits in an instant revolutionising the relationship between the national or provincial legal framework and more local integrated planning. Combined, they will create a revolution in urban planning, but at the cost of many existing safeguards.

Heyer, Antje, Stockholm University, Stockholm, Sweden

Discussing collaborative planning in Cape Town - a case study on in-situ informal settlement upgrading and the role of planners and the local government in bottom-up projects

My Master Thesis on Collaborative Planning presents the strengths and challenges of in-situ informal settlement upgrading in Cape Town. It discusses the project management of the bottom-up process and the role the municipality, informal dwellers and NGO based urban planners take, as well as their learning outcomes.

Owei, Opuenebo Binya; Ede, Precious, Rivers State University of Science and Technology, Port Harcourt, Nigeria

Re-inventing urban planning in Nigeria: the case of the land use policy of the new Port Harcourt city

The case study focuses on the land use policy prepared by a group of indigenous development professionals for the Greater Port Harcourt City Development Authority in 2013. The essence of the land use policy is to provide a framework that defines the key measures required to address land use planning.

Tang, Lei, Jiangsu Institute of Urban Planning and Design, Nanjing, China

People's livelihood-oriented multi-level cooperation: the urban renewal experience in Zhangjiagang, China

Zhangjiagang won 2014 Jiangsu Province Planning Award in China. Its people's livelihood-oriented multi-level cooperation included (1) Multi-sectoral Cooperation of Land Management, (2) Multidisciplinary Collaboration of Planning, (3) Multi-group Cooperation of Construction, (4) Multi-platform cooperation of Urban Management, (5) Multi-genre Cooperation of Urban Cultures, and (6) Multi-Capital Cooperation of City Operations.

Toto, Rudina; Shutina, Dritan, Co-PLAN, Institute for Habitat Development, Tirana, Albania

Planning as the technology of politics – to be used or misused; the case of Albania

Albanian spatial planning has dynamically evolved in the last 20 years, continuously conflicting with governance decentralization, development interests, territorial resources and political setting. Occurring in local social-economic contexts and confronted with EU knowledge, Albanian planning experience provides a unique example of key recommendations and avoidable mistakes for other reforming systems.

Visigah, Paul Nekabari, Oxford Brookes University, Oxford, United Kingdom; Kakulu, Iyenemi Ibimina, Rivers State University of Science and Technology, Port Harcourt, Nigeria

Integrated sustainable waste management - a tool for stimulating the waste economy in Port Harcourt, Nigeria

Delivering sustainable livelihoods via the waste economy is an inevitable route as African cities strive to manage the challenges of rising poverty and dwindling economies. This discourse evaluates the need to diversify the urban income base through ISWM Policy initiatives, and the potentials this holds for Port Harcourt, Nigeria.

Workshop 6 Dortmund

How to leverage economic growth from spatial projects?

Al Ani, Mohammed, Al Nahrain University- Collage of Engineering, Baghdad, Iraq; Alwehab, Abdelwehab, Baghdad University, Baghdad, Iraq

Urban optimization of transit – oriented development in Baghdad City

TOD is an urban planning tool to redevelop specific area in a city in order to transform it into a more liveable and resilient urban space. In light of TOD benefits and principles, a multi parameter evaluation of “Baghdad Comprehensive City Development Plan 2030” is undertaken, where shortcomings are outlined.

Baltrusaitis, Donatas, BUUR, Brussels, Belgium

Running up circular economy

On the relationship of resource cycles and how a shift in the treatment of these resources can have a positive business spin.

Bannaga, Sharaf Eldin Ibrahim, Bannaga Consult, Khartoum, Sudan

Understanding cities’ dynamics and the need for recurrent urban structure adjustment

Cities growing with conflicting forces of interests and landuses undergo urban transformation, and the larger the city or the urban entity the more complicated are these interests and their conflicts. Disparities exaggerate until the time comes when conflicts can only be resolved by urban interventions.

Camprubi, Alejandro, Pubang Design Institute, Guangzhou, China; Landeros, I.D., UNAM, Beijing, China

Engineering the public realm for thriving sustainable communities

The successful public realm has a positive impact on a multi-layer phenomenon that takes place in its surroundings. This paper explores place-making and creative communities to engineer the characteristics of physical surroundings and the correlation on the composition of the different elements that define a thriving sustainable urban community.

Huang, Wei, Jiangsu Institute of Urban Planning and Design, Nanjing, China

Exploration on transforming “new development area planning” to “built-up area planning” of the development zone in the new normal —with planning practice of national development zones in Suzhou as a case study

China is now undergoing an in-depth reform; its urban planning is transforming “new development area planning” to “built-in area planning”. Adopting the planning practice of national development zones in Suzhou as the research object, this paper explores the ideas, methods and implementation approaches of “built-up area planning”.

Jimoh, Usman Umar; Falola Olusegun Joseph, University of Ibadan, Ibadan, Nigeria

‘Reinvigorating the Nigerian industrial sector’

Industrial development has been a major catalyst in the employment of people in Nigerian labour market. Due to Poor regional development plan, the industrial sector have been neglected for the oil sector resulting into the relocation of industries, thereby creating unemployment and regional imbalance. This paper examines the possibilities of ‘reinvigorating the Nigerian industrial sector’.

Mohlmann, Joost, UN-Habitat, Kigali, Rwanda; Gibert, Montserrat, UN-Habitat, Barcelona, Spain

Leveraging economic growth through rapid urbanisation in Rwanda

Rwanda, the densest country on the African mainland, is promoting urbanisation to leverage economic growth. UN-Habitat supports the Rwandan government by developing local, regional and national spatial development strategies.

Niu, Yuan Sha, Nanjing, China

Region integration research based on the industrialization of cultural resources—taking Huai-salt industrial district in China as example

Huai-salt industrial district is the greatest salt production areas in China. Cities in it are confronted with the cultural, economic, ecological problems caused by the industry recession. Concerning this, Culture-Network Theory about the Huai-salt space characteristics – an innovative regional integration method based on the cultural resources industrialization is proposed.

Ogawa, Hiroki, Wakayama University, Wakayama, Japan

Problems of outer mega region in the mature period - case studies of Tokyo and Osaka region, Japan

This study clarified the problem of the difference in the inner and outer mega region in the mature period. Population decrease and the reduction of areas with increasing and decreasing populations do not happen equally throughout the whole region.

Skodra, Julita, IMIBE, Essen, Germany

Urban transformation of deprived neighbourhoods in metropolitan regions: the cases of greater Manchester and the Ruhr Metropolitan Region

Urban transformation is a complex process influenced by different challenges specifically in metropolitan regions facing structural change. Regeneration efforts, highly dependent on financial means, in the wake of economic slowdown present another challenging issue. This comparative study aims at exploring the mechanism that enabled successful urban transformation of deprived neighbourhoods.

Wang, Yi; Geng, Hong, Huazhong University of Science & Technology, Wuhan; Ouyang, Guohoi, Changsha University of Science & Technology, Changsha, China

“Imbalance” of regional industrial spatial development of small towns in the context of urban-rural integration--a study based on the case of Anshun City, Guizhou province, China

The author studies the strategies concerning and the layout of “imbalanced” regional industrial space in the urban-rural integration of China’s small towns

Workshop 7 Eindhoven

How to react when traditional industries move away?

Ahmad, Amira, Izhevsk State University, Izhevsk, Russian Federation

The history and rebirth of an industrial city: the case of Izhevsk, Russia

Studying Izhevsk as post-industrial city led to identifying a set of tools, which can contribute to reinventing other post-industrial cities. This model proves that industrial cities, which were developed and controlled by traditional centralized policies can be reinvented by the efforts and ideas of their active societies.

Grover, Paul, Arup, Liverpool, United Kingdom

Liverpool: a journey from a giant of world trade into a city where giants now walk the streets

The city of Liverpool has successfully managed to reinvent itself from a city that was once in decline resulting from shifts in World trade, into a World class Waterfront City that is now at the forefront of delivering culture and the arts to its citizens

Guo, Xiaodi, Nanjing, China

The exploration of industrial transformation in Chinese new economic normality—case of Yangcheng Lake Area planning in Suzhou

This paper chooses Yangcheng Lake Area located in the northeast of Suzhou for example to direct the industrial transformation. This includes the way of choosing economic category which suits for the environmental resources and economic conditions here, and the suitable path of industrial transformation.

Kamrowska-Zaluska, Dorota, Gdansk University of Technology, Gdansk, Poland

Social change from the solidarity to urban movements - design thinking approach in co-producing city of Gdansk

The paper presents bottom-up project of revitalization of interior urban quarter's in Gdansk using Design Thinking approach as a users' needs oriented method for co-producing of space. This pilot project could be a canvas to elaborate the model of intervention for other spaces in need of similar intervention.

Kelly, Erin, Detroit Future City, Detroit, United States

A little about lots: implementing land revitalization in Detroit

This case study will provide a measured description of Detroit's present inventory of vacant land and share the process behind developing a collaborative tool for parcel (or lot-level) interventions from A Field Guide to Working With Lots, the first community based, web-design tool for transforming vacant land in Detroit.

Lin, Yan; Wang, Jian-guo, Southeast University, Nanjing, China

Research on revival mode of China's traditional settlements based on "bottom-up" urban design method

The "bottom-up" urban design method can be supplement and improvement to the current general "top-down" method. Taking Cangshu, Mudu, Suzhou as an example, the article demonstrates and summarizes the "bottom-up" urban design method by operating the urban and architectural designing process on the ancient town.

Liu, Jie; Geng, Hong; Lu, Ningxing, Huazhong University of Science and Technology, Wuhan, China

Generation mechanism research on landscape of traditional settlement based on folk ritual

The paper integrates knowledge about architecture, folklore, sociology, history, geography and other related subjects, adopts basic methods of environmental aesthetics and settlement geography, and studies the correlation between Chinese folk custom ceremony and the generation mechanism of traditional settlement public environmental landscape.

Martinez-Diez, Pablo; Santamaria-Varas, Mar, 300.000 Km/s, Barcelona, Spain

AtNight project, designing the nocturnal landscape collectively

By means of "AtNight" project, we have explored the possibilities offered by digital technologies to propose new collaborative and efficient design scenarios. Given a model of nocturnal urban planning based on top-down management, we propose a new approach based on the perception of citizens.

Priyomarsono, Naniek Widayati, Tarumanagara University, Jakarta, Indonesia

Revitalization of batik business at the time of post-declaration of Laweyan's Batik Village Surakarta, Central-Java Indonesia

Laweyan is a pouch-formed settlement region of Pajang kingdom, having been developing since the sixteenth century. Laweyan holds typical societal characteristics namely societal groups of batik entrepreneurs. In the 1970s batik business started to decrease and even was assumed near-dead. The paper explores business revitalization as one way of prevention.

Van Strien, Anne; Boot, Isis, Eindhoven, Netherlands

Eindhoven in transition - reinventing the city from within

Eindhoven is a city in transition. Through a transition fieldwork study, collecting and connecting transition stories from a broad range of city makers. Our aim is to gain understanding and create new meaning of the city from within while reinventing our role as urban planning professionals.

Xu, Wei; Li, Juan; Chen, Chao; Su, Liangtao, Southeast University, Nanjing, China

Research and study on the town-rural planner system under the background of South-Jiangsu transformation in China

This research is based on several comparatively high industrialized countries in the south of Jiangsu Province and it looks into the "bottom-up" community planner system. By combining the "top-down" and the "bottom-up" mode, we believe that marketization helps to make up for the shortages of traditional South Jiangsu mode.

Workshop 8 Groningen

How to sustain energy resources?

Demerutis, Juan, University of Guadalajara, Guadalajara, Mexico

Planning for sustainable water and energy: a perspective from housing and urban development policy making in Mexican cities

The focus of the study is on housing through community building, under the premise of looking for compact, denser cities. A proposed planning tool comes in the form of a local government initiative to certify "Green Development" as a response to large water and energy consuming developments.

Momm-Schult, Sandra; Empinotti, Vanessa; Travassos; Luciana, UFABC, Sao Paulo, Brazil

The relation between the water resources management and territorial planning in São Paulo macro metropolis (Brazil)

How to ensure water access and supply to a 30 million people macro metropolis such as São Paulo? This article aims at the identification and analysis of the institutional arrangements and legal frameworks already in place and how capable they are in providing water security in the macro metropolis territory.

Mukoya, Kent Alwaka; Mwaura, Mbutu, Nairobi City Water and Sewerage Company, Nairobi, Kenya

Corporate social responsibility as a trajectory to actualization of corporate governance strategy - case study of Nairobi City Water and Sewerage Company

Responsible business practices can in many ways contribute to sustainable development.

Nabielek, Pia, TU Vienna, Vienna, Austria

Wind power deployment in urbanised regions: towards a comprehensive approach for renewable energy and spatial planning.

This research examines the implementation of onshore wind power by 'wind power-zoning plans' in European urbanised regions. It questions, whether these plans are comprehensive, that is if they promote both national wind power growth and regional-specific interests.

Papa, Enrica; Boelens, Luuk, Ghent University, Ghent, Belgium

Spatial, mobility and energy planning: a cross-sectorial and actor-relational approach

Energy's decarbonisation and a move towards a sustainable energy system is a massive challenge that can only be achieved by combining spatial, mobility and energy policies. Planning should address the integration with a collaborative and actor-relational approach.

Van Noordt, Anneloes, Spatial Development Department Flanders, Brussels, Belgium

Analysis of the impact of positive and negative criteria on the siting of wind turbines in Flanders

If Flanders wants to reach its target of 10,5% renewable energy by 2020 it has to step up the realisation of the siting of wind turbines. Based on a GIS analysis the impact of positive and negative criteria on siting of both current and future wind turbines will be performed.

Wang, Qianna, Sichuan University, Chengdu, China; M'ikiugu; Kinoshita, Isami, Chiba University, Matsudo City, Japan

Municipal renewable energy planning in support of post-earthquake revitalization: an application in a Japanese municipality

A GIS-based approach for municipal renewable energy planning and its experimental application in a Japanese municipality to support post-earthquake revitalization.

Yuan, Wen, Urban Planning and Design Institute of Nanjing University, Beijing, China

Planning in regional cooperative way to develop cities in ecological protection area: take Tongyu, China as an example

Cities in ecological area have long been confused both in green protection and local development, and planning in such area has long been difficult. In master plan of Tongyu, China, we are trying to deal with the circulation problem in a regional cooperative way.

Zhai, Baoxin; Zhu, Wei, Tongji University, Shanghai, China

Optimum population capacity forecast based on ecological footprint analysis: A case study of Xi'an

For the purposes of ecological balance and sustainable urban development, this paper used the Ecological Footprint Model to calculate the Optimum Population Capacity of Xi'an.

Workshop 9 Maastricht

How to overcome national borders?

Bacharyar, Abdul wasse, DeCoBa, La Wantzenau, France

The convivial regions in the world

Convivial regions or friendly areas consist in the union volunteer from several countries in the world based on historical, geographical, and socio-cultural approaches.

Boeger, Louise; Andrade, Hana, Universidade de Brasilia, Brasilia, Brazil

Brazil's federal district economic development integrated region (ride/df) and the regional mobility management

The paper presents the capital of Brazil and its Economic Development Integrated Region (RIDE), which comprehends twenty-two cities from two different states. We are going to understand the challenges involving public transportation in a metropolitan region by making an analysis of public policies implemented in the RIDE since 1998.

Caner, Gizem, Lodon, United Kingdom

From a barrier to a bridge: Nicosia and its national borders

Nicosia, the divided capital of divided Cyprus, offers unparalleled perspectives on the issue of transboundary cooperation and movement. This paper provides inputs on how a barrier can be transformed into a bridge, even when such a transformation is perceived as unthinkable.

Chen, Haining; Wang, Jianguo, Southeast University, Nanjing, China

Trans-boundary urban development cooperation as the new global growth engine: the research on mechanism of Sino-Singapore cooperative city building practices

The paper mainly elaborates the research on mechanism of Sino-Singapore cooperative city building practices through the discussion on trans-boundary urban development cooperation as the new global growth engine, with analysis models built from four Sino-Singapore cooperative cases.

Li, Lei, Beijing, China

Build a trans-boundary urban system from the top design to bottom practice

Urban design has changed with the development of science, technology and other factors. We need to break-through and build a trans-boundary urban system in a broad sense, beyond the achievement of all related, integrate and optimize them with adaptable methodology and systems from the top design to bottom practice.

Liu, Lixun, University College London, London, United Kingdom

The impact of rail transit systems on urban regeneration areas in a Chinese large city

The research topic is the impact of rail transit systems on urban regeneration areas, in aiming to understand how the impact on development and regeneration differs by locations and population groups. It also explores what associated policies and planning interventions should be introduced to achieve greater outputs.

[Peer Reviewed]

Ludlow, David, UWE, Bristol, United Kingdom

URBIS decision support for integrated urban governance

This paper presents findings from the EU funded URBIS project (ICT PSP 2014–17) development of assessment methodologies and tools to provide accurate up-to-date intelligence on urban vacant land opportunities, comparable across 700 urban atlas European cities, supporting the definition and implementation of sustainable governance strategies in city-regions throughout Europe.

Wang, Zhenyu, Jiangsu Institute of Urban Planning and Design, Nanjing, China

New development path for new city construction: an case study on Sino-Singapore Tianjin Eco-city in China

This paper analyses the development of Sino-Singapore Tianjin Eco-city in China, and put forward several suggestions. The paper tries to seek for new development path for new city construction.

Xu, Jiabo; Wang, Xingping, Southeast University, Nanjing, China

Effects of spatial pattern of province on the distribution of regional infrastructures

How to maximize the efficiency of regional infrastructures by choosing an appropriate site and encouraging cross-border sharing?

Workshop 10 Rotterdam

How to develop unprecedented port-city synergy?

Abdel Galil, Rania, Arab Academy for Science, Technology and Maritime Transport, Alexandria, Egypt
Moving beyond the physical, the competitive capacity of Port Said City and port

The city of Port Said is witnessing unprecedented attention due to the government plans for port extension and Suez Canal expansion. The interface between the city and port is marked by conflict and competition only to be resolved by a holistic approach considering services, human resources and knowledge management strategies

Goethals, Sebastien, Citilinks, Chengdu, China

The port sharing project in Rotterdam: exploring the potential of the sharing economy in the context of a port-city interface regeneration.

The "Port Sharing" project in Rotterdam aims to combine Sharing Economy principles with incremental community development, by proposing a network of "community sharing ports" in the port-city interface of Rotterdam, defined as social and economic clusters oriented to collaborative economy, knowledge and education sharing, shared mobility and resilient waterfront planning.

Guschl, Larissa, We Love The City, Rotterdam, Netherlands

Working waterfront Newtown creek

The case study in Brooklyn, NYC, explores the possibilities how to re-activate the urban working waterfront and simultaneously create an adaptive and resilient city-port area which is securing more public access to the water edge.

Liu, Chengcheng, Tianjin, China

Development strategic choice on constructing international harbour urban, Tianjin

In order to become an international harbour city, Tianjin has made three-level measures from the international economic cooperation to the regional radiation, and then to its own harbour-city synergy. They are planning Tianjin Free Trade Area, the inland anhydrous ports network, the twin strategy and dual harbours strategy.

Lorens, Piotr, Gdansk University of Technology, Gdansk, Poland

Reinventing the harbour metropolis – case of the "Tri-City" region in Poland

The paper deals with the phenomenon of the Tri-City (Poland) 'harbour metropolis' - meaning the conglomerate of city and port structures - and its complicated way towards reinventing its role in a globalizing world.

Matika, Christina, Aristotle University of Thessaloniki, Thessaloniki, Greece

Revitalizing Dunkerque; an effective environmental project

Dunkerque constitutes an important French city – port, which had dealt with two difficult issues; environmental degradation and lack of connection between the city and the port. The industrial zone played a major role in the redevelopment of the economic network, as new potentialities raised after the regulatory framework.

Meijer, Michaël, Rotterdam University of Applied Sciences, Utrecht, Netherlands

Organic area redevelopment @ m4h Rotterdam

Context description of Merwe-Vierhavens, Rotterdam explaining the organic area redevelopment strategy of the City Ports organisation and giving an overview of the plan site and involved actors. Main drivers are to reconnect the harbour with the city, stimulate the clean and creative making industry and introduce housing after 2025.

Ni, Mindong; Zhang, Nenggong, Ningbo Urban Planning and Design Institute, Ningbo, China

Ningbo master plan: a world connected metropolitan achieving port-city symbiosis

In 2015, the China's State Council approved the new "Master Plan of Ningbo" once again stressed the city's function as: the important port city in the southeast coast of China. For the objective of enhancing the international port, the new master plan proposed.

Niemann, Beate, University Wismar, Wismar, Germany

Sustainable urban waterfront development in port-cities

What specific content included such strategies to develop the port and the city in sustainable strategies? To gain answers, global case studies and reference projects will be analysed and critically scrutinized. Of crucial importance is the derivation of recommendations for the future development of the port-city with international charisma.

Nyamai, Dorcas; Wall, Ronald, Institute of Housing and Urban Development, Rotterdam, Netherlands

Wealth and the City: The competitiveness of port cities and non-port cities

Shipping companies now have the power to choose where to locate no matter the magnitude of investment by ports; making ports just a part of the value chain system. Strategies are needed for ports cities to remain competitive in the face of globalisation and export-oriented market strategies.

Pagés Sánchez, José Manuel, Hafencity University, Frankfurt am Main, Germany

Port-city relation: integration - conflict - coexistence - analysis of good practices

The port-city relation has evolved from integration, to conflict and then to a current state of coexistence. What are the main reasons for this change? What strategies are being used? What outcome are they getting? Most importantly, is this the right path?

Tsatsou, Alexandra, Institute for Housing & Urban Development Studies, Rotterdam, Netherlands

Port cities in action for resilience

Port and city are developing into entirely separate entities, spatially and functionally. Building resilience through port-city collaboration on climate change response is a mandatory condition for reducing risk and establishing ground for economic growth. Collaboration on climate actions can be the backbone of port-city cooperation on economic level.

Van Den Berghe, Karel; Ghent University, Ghent, Belgium

The Economic Port City Interface of Ghent, Belgium

Based on research of the port city of Ghent, this paper explores the different interfaces of the port city. Using different actor-relational techniques, it shows how the different interfaces are diverse and dynamic. This way, this paper contributes to the recent post-structuralist attempts in the port city research field.

Velnidis, Anastasia; Goethals, Sebastien, Citilinks, Chengdu, China

Perspectives and challenges of port-city interfaces in Chinese coastal cities with the lessons of European old ports regeneration: the case of Qingdao.

In 2015, eight of ten largest seaports are located in China, mostly in coastal port-cities. Recently, European largest ports such as Rotterdam have built innovative approaches of port-city synergies. In its development context, the port area of Qingdao faces similar opportunities and challenges of integrated coastal management and post-industrial rehabilitation.

Workshop 11 Schiphol-Amsterdam

How to connect in a globalized world?

Brunner, Ueli, IFOMAT, Erlenbach, Switzerland

Arrival of driverless vehicles – impact on land and city planning and the future needs for transportation infrastructure

Driverless-vehicle technology will have a profound effect on mobility and transport. It is time for Planners to think about the impact this may have on our lives and the built habitat.

Ledwon, Slawomir, Ministry of Municipality and Urban Planning, Doha, Qatar

City redevelopment around the new Hamad International Airport (DOH), Doha, Qatar

The article describes the planned development around the new Hamad International Airport (DOH) in Doha, Qatar. It opened in the new location in 2014. Currently there are many projects planned, including development of vast land of Qatar Cultural and Sports Hub, new connections, including metro, and redevelopment of adjacent land.

Mchunu, Koyi, University of KwaZulu Natal; Letebele, Emmanuel, eThekweni Municipality; Ralfe, Kate, Tongaat Hullet Developments, Durban, South Africa

Intergovernmental cooperation between spheres of government - The case of Dube Trade Port Development

The paper briefly outlines the nature of the Dube Trade Port development, a greenfield airport precinct located in KwaZulu-Natal, South Africa. The development is placed within a global, national, and regional context. The challenges of planning for an aerotropolis in a developing world context will be discussed in greater detail, with a view to informing interventions that will contribute to the easing of the tensions that will potentially delay the implementation of the Aerotropolis Master Plan.

Ordonez, Juan Felipe, Sedatu, México.

Troubleshooting in the New International Airport in Mexico City

The objective of this paper is to establish the problems and opportunities that both the new airport and the actual airport of Mexico City represent.

Stangel, Michal, Silesian University of Technology, Gliwice, Poland

Place-making and airport-related urban development

Is an 'Airport City' to a city like a 'shopping gallery' to an art gallery, or a 'business park' to a park? Or can airport-proximate areas become high quality urban places; new kind of sustainable districts in a polycentric metropolis? The issue will be discussed based on current European projects.

Thierstein, Alain; Conventz, Sven, Munich University of Technology, Munich, Germany

Hub Airports, the knowledge economy and how close is close? Recent findings and some observations

Workshop 12 Wageningen

How to feed the world's metropolises?

Allaert, Kato, Borsbeek, Belgium

Closing the loop: how food localisation contributes to the sustainability of settlements

The 'closing the loop' research project examines the effects of food localisation on settlements in the urban-rural region around Antwerp, Belgium and contributes to the discourse around sustainable food systems with a toolkit of design principles with straightforward methods for implementing sustainable local food systems.

Liu, Jinhua, Southeast University, Nan Jing, China

Exploration on the integration of urban and productive rural hinterland—based on the oriental farming culture

The paper summarizes the model of urban-rural linkages in Taihu Lake Basin of China in the ancient times. One targeted framework is proposed connecting urban and rural hinterland based on the oriental farming culture and it has been applied in Suzhou Taihu New City.

Luo, Yanyun; Wang, Qianna, Sichuan University, Chengdu, China; Liu, Wanyi, Washington University in St. Louis, St. Louis, United States

Post-earthquake rural ecological agricultural tourism planning and revitalization in Mianzhu City, Sichuan, China

The study presents two cases of Mianzhu City, Sichuan, where infrastructures and traditional industry were greatly damaged in the earthquake. One is an ecological agricultural tourist resort in Jiulong town: another is an overall tourism planning of Mianzhu city based on the kiwifruit production. The planning strategies and approaches to lead the village transit from previous industrial (cement, coal mine mining and brewing industry) pattern to a new sustainable pattern have been analysed.

Mirsafa, Masoumeh, Milan, Italy

Building new concepts on old traditions: rainwater harvesting as a tool towards sustainability of water resources

The paper argues how an integrated ecological approach in designing public open spaces can address water-related issues such as water scarcity, flooding and pollution, and therefore to contribute to the sustainability of water resources.

Olufemi, Olusola, Self Employed, Oakville, Canada; Labeodan, Olusakin, Leadway Pensure, Lagos, Nigeria

Family farms, local economy and food security: case of Romsy Ranch, Ibadan, Nigeria

Family farms are contributors to food security and drivers of the local food economy. Romsy Ranch contributes to the local food security and economy by sustainably creating direct access to fresh farm produce, adopting innovative approaches with a food value chain based on local food production, from farm to fork.

Roggema, Rob, Cittaideale, Wageningen; Spangenberg, Jeffrey, Spang31, Netherlands

Towards new urban networks for linking the urban food production-preparation-consumption chain

How the connection of the production of food, preparation in the public realm and consumption in neighbourhoods meet the needs for current society and shapes the public space.

Spoelman, Janneska, Buro Ja, Rotterdam, Netherlands; Nefs, Merten, Independent Association Deltametropolis, Rotterdam, Netherlands

Towards a sustainable food network for the Rotterdam - The Hague metropolitan region (MRDH) in 2030

New trends and techniques to produce food will have produced a major change in our food network by 2030. This research visualizes the network of the Dutch MRDH region by mapping current food hubs. Can we inspire the MRDH to set an agenda for a regional food policy?

Varella, Thais, GeoAmbiente Geologia e Engenharia Ambiental, Curitiba, Brazil

Strategy as a tool for replanning cities

The goal is to present a strategy to replan the cities for the future, through the strategy of local contextualization, SWOT analysis, population needs, scenario development and feasibility testing. It will be presented a case study applied on a disabled industry in the city Den Bosch, the Netherlands.



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How to build the city in a cooperative way?



An Anarchist Approach on Urban Planning: The case study of Thessaloniki

Ioannis CHINIS, Aristotle University of Thessaloniki, Greece

1. An introduction on anarchist planning

At the beginning of the 19th century, historical, political, economic and social fermentations resulted in the final transition from the era of the pre-industrial city to the urban center's one. The cities are exponentially larger, highlighting new needs. In more than two centuries, and already a canvas for a range of city planning approaches, the construction of the modern city continues to create and accumulate distortions.

Dystopian phenomena, such as spatial and functional fragmentation, uncontrolled suburbanization, urban sprawling, ghettoization, spatial exclusion of the economically weak and minorities, desertification and social alienation require the appropriate design solutions. However, from the age of E.Haussmann's operations in Paris, to the modernists of CIAM, to Keynesian government interventions and the General Urban Plan, up to the strategic planning and the post-modern approaches at the dawn of the 21st century, the town planners seem unable to give the required solutions. In this hierarchical politico-economic system the contemporary urban planner "acts as a mitigator against the ills of dehumanization, exploitation and societal divisions that capitalism brings, while simultaneously helping to facilitate the spreading and strengthening of that capitalist exploitation. This is a cause of much grief and cognitive dissonance for the planner, as they are trying to do several contradictory things at once, mitigate exploitation while allowing it to occur, and in this way they are participating in and perpetuating the exploitation and social inequalities themselves". (Tveter, 2009). The limited vision of the design process sets limits on design solutions that can be developed. The system of property ownership ensued by capitalism and, in more general terms, the power relations in our society convert spatial planning tools in policies which reproduce the aforementioned restrictions.

Design fails to extricate itself from property ownership and exchange, which create and nourish class differences, inequality, exploitation (of human and natural resources), division (social and regional) –conditions it is supposed to ease and eliminate. With limited ability to perform this role, design leads to distortions and sometimes gets bogged down over time. (Tveter, 2009) We, therefore, come to the conclusion that design must operate without norms imposed by capitalist interests, with the capacity to produce a wide range design of solutions for the well-being of society and the protection of natural environment. In order to serve these principles, a new socio-political context is necessary, without haves and have-nots, masters and servants, and of course without property, which is the backbone of all the previous conditions. A classless and anti-hierarchic framework. A stateless society, which will not be organized on personal power or governmental authority (Tveter, 2009) (Black, 2004).

Could we end up with a radical change in the political, economic and social system? If the society could cease the societal power relations, and, above all, the property relations, which are the foundation of the current system? Would it be possible to ensure the welfare of a society, through a model which does not follow the rules of a hierarchical, top-down" (top-down) design? Are we referring to a "bottom-up" (bottom-up) planning process (?). And what if we eliminate the term "up" from this sequence?

Since the 19th century, all these questions are being answered by theoreticians such

as Proudhon, Bakunin, Kropotkin and schools of thought, such as those of mutualism, federalism, anarcho-collectivism, anarcho-syndicalism, anarcho-communism. They envision a classless, stateless, anti-capitalist society, which is a result of spontaneous associations of free people into federalized social groups. They envision a society in an anarchist form. In addition they introduce a new way of organizing, without exclusions, exploitation, ownership, but with mutuality, solidarity, functionality and spontaneity. An organization planned from directly concerned people to serve themselves.

The gaps left in the structure of society in a state of anarchy would be prevented by free association among the society's members. When interaction between people is higher than the interpersonal relationship, "it takes some sort of institutional form; the community, the workplace, family and society as a whole, whatever it may be, should be subject to the direct control of the participants. This would mean works councils in manufacturing, people's republic in societies, interaction between them, teaming up in larger groups, up to the level of the organization of an international society" (Chomsky, 2004).

In an anarchist society, organization does not derive from the constitution and the institutions of a strong state mechanism. It isn't governed by the laws of the so-called free market, nor has the consistency of a national or a religious dogma. Its coherence comes from the solidarity relations developed between the people. People who neither accept the role of a private unit, nor operate as a homogenous whole. This diversity of associated members is the main "force" of society to avoid stagnation, not to run aground.

In accordance with theoretical analysis, we could identify the prerequisites for a truly unfettered, design process in a social situation of anarchy. It is normal, however, for questions to arise. Initially to investigate how the planning process in general, and how urban planning in particular, are being formed as the society is being organized in an anarchist way. The way and the instruments for the bureaucratic organization of modern states and the complex systems spatial planning, which have been institutionalized, are being replaced. And finally what is the role of the urban planner, within the whole planning process, considering the new anarchist organization?

1.1 Design process - Spatial organization

The urban planner and anarchist Colin Ward, identifies a series of principles entailing the entire organization of an anarchist society. Therefore, processes of urban planning in the context of this society are identified as well. An organization that stems from the bottom, framed with horizontal processes, does not establish and does not impose anything, in contrast with the type of organization in the modern capitalist system. It should be voluntary, functional, temporary and small-scale. (Ward, 1990)

As a result, we end up with a design system in which the residents of a small residential unit meet voluntarily, in order to arrange all territorial issues. Sharing common needs, this collective of people, through trial and error, improvisation and experimentation, and with experience (or information as defined by Bookchin, 1990) gained on design matters, is led to a state of "spontaneous order" according to P. Kropotkin on "Mutual-Aid". An order more direct and more closely related to the needs of people than any other kind of exterior and enforced hierarchical order (Ward & Bookchin, 1990).

1.2 The role of the urban planner in anarchist planning

The designer, now, is not supposed to set up, dictate, oversee, impose or exercise control during the process of planning and implementation. Instead, she offers her knowledge and experience as a consultant and work training, by injecting the designer's mentality to the collective and to each of the people who make up. At the same time she has to be aware that a very important aspect of the anarchist emancipation is the matching of everyday life with the element of playing a game, in which capitalism-derived separation of "working time" and "free time" ceases to exist. The planner may propose to the collective, this time by way of a

game, a range of ideas and projects, which are free from restrictions, could be bold, or even be considered surrealistic. And the collective, for its part, is able to discuss, develop their functionality, and evolve them. (Tveter, 2009) (Bonanno, 1998 (1977)).

1.3 Application examples of anarchist theoretical background

The framework anarchist thinkers propose for the organization of society has become the base for residential projects since the 19th century till today. An analysis of anarchist design will be presented highlighting examples of deliberately anarchy-based residential organization, such as the Israeli Kibbutz communities and the Freetown of Christiania in Copenhagen and examples with spontaneous elements of anarchist design as well.

Even though anarchy emerges as a political theory in the 19th century, its existence as an organizational situation can be traced back in much earlier times. In addition to academic literature, samples of anarchist organization can be found throughout the evolution of human society. Since the time of man as a gatherer, there is evidence of groups of people organized in anarchist fashion, albeit in a spontaneous mode.

Amid the social conditions prevailing in the 19th century, the first deliberately anarchy-influenced ventures emerge, with strong support by writings on anarchy published one century ago. In the context of these efforts, the anarchistic approach to social and residential organization is realized via expropriating means of production, housing and functional assignments, and the development of a new standard residential organization - the conscious community.

The phenomenon of occupying an abandoned or empty building or land, in order to cover basic housing needs, has been highly prevalent, if we consider that a population of approximately 863 million people in the world live in slums. (Cordaid, 2014). The practice of occupation, a common practice for societies throughout history, obtains an ideological basis for the first time by the works of anarchy scholars of the 18th and 19th century. Kropotkin, in his book "The conquest of bread", argues that expropriation of both means of production and housing, to meet the needs of society, is a non-negotiable condition for the transition to anarchistic society (Kropotkin P. 2007 (1892)). This gives rise to a new kind of occupying space, one with political and theoretical background.

Such occupations will appear in Europe after the 19th century and would not cease to proliferate as today, advocating a wide occupying movement in countries such as the Netherlands, Germany, England, Italy, Spain and Denmark. In the course of the 20th and 21st century, similar projects exceed the scale of a building or a block. These projects extend to the scale of settlements, operating as experiments, serving as a confirmation for the potential for anarchistic organizing of society. Bringing together all those elements (organizational and operational) they form an alternative basis for the replacement of a modern urban metropolis. Prominent examples include the Kibbutz communities (in particular in the first half of the 20th century B.C.) and the settlement of Freetown Christiania in Copenhagen.

The movement of Kibbutzim, particularly before 1948, manages to encapsulate the best version of the 19th century theoretical anarchists' vision of 19th century, in an alternative, directly democratic, pluralistic social infrastructure, a state level, on the basis of cooperative labor, and in the residential organization a federalist system federalized communes. (Horrox, 2009). As stated by one correspondent of the London-based anarchist journal Freedom in 1962, it is one of the best examples of democracy that there is and certainly the closest to anarchy implementation. Any anarchy-leaning theory ... (is) part of the daily survival pattern. Here in this microcosm, the authorities which may occur in a genuine free society are easy to identify" (Horrox, 2009).

Respectively in the example of Christiania, a system of organization of the settlement (operating as design instrument in real time, through the spontaneous actions of inhabitants) contains all the attributes of a free society. Elements, such as self-

management, solidarity, small scale, functional and temporary management of issues, enhancement of spontaneous action, as well as the anti-hierarchy, anti-capitalist and decentralized organization of life, make the Freetown of Christiania, a successful model of anarchistic social organization, within a modern metropolis, a highly capitalist environment. As a result of this theoretical approach, an experiment is attempted, emanating from academic texts and practical experience of similar projects. The goal is to examine first-hand the design process in an anarchistic environment and if a project similar to the ones of Kibbutz and Freetown Christiania could be realized within the limits of Thessaloniki, a familiar residential area.

2. The case study of Thessaloniki, Greece

2.1 Anarchism in Greece

With the roots of anarchist school of thought in Greece to have as a starting point the distant 1880, had to spend several decades to become witnesses of the first speck of both in the political life of the country, and the urban canvas. With important milestone in 1968 and with the particular social patterns that are formed before and during the dictatorship of the colonels' extends a trend that challenges the daily routine, that over the last years of dictatorship will meet with the political bases which have already been set by the first half of the 20th century the Stinas and Castoriadis, shaping the first groupings self-named anarchists/ antiauthoritarian. Under the influence of the policy concepts deriving from the Italian autonomy, the "Situationist International", the Cornelius Castoriadis and the American 'Movement', there is the gradual emergence of a/a 'space', together with the late appearance of the spirit of '68 and in Greece. Something which is reflected in soundbites of the events of 1973 (such as "the power", "April-May ' 68 ") (Σούζας, 2014).

Go to "transition from dictatorship to democracy is", we are dealing with a growing 'space', which self-excluded from the overall climate apparent cooperation and solidarity policies and social fabric, which brings the fledgling parliamentary democracy, moves in a multidimensional isolation. Whether this means the delegitimation of holders of the same and to criminalize large part of its activity, or the land of marginalization in the central areas, such as the plate and then of Exarchia.

The Exarchia with the particular characteristics which distinguish them (strong presence students, old quarter with similar urban background), have encouraged the establishment and flowering publishing projects. Between these and the first "family groups" who will comprise the a/a 'space', which makes the first steps of the kinematic setting post-war Greece initially to continue strike demonstrations in the second half of the 70s, culminating with the greek wave of those occupying the university buildings at the end of 1979 (Σούζας, 2014).

This time, amid the quirk repressive policy of the state, we are witnessing an historic phase of "space" and more generally of competing movements fiord in Greece, as well as for the first time occupied housing make their appearance in two large urban centers. These ventures as an expression of voltage prefiguration (Σούζας, 2014), which is emerging from the ranks of the a/a "Space", operate by applying and creating experimental, emerging from the '68 new political concepts, which place emphasis on the immediate "here and now" pursuit of desires, making blurring the boundaries between personal life/lifestyle and political motivation (Σούζας, 2014). Moreover, at European level, there is already the experience, with the squatting phenomenon is booming in after '68 period.

In the years ahead, occupied buildings will continue to emerge both in Athens, and in smaller cities the Greek territory (Real, 2013), including in Thessaloniki. The migrating sites mosaic, which is configured on the urban construction of Thessaloniki, enriched, supplemented and spreads, often in response to local and wider political and socio-economic developments (by the anti-globalization movement Genoa 2001, summit Thessaloniki 2003,

December of 2008, Capitalist crisis of 2008), by new housing assignments (Black Cat, Terra Incognita, Delta, orphanage, Libertatia, Fabrika Square YFANET), functional squatting ventures (Sporeio, Scholeio/School), as well as self-managed areas and spots that operate in leased facilities (Micropolis, Domino, Without Authorities, etc.).

2. 2 Option exercise-region study

From the extensive wine list to complement these efforts, causes a particular interest in the initiation of the investigation, gathering characteristics which are not found in other examples. Is the "free social ski school for the learning of freedom", which is housed in the 2010 grade II listed building on the corner of Bizaniou str. with Vasileos Georgiou str. (extension of Queen Olga str.), where the 12th elementary school Thessaloniki had been housed until 2004. This project seems to collect all those characteristics (in spatial, functional and ideological level), to operate as cradle of another-an alternative proposal for the setting up of urban space and the organization of life thereunder, as a source of aggregate rupture with this politico-economic system. As distinct from the political context of the assignment, special attention from the initiators of the project is given in point of space and the process of reclaiming from society, freed from the dystopic characteristics which have borne the chronic distortions of harmonized with the capitalist system design, and their use in accordance with the collective needs and desires of local society. Features referred to by the same: "liberalizing public spaces from the abandonment and the lack of power. Taking place in freedom and meant to individuals and groups to the total social emancipation from any repressive, extortionate institution and dominating control" (Convention E. X. School , 2010).

The assignment "school" regardless of the features that gives it the organization of everyday life and the kinematic measures of states, is in itself a statement. Sheltered in one of the few luxury buildings that have survived on the length of the former Exohon Boulevard, the current Vas. George Ave. in contribution with the Bizaniou str. The Administrative area to which the assignment belongs to E-municipal community of Thessaloniki municipality, becoming the first residential area that meets someone if moved from the edge of the historic center and the White Tower, to the south-east conurbation. An area with unique historic, urban and architectural interest, as well as part one of the first extensions of Thessaloniki at the end of the 19th century, outside the traditional limits (Γερόλυμπου., 1995 (1985).

Thus, the choice of the building of the first Croat squatters, in addition to the obvious practical reasons that the attached, such as the beneficial ownership (ownership of the church in this or the public in other cases) and the years of depopulation, has strongly semantic sleight nature. The so-called "towers" the avenue, were for decades average view of wealth and social symbol separating the bourgeoisie of Thessaloniki. With the occupancy and ownership of the building, from people-entities which are based on disengagement from the system that produces these class differences, there is a symbolic victory in the context of this particular "semiotical guerrilla warfare" (Umberto Eco,1989, from (Σούζας, 2014); the a/a space with the state, the bourgeoisie and the church (in which the building is owned by, and in accordance with complaints of local civil society, has attempted to change its use by school in commercial, anticipating a higher income) (Convention E. X. School , 2010) (Krümel, 2005). It is a practice which is prevalent in many other examples those occupying, creating a phenomenon of intrusion of the anti-culture and the squat movement in a symbolic and historic stronghold of urban culture (Σούζας, 2014). It could be said that the appearance of these migrating sites, their prevalence (in areas with specific characteristics) and networking to develop between them and the rest urban fabric, constitute a peculiar, the construction urban phenomenon, which brings in practice and with the most bold way the libertarian theoretical framework in urban areas.

In fact, therefore, a study on the implementation of an anarchist approach to design an urban center, such as the Thessaloniki, it is directed to the occupations, the spots and the social areas, but also the wider residential environment, as well as able to operate except areas of everyday life and kinematic action, as hob emergence of a new reality for

the current urban centers. A reality, which (as has been analyzed and the theoretical framework of research) starting from the level of the neighborhood - commune can be developed federalist as the level of confederation, covering existing hyperlocal spatial units and overhead levels of planning.

As an ideal setting in which to unfold such an experiment qualifies the e. X. "Schools", an area which brings together all the elements that could make it a representative example of squat movement, but also with special features that stand out from the other operations of Thessaloniki and contribute to highly developed relations with local civil society. In conjunction with the qualities of the area and the historic load, accompanying the urban background on which rests, emerges as a sole interest case to study.

3. 1 The workshop process

In November 2014 the general assembly of the School shall be informed of the issue and the content of the pilot project "DIY Urbanism Workshop // An anarchist approach on urban planning in Thessaloniki", and decide unanimously for the hospitality two six-hour meetings on the premises, on 5 and 12 December 2014. The next few days update (via the internet, posters, flyers) to a broad base, which includes members of the local society, people involved in the occupation, but also students of AUTH), that from the first moment showed a great interest on the project. A people for a whole week, and in particular for the 12 hours that would last the processes in the laboratory, we tried to simulate the processes of design collective, and to reach some initial proposals for the spatial organization of the region.

The first meeting of the workshop (5/12) begins with an initial approach in the theoretical background of an anarchist urban planning method, through presentation of bibliographical sources and a question-and-answer (Q&A) and free debate, with an eye to the best possible understanding of the framework by the participants. This is then followed by the presentation of the program, as well as the analysis of procedures and design tools, with the main to be the psychogeographic walk and the World Cafe, with the use of the design he now forms part at the end of two daily meetings (5 & 12/12) is in a position to put forward its proposals for the study area. This is the last intervention from the side of the researcher in the process and the manner in which the discussions of experimental collective.

So, through the design procedures proposed in he now forms part of the follow-up to the laboratory and following horizontal procedures, this is an attempt to analyze the area outside of the contractual procedures followed usually (for example in the study of a General Plan), while at the same time an attempt is made to identify trends, be deposited with new ideas, to challenge and to develop existing, to test the limits and the design features of our urban environment, and ultimately to establish a plan to regulate urban area study in accordance with the needs of stakeholders.



//ΘΕΣΣΑΛΟΝΙΚΗ

D.I.Y. URBANISM WORKSHOP

//ΜΙΑ ΑΝΑΡΧΙΚΗ ΠΡΟΣΕΓΓΙΣΗ ΣΤΟΝ ΠΟΛΕΟΔΟΜΙΚΟ ΣΧΕΔΙΑΣΜΟ

05/12 ΠΑΡΑΣΚΕΥΗ | 12:00

12/12 ΠΑΡΑΣΚΕΥΗ | 12:00

[Μπορούμε να σχεδιάσουμε οι ίδιοι το χώρο που ζούμε, κινούμαστε κι αλληλεπιδρούμε; Κι αν «ναι», πώς θα το διαμορφώναμε;]

πληροφορίες:



ΒΑΣ. ΓΕΩΡΓΙΟΥ & ΜΠΙΖΑΝΙΟΥ ΓΩΝΙΑ

Το εργαστήριο πραγματοποιείται στα πλαίσια διπλωματικής εργασίας του Τμήματος Μηχανικών Χωροταξίας και Ανάπτυξης, Α.Π.Θ.. Για τη συμμετοχή **δεν** απαιτούνται ειδικές γνώσεις.

1.1 3.2 *Psychogeographic walk - Registration /analysis*

Returning to the case "DIY Urbanism workshop", the application of the first of the two major design tools analyzed above, the psychogeographic roam, is used as a first acquaintance with the area study, for those participants are not at the same time and its inhabitants or the review of the region under a different perspective, from those who are already familiar with this. The roam is converted in this way in a particularly useful procedure recording and analysis of the area, in which the territorial-urban, morphological, physical, architectural features, but even the demographic and economic trends in the study area are identified by means of direct observation by the participants. The transfer of the bulk of urban analysis, from the "Office" and processing numerical data, the "road" and the emotive recording, it introduces the boldest concept of human scale urban planning.

The psychogeographic roam is the second in series planned action, for the first day of the lab. After a brief presentation of the theoretical background and the discussion in the framework, the first step was the participants to purchase charts and aerial photographs of the region, so as to facilitate the movement and the recording of impressions, and then to form spontaneously brings together wandering groups, which choose from a color to distinguish it from the other (orange, red, green, blue). Each group before you start exploring the town, selects a scenario, a predefined methodology by which outlines the course of the urban fabric. Thus, the members of the resources released by the responsible for the selection of the route during the experience of psychogeographic wandering around, and is free to be released exclusively on the observation of the urban environment. With regard to the free movement of information participants provide spontaneously and the overall size of the study area. Something that intentionally has not been established from the outset, as well as the division of space with any subjective or of what it seems like an objective justification by the investigator is an arbitrary nature in general, and the nature of the project in particular. As formulated by the German sociologist and philosopher Georg Simmel, "The limit is not a spatial fact with sociological effects but sociological fact that formatted territorial" (Simmel, 2011).

The methodologies traffic within the study area, to be selected by each group at the start of the promenade psychogeographic game, similar to those listed in the manual of the US Office Unknown destinations, but they are composed by creating hybrids. In particular:

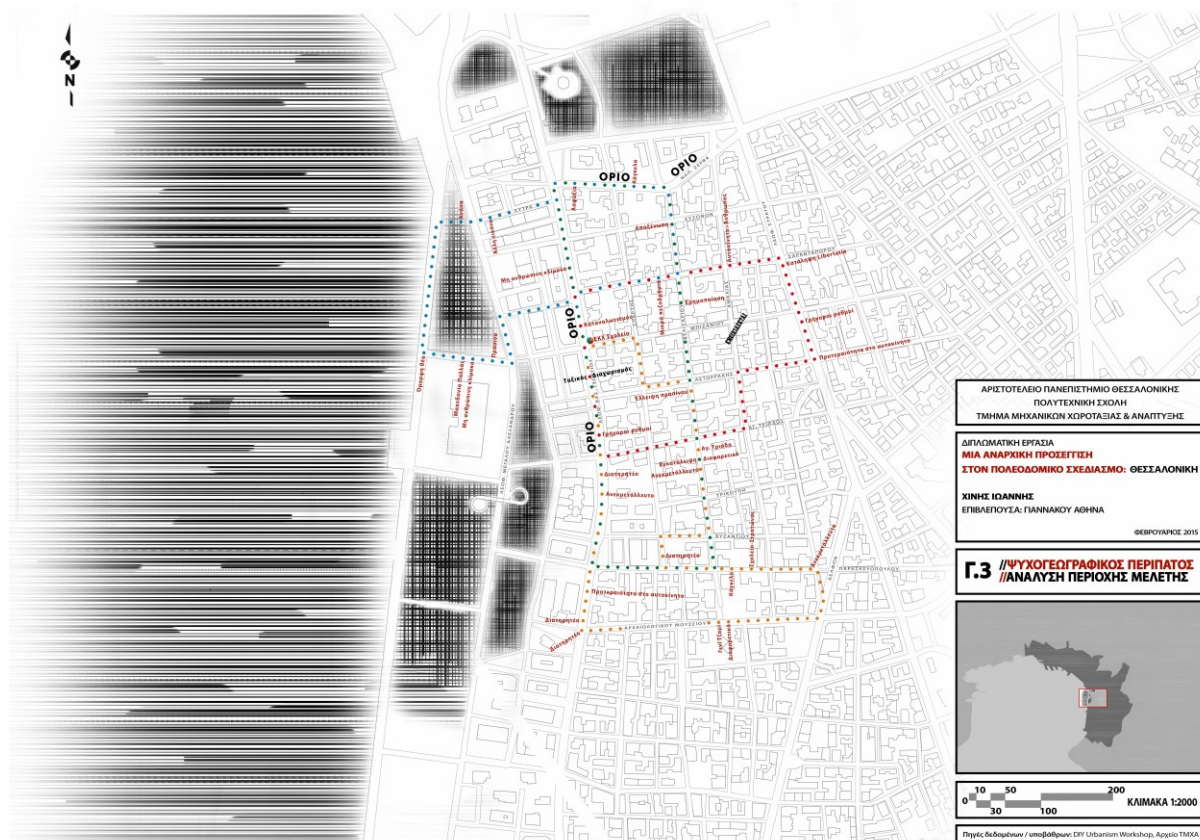
The "orange" team selects to follow an aesthetic roam. Making the aesthetic stimulus more concrete is chosen by the members of the group to follow the buildings with architectural interest. What ultimately drives more interest is the remaining villas (whatever remained to be reminded of the holiday Exohon Avenue), the neoclassical buildings with eclectic (middle-class dwellings are surrounding the villas at the beginning of the 20th century B.C.) and the architectural monuments (e.g "Mosque of Donme" or "Yeni Mosque" by Poselli Vitaliano property) that can be identified within the study area and are an integral and important part of the historical, architectural and urban background.

The "red" group following an aesthetic plan guided walks but, under an inverted, from aesthetic elements Mr. Linkohr's members of the negative. In other words, a route which is attracted to the "bad". An option that is very useful as it offers, as will be seen below in the analysis of space, a mapping of less attractive areas.

The "green" group moves in accordance with a simple scenario, which however enables it to cover a large area with plenty experience and the environment in the region. By selecting to move straight changing route and always turning left whenever a random stimulus leads to such a change.

And finally, the "blue" team combines two methodologies wandering around to complete the psychogeographic walk. While, initially, the members of the group agree on an algorithm and traffic route selection at each crossing, the form two right turns and three left, when they are the pair of roads Vas. George Ave. and Lytra str. and coming in visual contact with the New Beach, choose to follow an aesthetic criterion motion before returning to

area of assignment. So after moving algorithmic, left to the pacing are what will draw them in sensory stimuli of the beach front, creating the option of a hybrid algorithmic and aesthetic psychogeographic promenade.



The traffic routes of the groups during the psychogeographic walk are also ultimately spontaneously define the study area, which extends approximately from the street rpn. Zerva Napoleon str., near the Floral Park, up to the Archaeological Museum str. and the Yeni Mosque (the former archaeological museum, hence the name of the road), and from the Army Avenue down to the new Beach. This definition is the first decision to be taken by the design he now forms part, even if it is the momentum. The choice is a component of the natural movement of the members of which is affected by physical and morphological characteristics of the region, thereby implementing a concept, the theory of that moment of spontaneity and insecurity, and not as a result extrinsic factors (as is the case in the current urban and administrative division of the urban area).

After the return of all groups in society, starts the recording phase and analysis of impressions of psychogeographic wandering around. Each group after it identifies and plans the exact route on the chart of the region, is attempting to describe the other members of the collective, using photographic material, sketches, testimonies collected in notes, the experience gained from the walk and in particular elements which give a first idea for the area. Each group according to the scenario which has followed during the psychogeographic promenade, concentrates and in different territorial issues. Thus, during the debate on the analysis of the results of the psychogeographical process expressed both concerns shared by all groups, and in particular subjects dealt with only one of these in the course of wandering around. Through the concentration and the debate on the comments of the promenade, from which there are disagreements on details and construction subjects, identified and recorded through the filter of this collective process the

main points of the spatial resolution for the study area. Points which have been confirmed by the urban, environmental, demographic, economic, historical and morphological characteristics of the region.

The analysis of the region begins with a problem which all groups identify and record the impressions. Wandering on the main roads (Vas. Sofia Ave., Vas. George Ave., Army Ave., Delphon str., Alexander the Great Ave.), gives you the feeling of a non human-centered urban environment. Starting with the human mobility and senses, which are, according to Jan Gehl (2013), the key factor of all activities, communication and the peoples' behavior in general in the public space.

The mismatch of the urban environment in our region (but also in the wider region) with the characteristics of an average person, as analyzed above, is initially detected in the design of the road system. The parallel to the waterfront collector streets (Vas. Sofia Ave., Vas. George Ave., Army Ave., Delphon str., Alexander the Great Ave.) which divert the movement of vehicles to or from the center of Thessaloniki, include four traffic lanes each, which puts their width and the distance between the pavements on each side of the road at 15m, enabling the vehicles to develop speeds which are approaching the 50km/h. It is evident, therefore, the design's tendency to meet the needs of the vehicle, and not the human ones. A phenomenon that not only occurs on the main road axis but also on the residential area east of Vas. George Ave., where the mobility of pedestrians is limited to really narrow, incomplete -ramps and tactile paving does not account for the largest part of the network-and/or non-existent sidewalks, because in some parts are occupied by parked vehicles.

However, the sense of a non-human scale design is not just on the road, but also extends to the built environment of study. The main structural component of the urban environment and, more generally, the Greek urban center, the apartment building, contribute significantly to impression that members of collective. The vertical development at heights above 15m (most buildings feature 5 to 6 floors apartment), which is supplemented by the repeatability and the uniformity of the building structure, creates an environment in which, because of scale and morphology, fails to irritate the sensing of wandering, leading to it is irrelevant and boring.

The limited space, the barriers, the noise, the pollution, the risk of accidents and in general the hostile conditions, are the everyday life of the inhabitants of the region, such as those of most cities. If, indeed, we consider that the vertical build in small area and high travel speeds of vehicles allow you to maximize the exploitation of high rents showing an urban center, and the extension of these high rents in agreement with the pattern of urban diffusion length of the motorways. It will be necessary to note that this increase in speed does not have an impact on the lives of the people as well as the average time displaced in urban areas as well as in Thessaloniki remains stable in recent years despite the growth of urban centers. That means that residents do not save time due to the higher speed, simply travel further (Καυκαλάς, Λαμπριανίδης, & Παπαμύχος, 2008). It is confirmed, for example, and in this case the orientation of modern town planning initially in feeding the capitalist standards economic growth and secondly to meet the needs of people.

The green spaces which are recorded in the region is minimal, with the only exceptions of these Park Floral Park and the New Beach area, an area which has emerged from the post-war infill (decades ' 50- ' 70) on the beach front along the Exohon Avenue. A project originally with purely military nature (as cold-war defense project), which has been developed into a pleasant and lively and hyperlocal important public space, with the only discordant note the compact volume of Hotel Macedonia, which was raised on the beach in 1960 (Χαστάογλου, 2008) (Γερόλυμπου, 2008). Some green "touches" to the region are given by the gardens of the remaining eclectic buildings of the 19th and early 20th century, but the majority of them remain inaccessible for the local society, behind the bars of the fences. While a significant reserve landscaping is trapped in the unroofed building blocks. Something that comes as a result of the rapid, since the nineties 60, reconstruction and replacement of the original attribute beauty spots of wider area, with massive construction. (Γερόλυμπου, 2008)

The issue of enclosures seem to employ all groups after the psychogeographic stroll. As mentioned above, the handrail which erected around many buildings of area study (within these and the listed buildings) reinforce the image of the limited open-public sites in the region. Operating as a means separation and protection of property (either private or public), scattered in area fences isolate one important piece of potential open space available, creating effects fragmentation and discontinuity of public space, as well as a strong sense of exclusion to vagrants of the venture.

Features include examples, which referred to during the recording of experience psychogeographic promenade. The first is located on seven stored apartment buildings along the rpm. Zerva Napoleon, which both as building blocks as well as the fences which the projections are a visual and natural border of the region with the park of the floral park, where sometimes bloodline through his father the stream of field of the Champ de Mars. A further example is that of the schools on the Paraskevopoulou and Archaeological Museum str, which in addition to the separation caused by territorial, contribute to a second level in isolation of the educational process from the functions of the rest of civil society, giving level symbolisms the feeling of "army barracks". At this point it would be worth commented on that during the recording very few people who raised the existence fencing around the two occupied buildings in the area (e. X. School and Libertatia), whose presence is still a factor that indicates the historical and class background of buildings. This two-pronged approach which is recorded, after discussion between the members of the collective, is detected in predisposition which causes the open, of both territorial and functional nature of squatting projects and free access to them during the day.

However, the most intense limit identified in study area is drawn from the shaft of the VAS. George. Both the same avenue as a main road with similar traffic volumes and noise pollution, as well as the visual barrier that forms the "wall" buildings, which have been built in the villas of the last century and in the area of the New Beach, contribute so that in several cases a traveling circus on the Vas. George str. not to realize the existence of beach front and the largest open space in the region, the new Beach.

The spatial separation that causes the Vas. George, in this case it is considered that separates two situations, taking and class character. In accordance with the comments made by the homeless on the axle, the apparent differences in morphology, the components of the building and, more generally, the qualities of the space segment of the road extends to the Thermaikos Gulf, in relation to the "inside" part of the region, indicate a differentiation of social composition and the income profile of the inhabitants of the two parts. Something that is confirmed if study the differences in the prices of real estate across the avenue (and especially those who are facing the sea), and the demographic composition of the two compared regions (with the "internal" to hosts social groups of students and economic immigrants of decades 1990-2000, which indicates and cheaper rent houses and smaller percentage owner-occupied dwellings in relation to the "Beach" blocks) (Λαμπριανίδης & Χατζητροκοπίου, 2008).

The diversification of the region between the two highways (Vas. Sofia Ave., Vas. George Ave., Army Ave.), in relation to the "Beach" area, intensify the sense of abandonment which derive the members of the group wandering on the streets of first, mainly because of the lack public infrastructure (insufficient network pavements, damaged road network), the phenomena of disrespect in public space (vehicles are parked on pavements, overflow bins etc), and the diffuse visibly neglected buildings from the early 20th century. The unadorned areas, which until a few years ago-orientated retail outlets and workshops small nuisance (something which has declined as a result of the economic crisis of 2008) contribute and they significantly to deterioration of the residential section.

Under these conditions the linear development of business activity which is observed along major axes of Thessaloniki (to keep pace with the objectives set out in an approved General Plan), reinforced by prioritizing the boulevards of the test residential section, and in particular

the Vas. George, in key actors of commercial and social activity. Character which this road is not lost ever since the period of fire in 1917, when she hosted for the first time the evicted from the historic center commercial activity. When, therefore, the crisis is now, at the end of the previous decade, the great bargain stores for rent and the need for economic survival will lead even commercial level center neighborhood to gather as close as possible to the axis.

The territorial fingerprints of economic crisis is apparent, not only in the residential area between the highways, but also to the same shafts, and mainly in the Vas. George str., where the 1/5 of shops at ground floor of flats remains without a renter. A phenomenon that is not limited to the narrow area of study, as well as part of the widespread rapid economic activity of the city degrowth.

The conditions under which continues to shape the economic crisis and the spatial implications these in Thessaloniki, in conjunction with the attacks that has managed the modern way of life within the urban center (fast pace, solo lifestyle), the social ties of residents, build in parallel with the economic and social crisis. Cannot be compared with apparent alienation - alienation of the individual, and intrusion of the social fabric in other urban areas. However, the signs are obvious and recorded by most of the groups in the psychogeographic procedure. Information which is sufficient to raise a feeling of insecurity to vagrants in some parts of the route. Such characteristics indicate a participant: "I would not have felt comfortable to circulating evening in this area", by entering the debate and a 4th dimension exceeding the spatial resolution, this time, in which reinforced (or otherwise retract) some stimuli that gives us the urban environment.

Finally, in the course of wandering psychogeography have been detected by all the groups extremely samples of historical, architectural, cultural and social background of study area. Starting from the villas of high income strata Belle-époque along the highways, the remaining class educated backgrounds eclectic data homes, up to the ceremonial buildings (some in office, as the Christian church of St. Trinity, and other ineffective, as the Yeni Mosque), one can roam notional in all the historical phases of the test area. Moreover, indicative of the predominance of these buildings is the choice of one of the groups (orange) to navigate the site using the. And can the emergence of Thessaloniki in European Capital of Culture for 1997 has given rise to many of the monuments, which were rescued from the building frenzy of the past few decades, to sustain themselves and to maintain, but a large part of building this capacity (especially the "internal" residential area) in accordance with the recording remains unprotected in damage that brings the time and wasted.

To sum up, it may be useful to set out the cumulative list of problems, which were detected during the process of psychogeographic promenade and the debate - analysis followed by the area of the "school" and which are the starting points for the reasoning of the participants in the second phase of the simulation experiment, the phase World Cafe - proposal, as formulated by the design he now forms part:

- "Non-human scale."
- "Priority in vehicle against human (reduced mobility) ."
- "Homes boxes - uniformity - lack of different."
- "Lack green particularly over the Vas. George Ave.. The private parking is very public-open."
- "Handrail (separation - protection of property). Schools-barracks."
- "Diversification to limit the Vas. George Ave.. Spatial - class warfare division."
- "Sense of abandonment-desertification over the Vas. George Ave. (internal area) ."
- "Concentration functions to main routes."
- "Surveying the collapse of the "capitalist dream" into space."

- "Alienation - Insecurity."
- "Derelict / without a use historical-architectural monuments. The only different characteristics in study area."

3.3 World Cafe -Proposals

A week after the psychogeographic walk and the analysis of the collective area, the second part of the lab followed. Members of the collective, combined with new entries, gathered for the second time at the premises of the school, on Friday 12/12/2014. Immediately a general discussion on what happened last Friday started and, at the same time, the necessary information on what people are new to the process. For the next six hours we will participate in an experimental simulation of what a design collective would be like inside an anarchist society. The process of World Cafe is ready to start.

The members of the collective are divided into five tables, with each table hosting three and four people, with a different thematic debate on each one of them. The five themes relating to basic planning functions, which were found in the first chapter have been dealt with in theory of some of the most developed proactive anarchist thinkers. Thus, the participants are invited to discuss and to submit their proposals, in rounds of 20 minutes, for the issue of residence (the right to housing, the construction, the location of the site, and its relationship with other functions), for the ecology and the configuration of the urban environment of the region, the infrastructure networks and the way in which govern the other functions, for the adjustment of the production process, and finally to the new forms which will organize infrastructure system education, welfare and health.

The members of the collective will be witnesses and involving -expressing views, presenting ideas, evolving and revising the in many cases, arguing, questioning, finding mutually acceptable solutions, and ultimately bringing the theme up to the stage of the proposal; it is unprecedented for all. As long as the rounds of talks are interchangeable and the participants (together with their ideas and experience gained) move between the thematic tables, paper each thematic are filled with reviews and sketches, and the conference hall of the school with intense talks. The observer of this process can feel the tension between the discussers when there is disagreement, and pleased when the problems are exceeded and the common solution takes shape on the paper. Putting the image with allegorical figure available, it could be said that one can see that "signal" (according to Murray Bookchin) travels through the area, and as well as over each 20-minute is complicated, weave and the final proposal.

The World Café is coming to an end at the afternoon of the same day. All the design collective's members group together and the coordinator of each thematic table undertakes to present his table's proceedings in front of the entire collective. After each presentation, referred to some necessary clarifications, expressed the past disagreements, and once they solved, recorded the proposed objectives and actions per thematic; urban operation, the design collective is now ready to submit her approach on the design of the urban environment in a state of anarchy, to form proposals for the functional planning of housing, ecology and environment, infrastructure networks, the production and at the end of the education, health and welfare systems.

3.3.1 Housing

The residence, as the cornerstone of housing organization, garnered from the first informal discussions the interest of all members of the collective. Furthermore, considering that a dwelling is the first and most basic need - pursuit of a human, just after he ensures his food. It is no coincidence that the solution to the problem of housing over time is a key issue in the ranks of the planners.

Of course, the need for each person for a home involves much more than the simple desire for just a roof over his head. The residence except of providing protection of natural phenomena, is a key factor of determining and regulating social relations developed in a residential environment. Without any deterministic attitude, it could be stated that the housing model in each society may have a direct or indirect impact on the formation of social ties and, consequently, the social function. It is not difficult, therefore, for the members of the collective to argue that the basic housing model in the region must be undergone profound changes, so as to harmonize with the anarchist imperatives of social organization. Imperatives that this lab is trying to give a spatial substance to.

In accordance with the design team, in apparent isolation, social alienation and mask divisions, as highlighted by the spatial analysis of the region, can provide answers even through small-scale, directly feasible objectives, actions, and interventions on the planned area. And this by taking advantage of the opportunities given by the built environment to provide a fertile ground for the development of a social organization based on collegiality, anti-hierarchy, solidarity, mutual help, self-determination and the harmonious coexistence with the natural environment.

Flexibility

The initial concern arising from the discussions of the collective is the abandonment of strict a certain area of residence, which in our modern society has been configured as a direct reflection of ownership relations, as it is dependent on the socio-economic position of the occupants, and is (to a greater or lesser extent) a reflection of wealth and consumption patterns. Isolation, as a tendency of the contemporary metropolis, is resupplied through the converter of strictly defined apartment-concrete box. The apartment can be described as the microcosm of the modern human being.

In accordance to Greek planners, one of the most important causes of alienation in Greek urban centers, as well as in Thessaloniki, is the issue of residential building. However, an examination of the typology of dwelling which demonstrate that it may well be the basis for the development of flexible forms housing, able to supervise and to support a collective way of life. In a society based on solidarity and the coexistence of human beings in every aspect of their lives, the "common" maximized against the "staff". The capture of the above conclusion in spatial dimension would mean, in accordance with the he now forms part, a core facility to serve basic functions (health/focus), public areas which allow the widest possible interaction of inhabitants, and a range of flexible and adaptable, minimum areas for the hospitality of personal functions of every human being.

Consolidation

As the main problem, in addition to the isolation caused by the existing model occupation, and the fragmentation of urban areas, which sift-proof building volumes and the fences which are spread across the surface of the region, stopping the continuous of the urban landscape. The objective of the collective, as expressed through the proposals of its members, is the restoration of this continuity through the integration and efficiency of all unused and inaccessible places at the disposal of the local society.

In the first instance, the consolidated overdrawn and fenced areas of building blocks, they can be converted into hob coverage collective needs. On a case-by-case basis, can be used as meeting places, interaction and entertainment, as crossings, as urban gardens, or as the first nests-green lungs which will arise in an otherwise drab gray environment. The same may be applied, at the second level, and for the roofs of blocks of flats, which connected to each other and, through the facility each building, with the network of

integrated sites, can contribute to the creation of an escalator to urban environment, an extended collective residence. In this way the building blocks of flats do not adversely affect the urban streams and the qualities of the built environment, but also help to strengthen them.

In this way, the transition from the strictly defined limits dipole "public/private" area, in a model of territorial differences consistent. There shall be established a harmonious relationship between the "collective" and "staff", which is distinguished from the "collective" rather than with spatial terms privacy, introversion and need ownership of property, but in the sense of ensuring diversity.

Respect for the past

Important and separate part of the building stock of the region are the buildings of the last century. As was able to capture through the experience of psychogeographic promenade members of the collective, buildings and monuments (historical, architectural, religious) are scattered throughout the study area, adding different features in the image and becoming very important element of its historical landscape.

The preservation and maintenance of this beauty spots, which is a direct view of the past quarter of Exohon (and in general of Thessaloniki) in this, is one of the priorities of the design approach of the collective. The objective is the buildings do not remain, as simply a memory of the past, but to become practical. Moreover, the example of the same variety in which is housed the project of the school, is a guide for the way that these buildings can be used in the context of the new urban plan. In particular the reuse of symbols of a farprivacy, of wealth and of the class separation, giving space for the collective development activities \rightarrow -these could be for example meetings neighborhood; includes powerful symbolism.

Long-term objectives

With the above proposals the residential environment of the study area can be drastically changed, so as to keep pace with the needs generated by the new social situation, without having to make extensive changes to the existing building capacity. Of course, this does not mean that long-term the same model of organization of the built environment will continue to be sufficient to service the new forms occupation and organization of life. In accordance with the design team, the gradual change of the population model of the vertical typology of dwelling-unit, to a model closer to human scale, with a view to strengthening the conditions of collective lifestyles, perhaps should also be outlined.

3.3.2 Environment

With the, promoted by the he now forms part, extensive practical integration of structured and unbuilt area, as mentioned above, the figure of the urban environment changes dramatically. The design of the urban environment is oriented toward a more coherent model, which aims to take place all the functions of the settlement into a single spatial framework. It could be argued that the relationship and the degree of interaction between staff and open-public space, put on a new basis.

The role of environmental planning, the setting of this new status organization of settlement, it is catalytic. In this sense the design structure, seeks proposals that will enable them to develop environmental plan, freed by the external constraints imposed by the current political system, and capable of producing a viable human-built urban environment.

Zero ecological footprint

As the primary objective for the he now forms part, is the reduction of the ecological footprint of the agglomeration even at zero level. The development of an ecological conscience of the members of the commune, it is essential both for the attainment of the objective, or as a whole for the survival of the enterprise. The degrowth of each facet of the consumer behavior of individuals (which would have meant emphasis on quality and not the quantity of construction and choice of products), the reduction and elimination of

polluting activities, to avoid creating nuisance, and a shift to more sustainable transport solutions for themselves and cargo, are a series of basic individual changes that need to be achieved.

At settlement level this effort can be framed through practices recycling of inorganic materials, composting of organic waste and exploitation of rainwater and household (graywater) water. In this way obtained raw materials, which in turn can be re-used to make new products or, respectively, to serve the lubrication and the irrigation. Completed in planning, with moves toward the development of a policy for renewable energy sources (solar, wind, and wave) by exploiting the physical and climatic characteristics of the region, is in a position to offer the settlement energy self-sufficiency.

Ecocommunity

In the scenario that the design team is working on the study area, the distinction between the green areas and the remaining urban environment (with more features all the examples of the new Beach and Park the scope of Champ de Mars or Floral Park) ceases to exist. This contrasts with the natural environment is part of the urban environment, through the exploitation of the natural dynamics of the region (sea, streams), through the establishment of focal points cape throughout the area and with the assignment (as mentioned in the analysis of population model) surfaces of the structured space, having impact on run ecologically, productive and aesthetic level. Proposed, therefore, to strengthen the relationship of the region with the waterfront and the exploitation of the possibilities the Thermaikos provides, through non-intervention initiatives (e.g. floating platforms), and the return to work of the watercourse "Seytan Deresi" east of Field of Champ de Mars - something for which there should be agreement and cooperation with other directly affected communes at the federal level, which can assist in the water supply, to improve the urban microclimate and aesthetic upgrading of the region.

In making the above objective otherwise, it could be said that settlement which envisages the design he now forms part is configured to not only to integrate elements of the natural environment within the EU, but in a way that it fits seamlessly in the ecosystem and the wider bioregion in which it belongs. A human-built ecosystem, which is inherent in the natural -and not just co-exist with it; taking care to preserve and strengthen the environmental component.

3.3.3 Infrastructure Networks

The networks urban infrastructure and facilities are an integral part of the urban fabric and the functions, affecting key development. The management of waste, sewage and rainwater, water supply, energy and telecommunications, as well as the movement of persons and goods transport modes is examined and adjusted in the light of network infrastructure. With the introduction of new guidelines for the residential organization and environmental design, the everyday life of the inhabitants of the region, there is a need to review and configure network infrastructure, in order to accompany and support the decentralizing planning functions and the self-management effort of the daily life of the inhabitants of the settlement.

Waste Management

With regard to the management of waste in the region, he now forms part proposes a decentralized network, which will place an emphasis on recycling and the reusing, and will be organized around a system which will ensure a repeatable process sorting of waste. Something which will initially with the distinction between organic and inorganic at a building level, then through site selection and storage objects to reuse the neighborhood, and finally a level agglomeration with the collection and management of balance volume in local recycling plants. The organic waste can be treated in each building separately, through the composting procedure, and channeled to lubricate plants and vegetable gardens.

Water-stormwater-sewer

The first action on the water distribution networks, sewerage and rainwater, proposed by the he now forms part is the maintenance of piping so as to minimize any potential leaks and the risk of contamination of a network from the other. While gradually proposed the renewal of the whole network. There will be again based on the guidelines of the local management, with small-scale processing units, recovery and re-use waste water, as well as self-sufficiency, through a policy of reducing consumption, use of rainwater and graywater as well as the water resources of the watercourse of the scope of the Champ de Mars.

Energy - Telecommunications

The decentralization of energy production and the integration of neighborhood and building small-scale production units, will lead to the gradual minimizing the need for extensive distribution networks of energy.

So the community is directed at small-scale production networks and providing clean electricity. A changing energy policy in which contribute actively working groups in the neighborhood and settlement, which undertake with the help of local residents, the securing of energy self-sufficiency of all buildings in the region. Design, manufacture and install a range tailored to the specific needs of the environment and local needs, production units and power supply.

With regard to the telecommunications network within the settlement, he now forms part focuses on more comprehensive and modern artificial means handling information and communication, the internet. Furthermore, the structure and development of the internet, through a decentralized network throughout the world servers, similar to the organizational structures and network interdependencies a confederation anarchists communities. Special emphasis is given, therefore, to develop a wireless network (with technologies Wi-Fi / Li-Fi) covering the whole surface of the agglomeration, providing access to the internet in all the states of the Community.

Transport

The attention of the design collective directed to restore the human factor into the urban environment. So, strengthen the human scale travel and transport, with emphasis on encouraging pedestrian movement and use of bicycles. Promoted, for this reason, urban design space so as to allow for a more efficient movement of pedestrians in the greatest possible extent (something which will contribute and the multi-level integrations buildings and building blocks), an extensive network cycle paths (the morphology of the ground in the area can support such a move), but infrastructure that will enhance the mobility and accessibility within the agglomeration (ramps, rails wraps blind, lifts).

The main hyperlocal roads (Army Avenue, Vas. George and Alexander the Great str), hold the capacity of the corridor, but directed in service of traffic-calmed public transport (MMM). While throughout the rest of the region provided the design and technical specifications, in order to allow the approach of buildings by vehicles waste collection, handling (minimizing the absolutely necessary cases) and emergency (ambulance, fire-fighting vehicles).

The network traffic and transport is completed, in accordance with the he now forms part, with a flexible system UMM, serving the local movements of people (namely, covering the area of the village and adjacent areas). Is selfmanaged, and is based on the logic of carpooling, likening in a more sophisticated form of own-requirements' measures system Roter Punkt (movement of red comma) in Hanover in 1969, which the position of the card with the red dot to the vehicle, to inform the parties involved that can accept passenger, can get online applications (applications). While, the fleet of vehicles is to be kept and be available for collective use in the underground car park, which involve, in order not to prejudice the archaeological background and the aquifer in the region.

3.3.4 Production

With regard to the setting and the integration of the production, in the context of the total population, the design he now forms part is oriented toward a decentralized system small-scale and low noise levels, which is consistent with the human-built and natural environment of the region. Proposes, namely, the creation of production which both small-scale so as to be sufficient to cover the needs of the Community, but to be borne by the natural ecosystem.

Community laboratories

The proposal of the collective focuses on creating flexible sites, fully integrated into the residential environment and in the daily lives of residents, who provide and, at the same time build on their premises the productive means deemed necessary on each occasion for the production process. Potentially will collect production activities of all kinds, and when the operation will be open to all members of the Community who wish to participate voluntarily in horizontally structured work or have the intention to start a new production project.

Technology

These areas, or "laboratories" as Ward (1996 (1973)) calls them may create consortia for building larger-scale or to share means of production (tools, machines, transport vehicles) and manufactured products for the achievement of production objectives. A proposal which could be confused with the model urban industry in Northern Italy, where small, flexible laboratories cooperate in the production of compound products. If these practices combined with innovative technologies, such as 3D printing, it can easily be noticed the range of dynamic and yet unexploited opportunities for Community workshops, and through the solutions that they would offer for the whole community.

In the context of a Community laboratory's operation, means to provide energy may be constructed and maintained, making use of innovative technologies, as explained above, and easily accessible via the internet information; all this will contribute to the goal of energy self-sufficiency. At a second level, laboratories may contribute actively to upgrades and renewal of building projects.

Food

The same process should be followed in food production, so as to enable the Community to become food self-sufficient. There is, thus, a decentralized system of urban vegetable gardens, greenhouses, mixed crops (hydroponics and aquaculture) and plant production of animal products, sited in unstructured areas, consolidated open wheelers and roofs, but and in autonomous premises volumes, which extends throughout the settlement, in harmony with the other planning functions. This system can be integrated as proposed by members of the collective, with building structures exploiting the typology of vertical units to combine agricultural and livestock production.

While, in the long term the same system may be directed to produce only non-animal products, the possibility that a society geared to more sustainable solutions (diet composed exclusively of vegetable products) of the food problem, and with references to anti-speciesism, according to which the recognition of other animal species as less than human is considered to be arbitrary, and therefore their exploitation is unethical and against the principles of non-hierarchy society. Finally, the above production processes, governed by a collective policy in order to ensure access to food for all members of the Community, thereby creating an integrated approach to the objective of food self-sufficiency of the Community. For the implementation of this policy it is proposed that the central level, in part thereof, management and storage of surplus products manufactured, in specially equipped facilities (a proposal that was supported by members of the collective to be realized on the building which is now shelters Hotel Macedonia, on the New Beach).

3.3.5 Education - Health

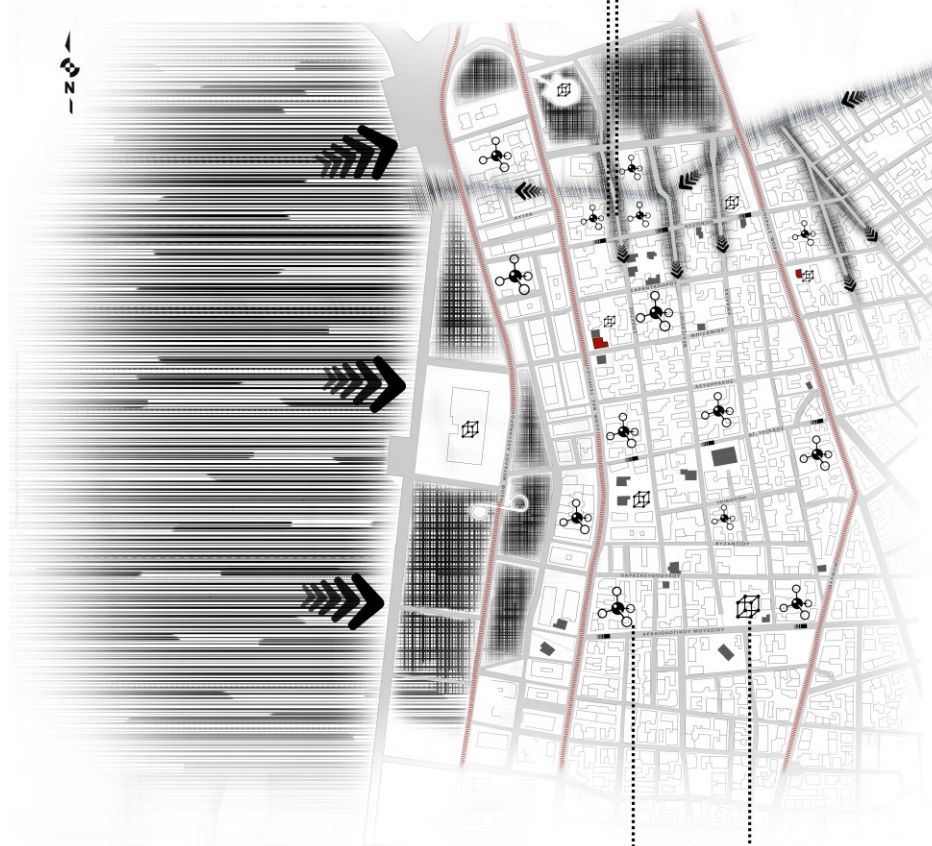
The collective proposes that education -as a learning process- should not be limited to a specific space since it can potentially be combined with any other operation which takes place within the agglomeration. This is the basis of a set of learning procedures where freedom, solidarity and equality are daily experience through actions and life attitudes of participants.

In particular, children in school age, participate in self-teaching workshops, during which children learn from each other through a process of discussion, practice and game. Adults could also attend the workshops, helping whenever necessary. These specific courses can take place in various areas within the settlement, depending on the purpose, while participating actively in Community activities. For these children school entails the whole Community.

Through these practices the children are exposed to a learning process, which is so closely connected with their daily lives, with the result that the leaves or as adults. In the context of lifelong learning, any new knowledge and experience gained by members of the collective, either through collective actions or personal research and experimentation, are at the disposal of all and work to their advantage.

At this point, a decentralized production unit, as analyzed above, the laboratory should be considered. The laboratory hosting and combining the function of production and of education, similar to a Bakunin inspired "Academy". A model for how to set the educational function in this area, it is the assignment of schools in hosted the exercise of specific diplomatic work. Meanwhile the "DIY Urbanism" lab stands as a very good example of a creative process of self-teaching, which could be realized in the context of a Community laboratory / college.

Finally, with regard to health services, the collective now proposes decentralized action that imitates other planning functions. The care of patients is left to the rest of the Community, being a collective "obligation" and maximum proof of solidarity co-existence. At the second level, health structures which are responsible for serious incidents, are to be established in central and easily accessible spots from the local community points of settlement.



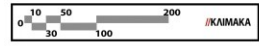
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ΠΟΛΥΤΕΧΝΙΚΗ ΣΧΟΛΗ
ΤΜΗΜΑ ΜΗΧΑΝΙΚΩΝ ΧΩΡΟΤΑΞΙΑΣ & ΑΝΑΠΤΥΞΗΣ

ΔΙΔΑΚΤΑΡΙΟ ΕΡΓΑΣΙΑ
ΜΙΑ ΑΝΑΡΧΙΚΗ ΠΡΟΣΕΓΓΙΣΗ
ΣΤΟΝ ΠΟΛΕΟΔΟΜΙΚΟ ΣΧΕΔΙΑΣΜΟ: ΘΕΣΣΑΛΟΝΙΚΗ
ΧΙΝΗΣ ΙΩΑΝΝΗΣ
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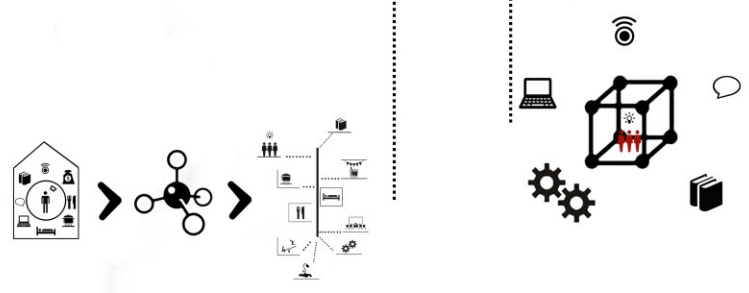
ΦΕΒΡΟΥΑΡΙΟΣ 2015

Γ.4 // ΠΡΟΤΑΣΕΙΣ ΚΟΛΛΕΚΤΙΒΑΣ
ΣΤΑ ΠΛΑΝΙΑ ΤΟΥ DIY URBANISM WORKSHOP

- Χώροι καταληγμένων εγκαταστάσεων
- Κτίρια ιστορικού ενδιαφέροντος
- Χωρική / λειτουργική ενσωμάτωση
- Κοινωνικά εργαστήρια (Community Workshops)
- Ύψος κυκλοφορίας ΜΜΜ
- ΜΜΜ Σταθερές τροχιές
- Φυσικές Δυναμικές
- Επαναφορά ρέματος "Πεδίου του Άρεως"
- Συνδεδεση φυσικού - ανθρώπινου
- Υφιστάμενοι χώροι πρασίνου
- Θερμικός κώλυτος



Πηγές δεδομένων / συμβόλων: DIY Urbanism Workshop, Αρχείο ΤΜΧΑ, A. Furlato ArchDaily



Conclusion

By bringing together the urban planning of anarchy leaning theory and studying the examples, we can say with some confidence that we are moving toward to solve problems, such as functional fragmentation, social alienation, exclusions, conflicts, environmental degradation etc. which are obvious in a modern urban center. Problems created and maintained, by the same politico-economic system, which an urban planner is called to ease. And it's quite clear from this experiment, that similar attempts may not be successful, if the planner (and society in general) does not develop relationships necessary for disengagement from the hierarchical, property-based, capitalist system.

Elements of this alternative vision, such as the autonomous groups, spontaneous order, the collegiality, the principle of federalism, aggregated in a coherent theory of social organization, alternative to the strict, hierarchical and institutional social philosophy of modern society. The person will be required, supported by Kropotkin, according to Ward (1990) "to find new forms of organization for the social functions which the state meets through bureaucracy", and insisting that "as long as this is not happening, nothing is going to happen". The literature and examples, to investigate this work, paving the way in which we can build a new design standard for the city, but it certainly does not give us answers for the form which will include this (or even if there will be a spatial entity) in a future anarchist society. This is not an obligation (or even possible) of town planning to answer, but it is left to free people to decide. Is the organization and their active participation, through the support structures, which will give an opportunity to seize their needs and goals.

Through the anarchist approach recommended in society an alternative realistic urban design, truly "open" (with the weight they attach to the term by post-modernists) and realistic, who will redefine the urban planner's role that would allow both to advise the design structures and to experiment with new approaches without posed external restrictions. Such as, the main actors in Freetown Christiania we, as planners and mainly as free people, to find out that these new forms of organization, turning opportunities into action.

This has been attempted through the processes of "DIY Urbanism Workshop // An anarchist approach to urban design of Thessaloniki", an attempt to give image and form in what in theory and research were examined in relation to the way we approach the city and the design in the light of anarchy. During these two days a group of people gathered and worked, through horizontal processes, trying to shape its own vision of the urban future of a central residential area of Thessaloniki. I have heard many opinions, there were even more disagreements, but what caused the greatest impression was the possibility of (for the needs of the laboratory) the collective to regulate itself and to overcome these discrepancies, finding mutually acceptable solutions.

The procedure is not completed in this laboratory meetings. It couldn't, due to the dynamic nature of the proposed design approach and does not allow any final completion. The consolidation - formalized procedures, in accordance with anarchistic teachings, can lead to a structure in a quagmire. The proposed planning process does not run the risk of ending up in a convoluted institutional system, but it manages to remain a flexible instrument for the setting of the urban environment by those directly concerned, following parole in simple rules, such as solidarity, equality, collegiality, mutual aid and harmony with the natural environment.

The design process, which is simulated in this lab, is the start of a long process, which goes hand in hand with the constantly changing human and natural environment, is affected by this, changing forms and finding new ways to become more efficient. This process opens a window, allowing the participants to look through this. It gives them the opportunity to understand what they can manage, keeping the contact with anarchy principles and their eyes on utopia.

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New public participation practices for revitalizing Klaipėda old market neighborhood.

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1. Context and ambition

Klaipėda municipality is planning to create a long-term vision for the Klaipėda old market quarter for its sustainable transformation. Both municipality & old market company have a substantial amount of real estate in their possession suitable for redevelopment. A wise investment here, can be a complete game-changer not only for the market, but for an old town as a whole. Currently this area houses a significant number of parties whose interests must be moderated and integrated within the future plans meanwhile relationships between different parties have always been tense.

The main goal is to create a strong impulse for the old market neighbourhood and for revitalisation of the old town as a whole. In this case old market becomes a central axis of the entire transformation process, while stimulation, creation and facilitation of new cultural, economic & spatial dynamics is the core aim of this concept. It cannot be achieved without the participation of all current stakeholders and future users; therefore it calls for an open and interactive approach.

2. Process

Pre-investment concept-definition process is divided into three stages: First, scenario development with existing & potential users, CCI representatives, local community representatives, investors and city officials. Second, creating common ground for common vision & agreeing upon the intentions and path to be taken. Formulating a qualitative criteria, character & guidelines for spatial development. Last, strategic (action) plan for implementation, with concrete guidelines, responsibilities of different partners and financial assessment.

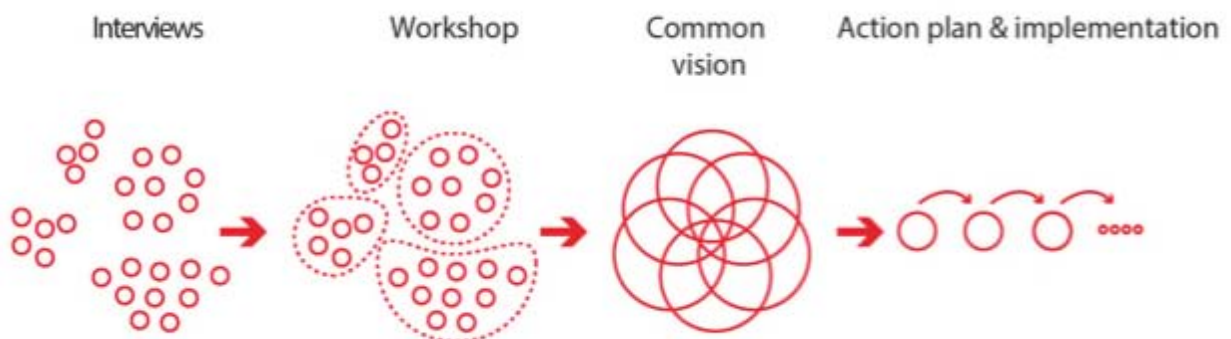


Figure 1: Process diagram

Usually, with such an amount of different interests, planning processes come into a halt because of poor communication, bad design solutions (that do not resonate with local

population) or just because people are against change. Therefore a rather untraditional (for Lithuania) approach was proposed for the first stage. First - mapping all the interests, ideas, ambitions & visions, which is executed through series of interviews & informal conversations with all parties. Second – a thorough analysis of current strengths of the city. And last – identifying the users of the area & inviting personally to the workshop.

A second stage involves not only local users & potential investors, but also real estate experts, legal consultants and social advisors. A common vision for the old market quarter is aiming at formulation of qualitative criteria for future development. The increase of social capital, new opportunities for entrepreneurs & transformation of the urban environment in a sustainable manner. Vision also prioritizes upon potential pilot projects and provides input for investment assessment and a strategic (action) plan.

A strategic (action) plan will define concrete steps towards implementation, investment priorities & investment demand at different stages. It will also cover the responsibilities of different development partners and partnership model that suits best.

3. Ideas for development

Ideas for development were formulated during the first & second projects stages through workshops, series of informal interviews & surveys. Most of the participants concur that market building has to retain its current function, on the other hand participants stressed that it has to become more efficient and attract new clients. Marketing professionals claim, that currently Klaipėdas' old market is loosing competition to two other markets in the city, namely "New market" & "Tilžės market", therefore it has to specialize more and invest more in branding, marketing, renovation and improving quality of its products. On a positive side they stress that because of its prime location, accessibility & the fact that Klaipėdas' commercial centres are located in the north and south, but not in the centre - it has a unique opportunity to transform into a largest trading spot in the city centre.

Quarter around the market and the surroundings are mainly designated for small-scale commerce, arts, crafts and cultural facilities, however there's also a need for a mid-sized cultural facility. Opinions vary on what specific function it has to house, concepts range from theatre, youth centre, dance studio to a cinema, museum or any other similar activity, but everyone agrees that it has to be incorporated into market hall or on a lot next to market square. Department of cultural heritage points out that it is an imperative to mind historical urban structures and its elements, therefore restoration of these elements is encouraged.

4. Impact on urban development

Vision and strategy aims at improving working conditions of existing market salesmen, old town entrepreneurs, CCI entrepreneurs and living condition of existing and future residents through provision of variety of new spaces and establishment of new synergies within the area. CCI incubator "Kultūros fabrikas" is located across the Tiltų Street which already gives a powerful stimulus to Klaipėdas' CCI scene for reconsidering old town as their possible office location while focus on small scale is vernacular to old town cityscape.

Currently there is a pack of issues that have to be tackled in order to ensure a more sustainable future for the neighbourhood. Old market does not live up to its full potential, public amenities are underdeveloped or insufficient, physical condition of buildings is poor and vast amounts of undeveloped vacant lots since the WWII fragment the image of the city. Klaipėda has a linear urban structure aligned to the Curonian lagoon and therefore all the public transportation connecting north and south is now concentrated on one axis (Tiltų street). On one hand it is good that the old town is a major transfer point and on the other, it is out of balance and has an enormous environmental pressure, therefore it call for a more sustainable alternative. Klaipėda is ideal for cycling, not only because of a mellow climate,

but also because of flat landscape, however local still prefer cars over bikes or busses leading to larger investments into roads rather than public space. Naturally, there is much more to be done to promote healthy lifestyles and ecological transportation modes, however these decisions are political and have to be solved on a city scale, while market and its surroundings can become a pilot.

Development scenarios, vision and strategy aims at proposing design solutions and concepts that can substantially improve economic competitiveness, urbanity and life in the neighbourhood. Improvement of public transportation nodes & promotion of multimodal access to the site is expected to increase number of customers for the market & for local business owners. Handicapped, pedestrian & cyclist-friendly public spaces promotes healthy lifestyles and improves accessibility, while diversification of spaces attracts different groups of people. In the long run it can stimulate creation of strong and cohesive social fabrics.

5. Potential users

The old market & surrounding quarter plays a major strategic role in revitalisation of Klaipėda old town, which means that it is a hot-topic for the majority of Klaipėda's population. There is a myriad of potential partners & clients, however the major parties involved are: Klaipėda municipality (Major land owner), UAB "Senasis turgus" (Old market company) (Major property owner & investor), CCI representatives & entrepreneurs, association of old town entrepreneurs (over a 100 different companies interested in revitalisation of old town), UAB Friedricho pasažas (major interest in development), local residents, kindergarten "Radastele", Klaipėda public transportation company (sees a part of the site as a transfer hub), Department of cultural heritage (KVAD), Architects union Klaipėda (LASKAO) and others.

6. Elaboration process

On 27th of September PUPA together with MMAP organized six one-hour workshops with local residents, entrepreneurs & city officials, where everyone could have their say. Main goal was to get as many ideas as possible & encourage participants to share them with each other. In addition – establishing new relationships between municipality, planners & users – can lead to a much smoother processes when it comes to decision making and implementation. Asking what people want before drawing enables designers to create plans that people are both engaged & believe in. All the input was summarized & presented to participants in a form of a newspaper, which can be downloaded here: http://www.mmap.lt/st/131008_Naujienlaskis.pdf

All the input gathered during the previous sessions serves as a basis for further elaboration of the vision. The main goal is to agree upon a concrete character for the old market neighbourhood & establish clear qualitative criteria for development. Therefore final product includes not only detailed urban analysis of the old market in multiple layers but also historical analysis (prepared together with department of cultural heritage & local historians), a real estate & development condition overview (general, detailed plans, archaeology, available, market conditions, competing projects and availability of municipal subsidies etc.) together with development trends & future uses for the old market building. The draft version of the vision will be discussed several times during the process and on 7th of December 2013 and it will be presented to the public during "Old market culture night". All the feedback and comments during this event will be summarised incorporated into the final version of that vision.

The third stage – strategic plan is done together with legal experts, municipality and development partners. Team of experts will present several public & private partnership options that suits best for the specific case of Klaipėda old market quarter, which will enable legal experts to prepare all the necessary documentation. Strategic plan draft will be

presented several times to the public & officials for evaluation. After integrating all the comments it is now possible to sign intention agreements & pursue towards the implementation.

7. Development scenarios

Several possible scenarios were presented during the workshops & people were able to react upon them by mixing and combining different ideas in a large scale model. Participants created six different scenarios where each represents one or other opinion on how the area should transform. All the ideas and results are covered in the publication downloadable from http://www.mmap.lt/st/131008_Naujienlaskis.pdf

Participants agreed on several key issues, one is that the market has a long history, therefore it has to stay, second is that it can be much better therefore it has change and upgrade, and lastly that neighbourhood is not for lucky few, but for everyone – it has to become a diverse high quality environment for living working or just spending free time.

The **first group** sees an opportunity to enlarge the old market making it the icon of the neighbourhood. They also pointed out that there is a need for high quality public space, more room for small scale entrepreneurs & more cultural activities.



Figure 2: Scenarios on an interactive model

Second group envisioned the neighbourhood as a place for crafts & small businesses. Discussed about the need for flexible public spaces with multiple uses, cultural activities, gourmet market, restaurants & cafes. They also see that market hall building has to transform and incorporate much more diverse programme.

Participants of the **third session** see the neighbourhood as a place for large scale commerce - some sort of “open air shopping mall”. Boutiques, cafes restaurants & known brands surround the market hall, this way attracting people to the old town rather than large shopping centres outside the city. Differently from other sessions – this group does not think that this neighbourhood is suitable for living, on the other hand they believe that it’s a perfect place for hotels accompanied with some tourist attractions.

Fourth session was dominated by the young, as a result the proposal was youth-oriented. The expressed a need for more places where young people could spend their free time & socialize. Their scenario incorporated a large youth centre, cinema, new market hall with roof terraces – all surrounded by a vibrant public space to meet & hang out.

Fifth group wants a large & modern fish market in Klaipėda’s old market neighbourhood, since there is a long on-going discussion that there isn’t one yet. They also made a point the market square must house more functions than just shopping stands.

The **last session** was visited by more than 50 people: entrepreneurs, cultural representatives, city officials, architects & local residents. Participants discussed a lot about the identity & history of place and how to extract & show-off cultural layers from the past by bringing them to the present. Most importantly, entrepreneurs do not think that there is a lack of space for their businesses, in contrary they pointed out that in order to revitalize the area – municipality should consider focusing their energy on provision of new high quality housing. This led to an interesting urban configuration where all the commercial programme is clustered around the market hall with the square while the neighbourhood itself has a rather residential character.

All six scenarios differ, therefore they represent different development models & financial investment demands. Large scale developments can be undertaken by big developers while smaller scale will retain an organic character. It would be inaccurate to speculate further on the cost of this project while strategic plan is not ready. On the other hand, when discussing about the concrete pilot projects that will need to start & will serve as a trigger for transformation - three absolute winners dominated the discussion: 1. Market hall transformation, 2. Quarter next to existing fish market building & 3. Market square. All the other vacant plots – can be developed separately or sold. To facilitate the first steps municipality is preparing a land-use plan, on the other hand research on archaeology & cultural heritage still needs to be carried out.



Figure 3: Moments from the workshop

8. Vision for development

Vision for development is based upon scenarios that were elaborated during the six workshops, where the main goal was to create one common vision that would integrate the interests of all different groups and users, define a qualitative criteria for the neighbourhood and propose a functional programme for the market company. Even though scenarios were different, each of them had something in common, everyone agrees that market has to stay but has to be more efficient, the market square on the other hand – must have more uses

and become not only space for selling groceries, but also a place for culture, entertainment and recreation. Market itself has to have a much cleared entrance and use its spaces much more efficiently. Another important starting point is to maintain current market salesmen and relationships that are already established within the complex. Lack of cultural facilities was regarded as a problem not only in the neighbourhood, but entire old town, therefore it was proposed to reserve space for that. Accessibility is a big issues which if not solved can hinder the success of the entire development. All in all one of the main proposed goals was to create more diverse functions within the area, combining commerce, market, offices and residential programme.

The main conclusion coming from workshops was that *old market defines the character of the area, therefore it must become a central axis for the regeneration of the neighbourhood.*

9. Design proposals

Klaipėda old market is within the borders of old-town heritage and is protected by the government, therefore all developments here are evaluated by heritage department of Lithuania. The main criteria for evaluation is if the plan is respecting the urban structure and allotment of XVIII-XIX century, which is considered the most efficient tool to preserve a tiny scale of Klaipėdas' old town. Currently old town lack a clear idea for circulation within the city, it means that there's no clear routing between different cultural or historical spots. Lastly, there's no major economic activity within the old town while most of the commercial programme is located in the north and south of the city.

The first ambition aims at using a market regeneration as a central axis for solving the aforementioned issues by establishing clear routing, filling the economic gap within the city and regenerating through restoration of historical urban structures.



Figure 4: Spatial concepts on city scale

9.1 History

In XVI century the quarter was called “leather quarter” which a century later became Friedrichstad. A market was designed in late XVII century and remained there until WWII. Market square was never built up, therefore it is an imperative that it remains open. Historical quarters on the northern side were destroyed during the war and shortly after market hall was built in 1956. Even though the market building is out of scale (according to heritage department) it still has some value. Design-wise, it is essential that market renovation contributes to restoration of historical urban fabrics, otherwise it will come into a halt because of heritage department evaluations, which in Klaipėdas' case is extremely orthodox.

9.2 Public space

Main focus in public space is on pedestrians and cyclists rather than cars. It does not mean that automobiles are not allowed, just that car traffic is discouraged. New public spaces encourages both locals and city dwellers to use them while a diversity attracts different types of people. An integral structure of squares and small parks provides easy access and vitality throughout the day and different seasons of the year.



Figure 5: Priority for pedestrians and diversity of public space

9.3 Access & traffic

Multimodal access is the core aim once talking about traffic and transportation. On one side, the site has to be accessible by all means of transportation and on the other, the area has to become an ideal transfer spot within the city.



Figure 6: Market as end destination and transfer point

9.4 Programmatic diversity

Next to a market programme there is space for work living and small scale commerce. Programmatic diversity ensures the vitality of quarter. Diversity of typologies is proposed in order to create a healthy social mix.

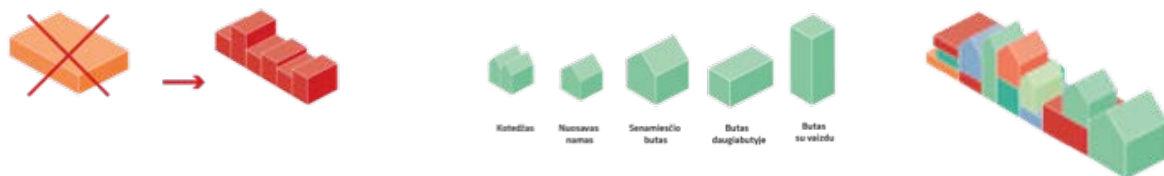


Figure 7: Typological diversity

9.5 Regeneration of the market

Market does not live up to its full potential, therefore there are several steps that need to be taken. First clear concept and target group definition, then renovation and development or realisation of vacant lots. Marketing consultants claim that this market has a unique opportunity to fill the commercial gap within the city centre, but it has to specialize more. Out of all concepts proposed during the workshops, it is clear that one way or the other it has to become an attractive place to buy meat, fish and groceries.

9.6 Pre-investment design concept

The plan incorporates all the design constraints and provides a good overview of synergies between different functions. It is the intention to double the amount of space within the market hall, renovate public space, create space for new residential and commercial programme and restore historical structures at the same time. New transfer at the northern

entrance of the market encourages sustainable mobility while easy access and pedestrian friendliness – increases customer flows for the market.



Figure 8: Masterplan

10. Public presentation of the vision

On 7th of December all the participants of previous workshops were invited to participate in the public presentation of the vision and discussion. Participants were encouraged to express their opinions and point out weaknesses of the plan. Some were doubting some parking solutions, but the overall atmosphere was positive. The model receive many positive comments that were integrated into the final vision sketch.



Figure 9: Moments from vision presentation even

11. Outline of necessary investments

Municipality of Klaipėda has an ambition to apply some of available financial engineering instruments in order to implement this particular project, which means that they want to limit their financial investments to a minimum. On the other hand they own a substantial amount of non-financial assets e.g. real estate, decision-making powers & a good will of course. There is a strong belief that these assets can become a good starting point to establish some sort of partnership with the private sector (a development agency, a development fund, a corporation etc. which will be outlined during the strategic plan phase).

An integral vision for the area is enough to state wither there is a need of **one big development partner** or in contrary - a **development agency** which would negotiate with multiple investors or perhaps a **development fund** with hundreds of small actors pursuing a common vision.

Current economic assessment of proposed programmatic column and mix is regarded as healthy with a investment return of 8 years. This assessment indicates value of a specific project based on current market conditions and forecasts, supply and demand of commercial, residential and office buildings. This assessment does not include archaeological research that must be undertaken. Since it can extend substantially project implementation and risk it is advised to carry it out before design phase starts.

12. Possibilities for financing the investments

Financing the necessary investments is determined by choices made in the vision & strategic plan, however today there are several possible sources. National programme “Atnaujik būstą” that finances the renovation of buildings in integral manner, however if focuses more on technical aspects of buildings. Municipal tax reliefs for building renovations. Several entrepreneurs in the area that declared an intention to buy property once they are presented with the chance to do so. Several developers expressed willingness to participate in the partnership if this model will be chosen. Market company that now owns a substantial amount of real estate and municipality are seen as the main contributors to renovation of public space. URBACT was discussed as a potential source for extra funds, a sustainable market regeneration is their main focus, however applications will follow once the vision is approved.

13. Municipal funding

Even though municipality wants to limit their financial investment – they show good intentions and will to facilitate the development through preparation of necessary legal documentation & planning documents. Municipality is also preparing a public space investment plan for next 20 years, where next to physical renovation of the public space (hard measures) there is a set of soft measures like promotion of entrepreneurship, increasing social cohesion and community involvement. Shortly it will be clear how much investment it is possible to expect for this particular neighbourhood.

14 . Development options for the market

Currently there five options on how to pursue towards the development. **First** option is that UAB “Senasis turgus” (market company) is the sole owner and developer of the area, however this model is criticized because market company and municipality doesn’t have capacity or are not allowed legally to undertake such projects. **Second** is when municipality is the main shareholder of UAB “Senasis turgus”, but private market operator is hired. **Third** option still sees municipality as a shareholder of UAB “Senasis turgus” together with private investors who hire a private market operator. **Fourth** option is to rent out UAB “Senasis turgus” with legal obligations to renovate it for 20-30 year, however case studies of Vilnius market hall shows that once investments are done, market operator loses its interest for further investments and focuses on maintenance only. The **last** option is to sell everything to the highest bidder, however this option is not accepted by city officials, since municipality wants to retain its influence and preserve markets function as such. All in all, it is most likely that development model will be chosen out of middle three where city still has some degree of control over the development of the area.

15. Time line

Strategic plan will be prepared shortly after the vision is approved. This will be enough to start the quest for development partners & draft the investment agenda for coming years. Once the development and partnership model is chosen by the municipality, it becomes possible to have a clearer overview about the timeline, however there are two possible outcomes. If it is chosen to establish a partnership with only few investors – the process can be fast & entire transformation can be ready for use in less than 8 years, on a down side - the risk of failure is much higher. If decision makers want to keep it safe & go for *slow dynamic*, then the process can take over 20 years but on a positive side – small changes will be visible almost instantaneously and will gain speed over the course of time.

Economic assessment is done for a rather modest, but safe 8 year investment return cycle, however it will only be clear once partnership model is set.

16. Expected output

The aim is to create more opportunities for local businesses, more space for cultural facilities & high quality living environments. No matter which path is taken there will be a substantial improvement for the city as a whole including local CCI scene. Creation of High quality public space & living environments will undoubtedly serve as powerful stimulus for the revitalisation of the old town & increase of social capital within the area.

Current residents will benefit most from investments in public space on one hand because of higher value of their property and on the other a more diverse environment for recreation and living. Market company and its current salesmen will still remain as main users, however renovation can generate more customers and more profit for company. CCI representatives are offered more space for working and ideas similar to market and old town entrepreneurs who benefit from increasing numbers of people in the city. And lastly – residents of Klaipėda, who get a system of diverse public spaces with more things to do in the city.

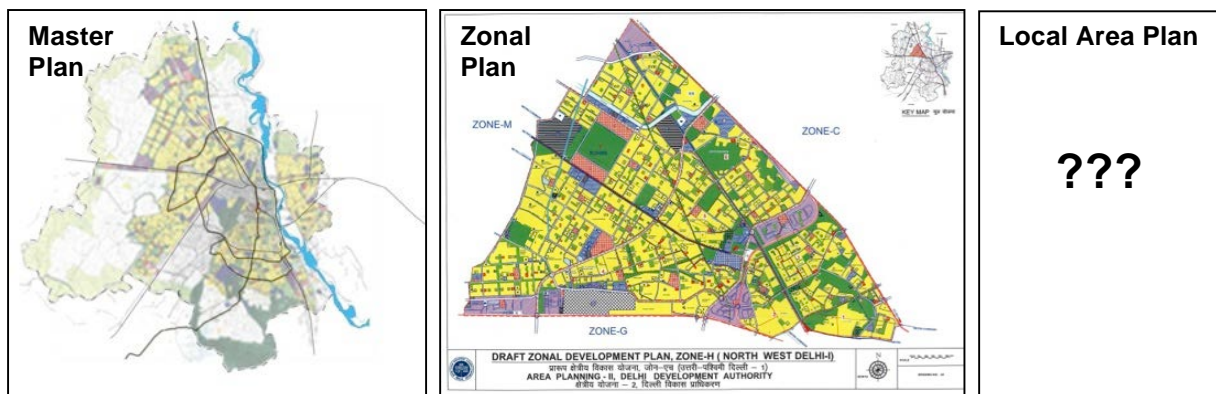
Collective imaginations for everyday realities: City building through 'creative' cooperation

Divya CHOPRA
INDIA

This paper articulates the need for collective engagement and conversations as a significant aspect of the 'creative' and cooperative city building framework while investigating the role of public art and co-design as necessary ingredients that could contribute towards a re-defined and inclusive way of building our cities for the future.

Often defined as complex microcosms of socio-spatial relationships, Indian cities are in constant negotiation with multiple polarities of existence. Intertwined within the spatial network is a complex interwoven social fabric representative of a wide spectrum of socio-economic groups in the city (from rural migrants to the global diaspora), which has further augmented a scenario of splintered urbanism. From being one of the most interesting cities in the world with their multiple historic layers embedded over one another, cities within the Indian subcontinent are continuously dealing with the complexities of their everyday realities.

With reference to Delhi, the conventional city planning process has by and large been a top-down approach focusing on expansion-based strategies, including concepts of functional zoning, neighborhood planning, pre-defined commercial centers, etc. *"Delhi's Master planning framework is based on a hierarchical system of developmental zones addressing different levels of population needs starting from the neighborhood, the community, the district and further to the zonal and city level. For each of the identified planning units, policies and decisions are to be correspondingly articulated through the overall Master Plan of Delhi (MPD) at the broadest level and then through Zonal Development Plans (ZDPs) to Local Area Plans (LAPs), and finally Layout Plans for detailed guidelines and regulations".¹* The city development plans that define the trajectory for future growth and expansion are primarily two-dimensional overviews that largely focus on resource allocation, use-distribution, movement systems and development norms for the city as a whole.



The Missing 'Link' (base map source: <http://dda.org.in/>)

Planning for Delhi so far has remained confined to the broader level imagination of the overall city and surrounding regions through successive Master Plans from 1962 onwards and is yet to get formulated at the necessary levels of local areas and neighborhood. As of now, beyond the Master Plan, the city has formalized only 11 zonal plans out of the 15 planning zones identified and local area plans along with layout plans as required, are yet to see the light of the day. Further, the physical boundaries of the zonal plans as defined by the

¹ Divya Chopra, 2008, "In-between" zones as resource. Case: Delhi, 44th ISOCARP Congress

MPD do not overlap with the ward boundaries that are based on population distribution and local unit of city governance.

Apart from the above disconnect with the local, the existing provision for participation as articulated within the planning process is negligible and inconsequential to the decision of city building. It happens only through inviting public suggestions and objections for modification once the draft Master Plan is already prepared and if the public has any suggestion or objection they can respond to the notice within a period of 45 days. This process however reaches a very small proportion of the existing population, which has access to the document, ignoring a large section of city dwellers,² resulting in a one-way partial engagement of citizens within this process of city planning. There seems, therefore, a lacuna with respect to visualizing the city in terms of its multiple discreet parts as well as a lack of dialogue between the plan/policy makers and citizens of the city.

This disjunction between planning norms at the broader scale and everyday needs could be best highlighted by the infamous 'sealing drive' in Delhi conducted by city authorities when thousands of commercial establishments and institutions were 'sealed' all across the city under the pretext of being 'unauthorized'. What is important is to note that this condition of 'unauthorized commercial establishments' arose from the strict zoning regulations of the Master Plan which stipulate mono-functional residential districts across the city confining commercial activities into pre-designated and hierarchically disposed 'commercial centers' as envisaged in the plan. These planned commercial centers were neither adequate nor appropriately located with respect to the everyday needs of the rapidly growing urban population in this city. The resultant gap between the imagined planned vision of a functionally segregated ordered city and the ground realities of increasing demand became the underlying reason for this contestation, leading to protests and violence across the capital and even after eight years there seems to be a lot of resentment among the citizens who were affected by this drive.

The 2021 MPD however mentions 'public participation' as one of the major highlights of the plan through decentralized local area planning by participatory approach, further defining this approach as involving the private sector in the assembly and development of land and public participation in policy and implementation. This suggests a perceptible shift towards privatization, which may lead to creation of exclusive domains in the city. The planned city is now being increasingly imagined as a city of glitzy malls, super-fast metro, high-end condominiums, and entertainment zones. The everyday city lost in this urban milieu continues to find minimal or no reference within this formal planning framework, resulting in creation of disjointed pockets of development, dominated by non-descript urban form catering to selected social groups and ignoring a large population of those in the margins. These kind of contestations and continued mismatch between planning objectives and ground realities that are visible in many cities in this part of the world following the 'master planning' approach have resulted in widening the ever-present gap of socio-economic disparities, highlighting the need for focused attention on the missing link that could develop critical synergy between planning visions and 'the everyday'. A change in perspective is vital

² For an estimated population of 18.2 million (as per the 2011 census), a meager response of about 7000 objections / suggestions were received for the Draft Master Plan (2021) which was notified for inviting public objections / suggestions through Gazette Notification dated 16.03.2005 and public notice in newspapers on 08.04.2005. These were considered by the Board of Enquiry which met on 17 occasions and also afforded personal hearing to about 611 persons / organizations. The Authority considered the revised draft MPD 2021 along with the report of the Board of Enquiry in three sittings held on 29.12.2006, 4.1.2007 and 19.1.2007 before it was sent to the Ministry of Urban Development for approval. The Ministry of Urban development considered the proposal in the light of the inputs received from DDA and from various quarters and finally approved the Master Plan for Delhi 2021 in the present form. (MPD 2021 - <http://dda.org.in/mpd2021rsms/layouts/openoffice/suggestion.aspx>)

in the present planning scenario, from a singular, top-down 'macro-development' model, towards addressing micro-realities of the everyday city. *"The intersection between an individual or defined group and the rest of the city are everyday spaces – the site of multiple social and economic transactions, where numerous experiences accumulate in a single location. These spaces where differences collide or interact are the most potent sites for everyday urbanism".*³



Everyday spaces in the city (source: author)

While the prevailing development process has detached itself from the changing dynamics of everyday life, interestingly it is this everyday city that has found (or is finding) ingenious ways to address its multiple polarities of negotiated existence, which often define and characterize the spaces they inhabit. The social dynamics of contestations and negotiations are constantly being enacted within public realms which lie beyond the formally planned mechanism and consist of small residential neighborhoods, retail spines, community spaces along with sidewalks, pavements, nooks and corners dominated by informal occupation. It is at this local scale that a strategy for mediation incorporating multiple local aspirations through a 'creative' urban development framework that represents the widest range of stakeholders, acknowledging diverse voices within a pluralistic society like ours, needs to be integrated within the planning process for a more meaningful and socially inclusive engagement within our cities. This strategy could be dovetailed with the existing planning framework at the local area plan levels, which could then become effective mechanisms of addressing issues of everyday. An interdisciplinary approach allowing inclusion of divergent viewpoints engaging not just policy makers, planners and urban designers, but also artists, environmentalists, sociologists, economists, geographers, historians, etc.... on a common platform along with

³ Margaret Crawford, (ed.) John Chase, John Kaliski, Margaret Crawford, 1999, *Everyday Urbanism*, The Monacelli Press, New York

the voices of citizens could contribute towards the formulation of a more comprehensive discourse to address contemporary social and environmental concerns while envisaging a new urban future.

*“Everyday urbanism demands a radical repositioning of the designer, a shifting of power from the professional expert to the ordinary person. Widespread expertise in everyday life acts as a leveling agent, eliminating the distance between professionals and users, between specialized knowledge and daily experience”.*⁴ Whilst redefining the role of the designer, this new approach includes artists as significant contributors within the city building discourse. So far the role of artists and their engagement with the city spaces through public art has been ignored and its potential to address social change unrecognized. One of the strategies for this mediation could be based on the idea of *“critical spatial practice”* which allows us to describe work that transgresses the limits of art and (architecture) city design and engages with, both the social and the aesthetic, the public and the private. This term draws attention not only to the importance of the critical, but also to the spatial, indicating the interest in exploring the specifically spatial aspects of interdisciplinary processes or practices that operate between art and (architecture) city design.⁵ Public art needs to be seen as a social process contributing meaningfully to city re-imaginings. Intervention through public art as a medium of communication and outreach could result in new forms of civic engagement for a collective dialogue between the city and its citizens.

A small experiment held in Delhi in December 2008 offered insights for such a possible collaboration, where urban designers, artists, art curators, anthropologists and various other professionals came together for the first public art festival, 48°c Public.Eco.Art, where for two weeks selected public spaces were transformed into open art galleries allowing the city users to engage with diverse art installations. Revolving around the notion of Delhi's changing urban environment, the festival aimed in bringing together a collection of art works in central urban spaces of the city to explore the possibility of a collective dialogue between city issues, urban spaces and citizens through the prism of public art. What is of significance is the immediate connect that the festival could establish with participants of these contested spaces in the city bringing forth into public domain, the dormant strands of various networks that constitute each of the selected urban pockets and allowed a new kind of dialogue between the city and the citizens that Delhi had not witnessed before. *The value of new genre public art is, (then,) in its ability to initiate a continuing process of social criticism and to engage defined public on issues...and in so doing create imaginative spaces in which to construct, or enable others to construct, diverse possible futures. New genre public art is process-based, frequently ephemeral, often related to local rather than global narratives, and politicized.*⁶

The following experiments within the stated public art festival highlight the connection between art and its intent on one hand and civic engagement on the other, for a wider urban discourse. The first set of experiments revolves around communication strategies towards deliberating on a significant concern/s related to the present day city and corresponding collective response. The second set of experiments offer public art as a proposition to resolve or address issues of generic or specific nature in relationship to their location within the city.

An uprooted tree loosely hanging over an abandoned colonial bungalow in the commercial hub of metropolitan Delhi was met with reactions of shock and awe by most street users, 'Crane+Tree', one of the artworks by artist Krishnaraj Chonat was a surreal take on the ever-

⁴ Margaret Crawford, (ed.) John Chase, John Kaliski, Margaret Crawford, 1999, *Everyday Urbanism*, The Monacelli Press, New York

⁵ Jane Rendell, 2006, *Art and Architecture: A Place Between*, IB Tauris, London

⁶ Malcom Miles, 1997, *Art, Space and the City: Public art and urban futures*, Routledge

present dichotomy between development and environment. This hanging tree signified the fate of numerous other trees that once allowed everyday life to perpetuate below them but were sacrificed for an underground metro line connecting the CBD to other parts of the city. Through this spectacle of drama, the fundamental dilemma on development needs against environmental loss was communicated en masse to the millions of commuters and users engaged with this space.

Another artwork on the same site by artist Navjot Altaf titled 'BARAKHAMBHA' was a video installation of previously recorded dialogues with various occupants of Barakhamba road and adjoining by-lanes, city authorities, planners and other experts highlighting various transformations that this space has experienced after the metro. Subsequently a live video stream projected parallel discussions among the audience about the changing nature of this space whilst raising pertinent issues of urban development decisions and everyday patterns of space usage.



Artwork 'Crane+Tree' by Krishnaraj Chonat
(source: author)



Artwork 'BARAKHAMBHA' by Navjot Altaf



The above examples of public art showcase the creative potential of mass communication strategies in both the evocation and provocation of collective memory and experience of city users with respect to the developmental processes that affect their everydayness. The following artworks go beyond, establishing a necessary dialogue on urban concerns between city users and decision makers towards offering possible directions and ideas on resolving location specific, community problems and/or, demonstrating proto-typical design interventions addressing generic everyday needs.

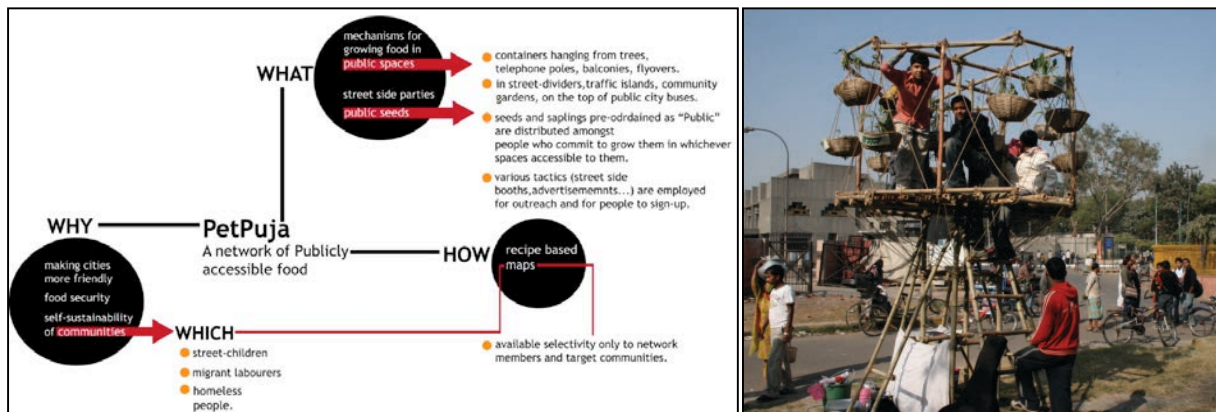
Roshnara's Net by artist Mary Miss located in a deserted garden from the Mughal era tried to reconnect a community with its lost city space. Once a thriving economic zone, this area is now a run-down quarter within the city as a result of a Supreme Court ruling of 1990s for a 'clean Delhi green Delhi' campaign that led to an overnight shutdown of factories employing thousands of people. A larger dream for a 'cleaner' Delhi was actualized at the cost of local livelihoods and primary sources of sustenance. Mary Miss's artwork was based on a strategy to give new hope to this community by drawing them back to their abandoned park, but with an added purpose and meaning to it through the incorporation of an Ayurveda / medicinal garden. *For her "this territory that we occupy, that we are involved in, is what's going to allow us to deal with these issues that are confronting us, imagining new ways to live and new ways to think".⁷*

⁷ Excerpts from 'The Latent City', written and directed by Krishnendu Bose, Earth Care Films, (http://www.earthcarefilms.com/filming_urbanenvironment_the_latent_city.html)



Artwork: 'Roshnara's Net' by Mary Miss (source: author)

Located in the busy public street of Chandni Chowk in Old Delhi, artwork by artist Prayas Abhinav titled 'PetPuja' / 'Canopy' was a publicly installed bamboo structure that ingeniously accommodated a dual use of public space. It allowed a teashop to function at the street level along with a space for children to climb over it and grow vegetables and medicinal plants for themselves...whilst looking at expanding the nature and use of public and unused urban spaces. This art experiment resulted in the creation of an urban proto-type bringing the two realms of art and design together as a refreshing approach to address vexed problems of catering to the informal sector and its relation with everyday space.

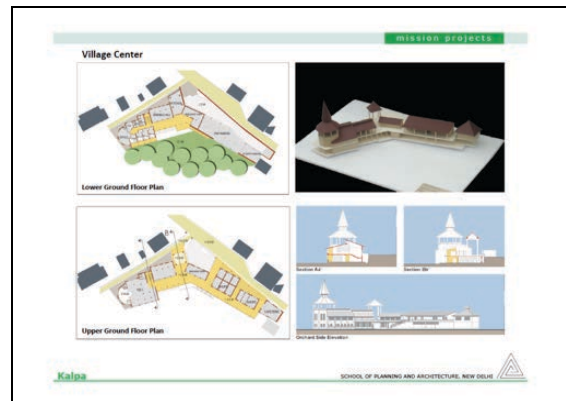


Artwork: 'PetPuja' / 'Canopy' by Prayas Abhinav (source: <http://prayas.in/projects:canopy>)

Both the above sets of experiments extend possibilities of revisiting existing tools and strategies of city building processes and highlights the need to harness such creative resource for a stronger and more inclusive way of engaging with our city spaces.

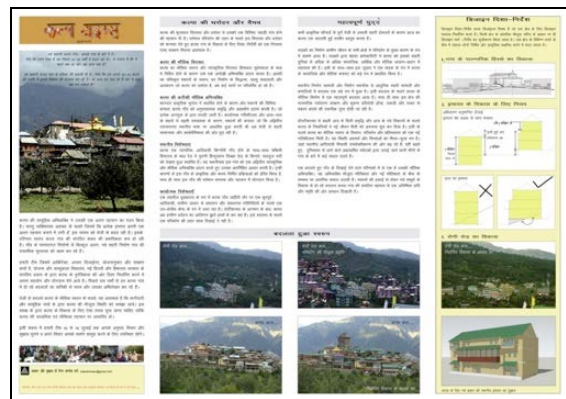
Beyond the role of public art as exemplified in this paper above, a wholesome strategy for a 'creative' urban development framework involves the need for design integration as a vital component to this process. Here, design caters to all scales of the urban environment especially the public domain ranging from the doorstep and the immediate street to neighborhoods, city districts and beyond. Design here, also incorporates creative ideas across disciplines like urban design, architecture, landscape architecture, product and graphic design etc. Finally design here, refers to the creative potential of both, technical / professional design service providers as well as community members and city users. The idea of co-design as a deliberate tool in accordance with differentiated needs and community aspirations thus forms an important aspect of the suggested development framework.

An ongoing experiment as an example of a co-design collaboration discusses a decade long association with an urbanizing rural Himalayan settlement undergoing rapid transformation. The core areas of this action research program lies in inquiring into the urbanization patterns of such settlements, which are trying to simulate the city and its contemporary urban forms primarily under the influence of heightened tourism activity in the region. One of the fundamental principles of this project has been the aspect of community participation towards defining future development paths and their connected physical manifestation. The project was envisioned with the idea of a place, where development happens through active participation, consensus and management by resident community. In this endeavor the technical team of designers, planners, architects and others was positioned between the local village community and the state government as a facilitating group. This way of association allowed for a mutual and collaborative partnership among the diverse sets of decision makers for this place. An extended period of community engagement of over more than ten years with continuous mediation through co-design by planning, design and social experts, government planning departments and the village community has nurtured a multi-layered process of co-operative building beyond the formal development framework.



2003-2006: Community Design and Interface (source: Dept. of Urban Design, SPA, New Delhi)

The initial field visits concentrated on documenting built transformations along with preparing design schemes for the community as well as individual stakeholders as a means of suggesting appropriate building types in response to the sporadic mushrooming of alien built inserts within the vast natural landscape. Socio-cultural trends were recorded through a structured questionnaire and through parallel discussions with the community and the government authorities allowing for mediation between top-down decision-making and bottom-up articulation of ideas and possibilities. The process involved organizing community meetings in the presence of state officials towards collective design thoughts using various tools for communication and outreach such as presentations, exhibitions, posters, and newsletters in local language (Hindi) for a wider outreach amongst the range of stakeholders.



2010 – 2012: Forms of outreach - presentation, exhibition and newsletter in Hindi (source: Dept. of Urban Design, SPA, New Delhi)

The project continues to track and document physical and socio-cultural transformations; suggest design ideas for public as well as private projects; interact with the community and political representatives as a means of strengthening this long-term association. Multiple discussions with village residents, women groups, along with the Panchayat over the course of time and during the recent 2015 field visit, has resulted in formulation of a village development committee comprised of local residents that would oversee the physical development in the village. Also, the local MLA has sanctioned a proposal for a 'village development center', which would seek to provide skill-based training for building and construction activity to the youth of the village.

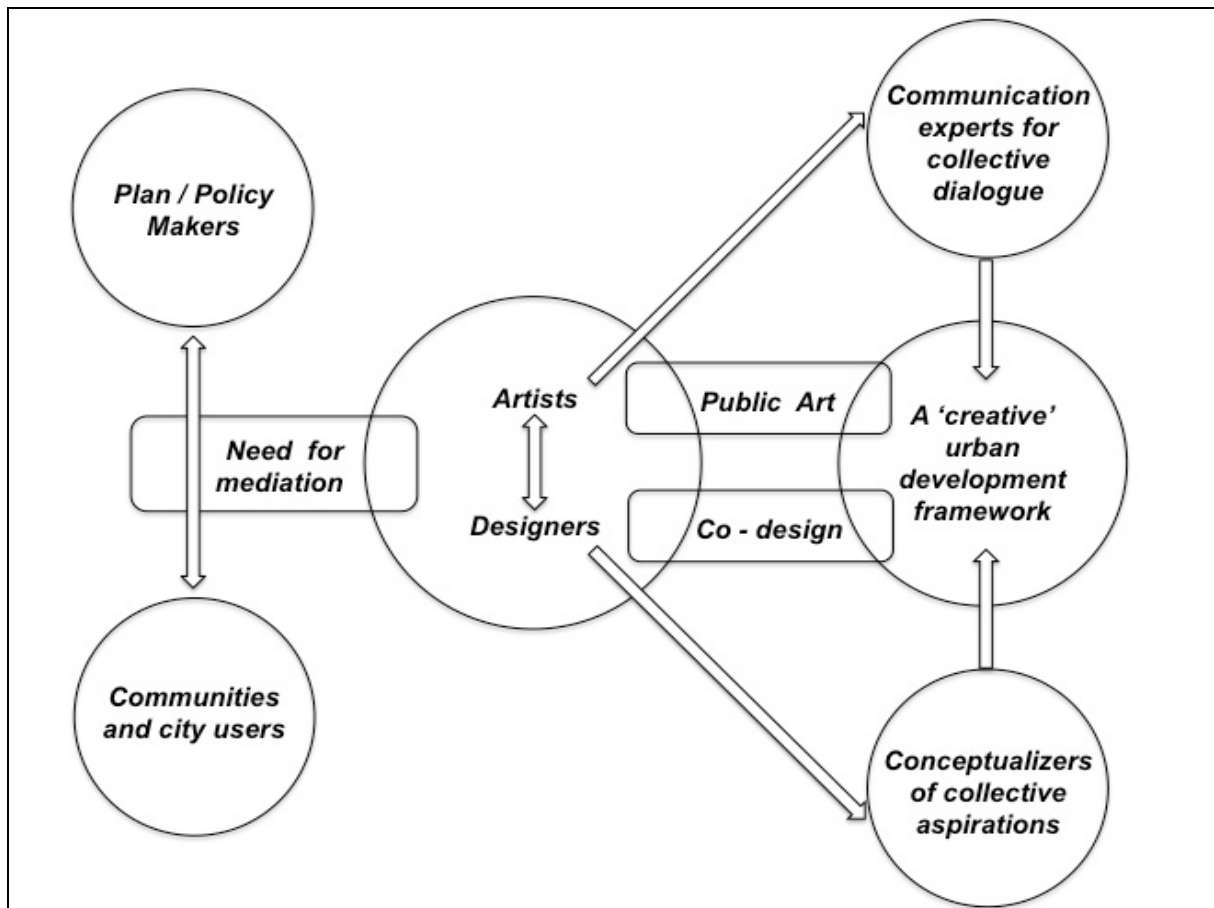


2015: Meeting with the MLA and the community (source: Dept. of Urban Design, SPA, New Delhi)

The project focuses towards initiating non-planned conditions (settlements outside the formal planning process) into an organized, cooperative way of decision-making for future directions where the ideas are being collectively nurtured at all scales from the regional to the settlement levels and finally to building or unit level. This involves multiple stages of engagement using a cyclic approach wherein study, analysis and propositions are carried on simultaneously rather than in a sequential linear path. A long association with the place has helped the designer to become concurrent with the community as a learner, an educator, a facilitator and an equal partner in devising a future course of action. For the members of the technical group associated with this endeavor, sustained engagement with the place and the community, initially as student volunteers to project associates has resulted in a new perspective towards the city building discourse. The project allowed exploration of new dimensions, skills and techniques using a multi-stakeholder approach towards a cooperative way of architectural production in transforming contextual settings such as these.

In conclusion, the distance between planning ideas, concepts, norms and urban ground realities in our cities could be bridged through a deliberate strategy of mediation using the creative disciplines of art and design. City visions at one-end and ground level, micro-development initiatives at the other, may have opened the need for a strategic interface between the prevailing planning system and local communities.

A new integrative strategy for cooperative city building engaging the community as collective creative resource incorporates public art as a communicative tool for dialogue along with co-design collaboration for local place-making. These two significant components can be viewed as an extension of the prevailing planning process to realize developmental objectives and community aspirations at the everyday level, where artists and urban designers have a significant role to play apart from, and in association with, planners and policy makers. This paper puts forward a 'creative' urban development framework as a productive intermediary to define and strengthen the cooperative city building process as a vital step for a new and an inclusive way of shaping our present and future urban environments.



A 'creative' urban development framework (source: author)

An effective development framework that connects between visionary ideas with ground realities cannot operate without the disciplinary convergence between planning, design and art. Till date this dimension of multidisciplinary creative inputs into the planning process has been negligible or at best accidental. The roles of the designer and the artist, especially in contributing to the shaping of the built environment and its final realization, cannot be overlooked further. For future cities to be sustainable and meaningful, the idea of citizens as active agents of critical assessment as well as creative imagination of their own habitations needs to find centrality in the discourse on urban development. Socially responsive planning needs to embrace this paradigm towards a more relevant and democratic future path of urban decision-making. *"Dwellers are also experts on their city and if so, their expertise begins in their awareness of the spaces around the bodies and the lattices of memory and appropriation they assemble as a personal reading of the city. From this it follows that the role of the planner becomes that of enabler, assisting members of communities in acquiring the vocabulary and information, added to the empowerment of community identity, to affect planning outcomes"*.⁸ To reinvent planning, it is time now to look beyond small corrective measures within the prevailing top-down, singular framework and embark on a new trajectory of a participative co-design and development alternative that mediates larger city visions with multiple aspirations and everyday realities.

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- 'The Latent City', written and directed by Krishnendu Bose, Earth Care Films, (http://www.earthcarefilms.com/filming_urbanenvironment_the_latent_city.html)

An Integrative and Empowering Model of Services for At-Risk Children and Youth:
A Paradigm for Cooperative and Activist Management

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Introduction

Public land-use allocation specifically and public space plans as a whole are high impact tools that enhance planning processes' influence over the quality of life of the local community.

Public land-use allocation constitutes one of the leading physical planning tools that enable us to address social and communal characteristics, foster encounters, and promote opportunities for self-actualization, recreation, leisure, and culture – all in a manner that is timely, accessible, suited to actual needs, and substantively valuable.

Children and youth are a major constituent element of the community. They symbolize growth, the future, the next generation, and new opportunities in years to follow. Land use allocation plans for children and youth are most often limited to educational facilities and institutional spaces of activity. In practice, however, children and youth are spending an increasing amount of time in front of the screen: smart phones, computers, television, and movie theaters. If they do leave the home, school, or facilities for institutional services of whatever sort, they tend to spend time with groups of friends in a "format" and of a profile that resemble their own: friends from their own neighborhood, from school, or from extracurricular activities, family members, and the like. Youth are perceived as an "avant garde," creative, and "anti-establishment" age group. Indeed, it is hard to draw them towards institutional services; they tend to demonstrate behavior patterns that express independence, rebellion, and an attitude of resistance. Yet in practical terms, they are still dependent on school, on finishing their high-school studies and passing their matriculation exams, and on adults for accessibility and movement within the surrounding space, among other factors. This age group aspires to increase its spheres of life: to make new acquaintances, to expand the physical space of life, to display and demonstrate maturity, while at the same time they are still bound to the educational establishment, the family, and their parents.

The Public Space: A Platform for Inclusive and Collective Urban Pluralism

Urban planning uses a variety of tools to create public spaces that include roads, public buildings, open spaces, and spaces for transit or rest that are suitable for diverse target audiences. The projects presented here underscore the importance of transitioning from serving the needs of the "average resident" to addressing the needs of the city's diverse communities, using models that enable everyone's needs to be met, offering everyone opportunities and a sense of relevance, while simultaneously creating a whole that combines all of these into an integrated public space that is of high quality, intriguing, and inviting, both individually and collectively. This is the challenge at the basis of integrated

management, urban-communal cooperation, and the pluralism that fosters self-actualization alongside integrated urban belonging.

Youth – An Unrecognized Key to Renewal and Growth

Youth are a population group that requires special attention. First and foremost, there are almost no guiding standards that address and take into account their lifestyles, characteristics, and experiences, while reflecting their most current and changing reality. Mid-twentieth century standards that address youth clubs, libraries, and the like, are no longer relevant to contemporary youth lifestyles. Evidently, today's youth do not spend time in youth clubs, community centers, or organized extracurricular activities, but rather in spaces dedicated to sports, physical activity, and consumer activity (malls and so on), as well as, primarily, in front of screens. Moreover, the youth are a population group whose very nature embodies rebellion, adolescence, expansion of the spheres of life, new acquaintances, and the like. Accordingly, any effort by the establishment to attract youth to participate in activities constitutes a special challenge.

When it comes to youth, there is a lack of contemporary tools, standards, norms, and models that reflect the needs stemming from today's reality. We do find that over the years unique youth centers have been opened, providing a range of interesting programs that combine technology, sports, social gatherings, youth involvement, alternative learning, volunteer initiatives, and more.

The recognition of youth as a key population group that greatly influences the quality of public space as a whole, individual security, patterns of use of public space and time, quality of educational life and social experience – thereby creating a social foundation that provides opportunities for urban renewal, the re-imagining of urban spaces, and residents' aspirations of belonging to the neighborhood and surrounding space and being part of it – all these form a basis for generating comprehensive urban growth.

Image 1: A neighborhood shopping center as a social and diverse cooperative space, in Kiryat Hayovel



The youth (ages 12-17), who constitute more than 23% of Israel's population, are one of the keys to successful urban planning and development. This is particularly true for the youth termed "at-risk" because they do not always operate within recognized frameworks, they embody an element of violence and intimidation, they make use of public space in unconventional ways, and they often foment public disturbances. A perspective that recognizes this youth group as an inseparable part of the whole community and integrates it

into efforts aimed at taking responsibility for its surroundings , for its sphere of life, and for the quality of the community in which it lives – such a perspective might "make the difference."

This insight requires initiating different, contemporary, and specialized planning processes with youth and the overall community. It requires a land-allocation approach that is socially sensitive and simultaneously fosters encounters and connections, and creates opportunities. This is a combination that makes it possible to meet the needs of every individual separately and of the whole community in an integrated manner – producing a steadily improving quality of urbanism.

This paper will present two projects we have initiated: first, a strategic plan for children and youth in a Jerusalem neighborhood undergoing rehabilitation; and second, the planning of processes that foster cooperation between boarding schools and youth villages, on the one hand, and local authorities, on the other, in order to generate quality services and growth for the entire space and all communities. This process was led by the Public Forum for Boarding Schools and Youth Villages within the National Forum of Boarding Schools and Youth Villages, a forum designed to enable the consolidation of efforts, cooperation, and lessons learned from colleagues and stakeholder groups comprising diverse participants (boarding school principals, relevant government ministries, donors and philanthropic foundations, professionals, academics, and more).

The Strategic Plan for At-Risk Children and Youth – Kiryat Hayovel, Jerusalem

This program aims to examine the needs of at-risk children and youth, as an integrative part of the community and, in particular, of communal efforts towards renewal, growth, and transition from a state of rehabilitation to the dynamics of growth. This combination – of a social analysis of children and youth on the threshold, defined and recognized as children and youth who are at risk, and the needs of the neighborhood and requirements for growth – has resulted in unique modes of cooperation, and in particular a new, contemporary perspective yielding a program that provides services and opportunities, with a view towards growth for the entire neighborhood, the children and youth who are defined as at risk, and all the neighborhood's children and youth, across the range of services and components of public space. The perspective underpinning this process views it as an opportunity to generate growth, with advantages for the entire community, alongside space for contemporary preventive and treatment measures that aim to change the approach towards services for at-risk children and youth within the overall public space. The process was preceded by meetings among various service providers, by thinking "outside the box," and by the most current ideas, including primarily the importance of involving children, youth, and their families in the thought process, planning, brainstorming, lessons learned from the process, and the like.

The planning process was based on a number of discussion group meetings with a variety of neighborhood service providers and municipal officials in a range of areas (physical, social, economic, and the like). All these, in advance of meeting with the residents, required a

Image 2: Renewal in Kiryat Hayovel



cooperative confidence-building process, as the neighborhood had undergone several renewal efforts during recent decades. The planning process was based on a mapping and characterization of the entire public urban space of Jerusalem, and on a characterization, mapping, and study of the various aspects of the network of services for children and youth generally, and at-risk children and youth specifically. An analysis was undertaken to examine the neighborhood's renewal plan, the construction, evacuation, and renovation of public space, and the development of mass transit systems, public centers, space for transportation, and the like, while also taking into account current trends regarding treatment, preventive measures, and integration for at-risk children and youth in the urban community and public space, through an integrative perspective. On the basis of all the above, a joint, multi-disciplinary workshop was held with the aim of examining where, how, and in what manner it might be possible to use existing neighborhood infrastructures as leverage, and how it might be possible to lead the neighborhood's children and youth, particularly those defined as at risk, to develop the means of leverage that will improve public space for the entire community and all its children and youth. Thought was also given to the question of how to generate public space that makes optimal use of public buildings, open spaces, spaces for traffic and public transportation, and the like, thereby improving their safety, quality, and potential for fostering encounters, opportunities, creativity, and a sense of initiative for the various local communities and the community as a whole.

The above process led to the conclusion that a number of key focal points in the neighborhood "make the difference" for the entire community. These are main focal points perceived as qualitatively significant, and they serve as anchors for growth. The program's recommendations were to use them as the foundation for treatment, prevention, and especially opportunities for encounters that foster creativity, currently relevant advantages, social and communal life, individual security, and shared responsibility and management – namely, urban cooperation that reflects a multi-faceted and inter-communal synergy.

Towards this end, a number of focal points of excellence within the neighborhood were identified, to serve as anchor points for the program. For example:

The Prestigious Experimental School – The initial process began at a unique neighborhood school, a branch of the prestigious municipal experimental school. A plan emerged to move the daycare center, which is intended for children on welfare, from the outer yard into the school, thereby intermingling the children who benefit from it and creating a social-educational space of prestige and quality that is also inviting. Simultaneously, a unique plan was adopted for renovating the school using models that engage the entire community, generate points of interface, prevent segregation, and create opportunities for encounters.

Image 3: The Argentina School in Kiryat Hayovel



The Shopping Center – This is the other focal point that serves as an anchor for neighborhood growth along all dimensions for the entire community. The program initiated a cooperative process involving business owners, shoppers, and "random" visitors. This led to a recommendation for a socially sensitive cooperative process that combines occupational training for at-risk youth, who will take responsibility for and leadership of the renovation and maintenance efforts, the creation of local social activity spaces, the promotion of local neighborhoods enterprises, neighborhood craft fairs, and the like.

Boarding Schools and Youth Villages – Cooperation with Local Authorities

Boarding schools and youth villages bring together children and youth who are identified as on the threshold – that is, children who are face a high risk, necessitating their removal from their original community, family, and friends. In Israel a forum was established to bring together the administrators and principals of boarding schools and youth villages, as well as representatives of relevant government ministries, philanthropies that support this population group, and others. Youth villages and boarding schools are remotely distributed, thus creating a "black hole" of sorts that is not recognized by the local community or local authorities.

One of the main insights of the forum was its emphasis on the importance of cooperation: among boarding schools and youth villages, various relevant government ministries, actors on the ground, and in particular, the local authorities in areas where these institutions are located throughout Israel.

Currently, it should be noted, youth villages and boarding schools, as well as local authorities, do not recognize the importance of the connectedness among them. On the contrary, their perspective embodies suspicion, lack of willingness to mix communities, and concerns that any form of cooperation might generate reciprocal requests for resources or spark conflict, for example.

The process we initiated was intended to highlight the

significance of connectedness, relationships, and cooperation between local authorities and the boarding schools and youth villages, and in particular it aimed to create opportunities for mutual growth. Cooperation at the social, communal, and administrative levels, cooperative use of infrastructures, the creation of new acquaintances and opportunities for meetings, the development of new "traditions" of meetings – annually or biannually, for example – all these provide opportunities to improve the provision of services by local authorities and at boarding schools and youth villages. Moreover, this process embodies a social message that recognizes the importance of making acquaintances and having encounters within a diverse community – as a source of leverage for social, economic, and environmental growth.

The process comprised meetings with forum representatives, discussion and debate among the various actors who are involved, and the production of a briefing book aimed at presenting the guiding principles and examples of multi-disciplinary cooperation, and in particular at encouraging the integration of successful examples from the field.

The discourse that emerged from the proposed process is intended to create opportunities for work with specific boarding schools, which will undertake physical renovation in the context of social, economic, administrative, and environmental cooperation with the local authority. This type of cooperation will create the type of unique interface that is so lacking among diverse population groups and the administrators in charge of growth in the public space.

Image 4 [Frenkel School yard playscapes – Peri-Davidovich arch](#),

[D.M.R. Planning & development](#).



[Publication: Cooperation among Local Authorities, Boarding Schools, and](#)

– Available in Hebrew [Youth Villages](#)

Conclusions

The projects presented in this paper reflect a perspective that emphasizes the importance of shifting focus from the challenge of "attracting a strong population" towards a specific place, street, neighborhood, or city, to the more contemporary challenge that underscores the importance of "strengthening the diverse population groups of the place".

Image 5: : Planning with children



This is a modern, principled approach that views diversity as leverage for empowerment and the creation of opportunities that will yield new and up-to-date advantages. Here space is not used to segregate communities into neighborhoods and suburbs or to create areas divided by use and purpose; nor is the power of the community split into separate and exclusionary spaces. This is a perspective that recognizes the importance of interaction, relationships, openness, reciprocal relations, and synergy. This is the key to a style of management that produces shared responsibility, urban cooperation, and a contemporary communal and public quality of life.

Addressing Flooding Issues in an Environmental Justice Community: A Complicated and Multi-Layered Case Study

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1. Introduction

How to address recurrent and severe flooding issues in a community subjected to significant environmental justice (EJ) concerns? What should be the role of the surrounding communities? This paper presents a unique and complicated case study while addressing these broad questions. It focuses on a metropolitan watershed around a historic town (incorporated in 1888), located close to the City of Philadelphia, USA. It describes the process of developing a flood and stormwater management plan for the whole watershed, with a specific emphasis on the EJ community.

The term “environmental justice” was created in response to the increased prevalence of toxic pollution and its disproportionate impacts on poor, minority communities (Holifield 2012). EJ is defined as the fair distribution of environmental risks and hazards among all groups based on race, class, ethnicity and economic status. Environmental injustice is commonly described as certain disadvantaged groups of a population bearing a disproportionate burden of environmental hazards. The scope and range of EJ literature has evolved greatly since the origin of the term in the early 1980s. An EJ movement was born when a PCB landfill was set to be built adjacent to the homes of mostly low income African American residents in Warren County, North Carolina (Bullard 1993; Schlosberg 2007).

Over time, the scope of the literature has not only broadened to include various social groups, but also the various issues that can be associated with environmental hazards, including flooding (Holifield et al. 2009; Walker 2009; Walker and Burningham 2011). More recent natural disasters, such as Hurricane Katrina, lead the literature to look more closely at natural hazards as well as technological ones, which dominated the field for a long time (Colten 2007; Morse 2008; Stivers 2007; Sze 2006). Flooding is a significant component of this small but quickly growing body of work. Within this work flood risk is being framed as a potential component of environmental inequality and injustice (Walker & Burningham 2011). While a small group of literature exists on flood risk and its associated environmental justice issues, further research is needed as flooding issues grow worldwide.

The literature has also expanded to look at environmental justice as a multi-dimensional concept (Martin et al. 2014). Researchers look at EJ as having three main dimensions. These dimensions are: distribution, recognition, and participation (sometimes referred to as procedure). Early in the literature, distribution was commonly discussed and dominated the field (Walker 2012). Distributive justice refers to the “distribution of goods and bads” between different individuals and groups and has dominated environmental justice debates to date (Walker 2012). The field expanded to eventually include the dimensions of recognition and participation (Walker & Burningham 2011; Holifield 2012). The dimension of participation, commonly referred to as procedural justice, deals with the level of inclusion of individuals and groups within the decision-making process as well as who guides the process itself (Martin et al. 2014). Procedural justice is commonly defined as “the fair and equitable institutional process of a State” (Urkidi et al. 2011). Recognition acknowledges personal dignity of all individuals (Fraser 1995), collective identities and their needs or concerns (Staeheli 2008) or the overcoming of institutional harm to social status (Tschakert 2009). This dimension examines the role of history and process and evaluates the causes and consequences of environmental inequity (Pellow 2000; Sze 2007).

2. Context

The densely-developed West Ambler neighborhood, located in Whitpain Township, Pennsylvania and characterized by a low-income and minority population, has vacant and flood-damaged properties. The neighborhood faces environmental justice issues that include air pollution, surface water pollution and groundwater contamination. As seen in Figure 1, sections of Ambler Borough and the West Ambler section of Whitpain Township are located at the downstream end of the tributary watersheds and are subject to the accumulated effects of increased runoff from upstream areas. In addition, these areas are impacted by flooding from the main stem of the Wissahickon Creek. In addition, the West Ambler neighborhood includes the BoRit Superfund Site, which includes a six acre private tract with asbestos piles, a 15-acre reservoir, and an 11-acre park that has been closed due to asbestos contamination. Another site, the Ambler Asbestos Piles, is also located in close proximity to the EJ community.

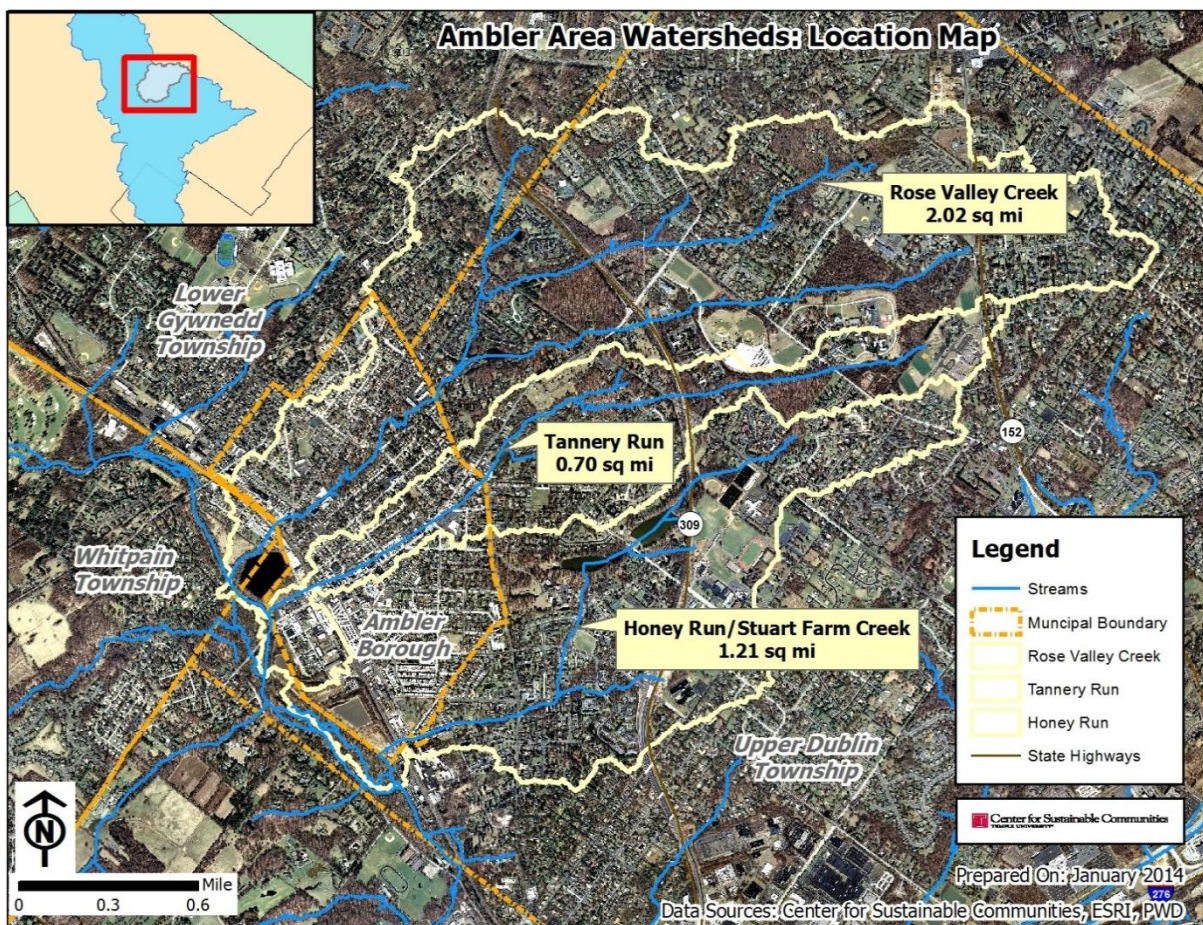


Figure 1: Study area

Ambler Borough has had a long and unique history of asbestos production and contamination that stretched from 1897 to the 1980s (CEET, Ambler n.d.). The superfund site has had a legacy of producing and serving as a dumping ground for asbestos products. It was selected for the Environmental Protection Agency's (EPA's) National Priorities SUPERFUND List in 2008 (CEET, Ambler n.d.). It is a high priority due to its proximity to several water bodies (Tannery Run, Rose Valley Creek, and the Wissahickon Creek) in addition to residences. Residents of the community have voiced their concerns about the site for several decades.

Communities in the Wissahickon Watershed have faced devastating effects from major flood events (Floyd 1999, Allison 2001, Ivan 2004, Irene 2011 and Lee 2011), and

have faced millions of dollars' worth of damage as well as loss of life. For the main stem of the Wissahickon Creek in Montgomery County, each of these events produced peak flows larger than the 100-Yr flood used for the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). While flooding is a natural process and occurs in both developed and undeveloped watersheds, land conversion to less-permeable surfaces in the absence of stormwater controls leads to higher flood peaks, flood volumes, and frequency of flooding. This is of particular significance in the West Ambler neighborhood, where more severe impacts have been observed.

Environmental justice issues helped launch the Ambler flooding study. In 2011, Whitpain Township had received \$250,000 in streetscape funding from the Pennsylvania Department of Community and Economic Development to replace sidewalks in West Ambler. After the two storms and local devastation, West Ambler residents successfully argued that the flooding issues should be addressed before replacing the sidewalks. As a result, in 2012, the township engaged the Center for Sustainable Communities (CSC) to perform the flooding study for the Ambler area and the firm of Simone-Collins to prepare a revitalization plan for the neighborhood. The CSC created a Project Team of university researchers to perform the study.

The Project Team's discussions with community groups indicated that the disadvantaged West Ambler neighborhood faces severe flooding and poor water quality due to contamination from the asbestos site, posing a serious environmental justice problem in this watershed. Through this work, the interests of both the residents of the West Ambler neighborhood, who are disproportionately impacted by flooding, health risks, and floodplain map revision, and the surrounding communities of the Ambler Borough and Upper Dublin Township, must be balanced accordingly.

3. The Project

3.1. Initial Community Outreach

At the very early stage of this project, the team met with officials of the three municipalities, and representatives of environmental groups and community organizations. Ambler Borough officials indicated that mitigating recurrent flooding, managing stormwater and improving water quality are critical challenges to achieve a better quality of life for its residents. Whitpain Township officials said that emergency response, flooding mitigation and community revitalization are community priorities. Stormwater management and flood mitigation are longstanding priorities of Upper Dublin Township, which is implementing several stormwater improvements identified in a previous CSC project. The project team's discussions with local environmental councils and organizations indicated that the disadvantaged West Ambler neighborhood faces severe flooding and poor water quality due to contamination from the asbestos site, posing a serious environmental justice problem in this watershed.

The Project Team used outreach activities and stakeholder meetings throughout the two-year project period. A 24-member Watershed Plan Advisory Committee was formed in September 2012 consisting of representatives from government officials, municipal authorities, professionals, environment advisory councils, civic associations, environmental associations, business community and local residents. A project website (<http://amblerwatersheds.wordpress.com>) was launched in mid-September of 2012. The web site included project-related basic information, community priorities and challenges, and an online form for public input.

A "municipal problem area" survey was conducted in 2012. Municipalities within the watershed identified 163 locations where flooding, erosion, and sedimentation were occurring. Information on drainage problems and proposed solutions was solicited from each municipality by providing forms for each Advisory Committee member. The project Team studied local plans, projects, and initiatives addressing stormwater management and flooding issues throughout the study area. Examples included *Ambler 100 Rain Gardens*, *Rose Valley Creek Riparian Buffer Restoration*, and *West Ambler Revitalization and Action*

Plan, which focused on the BoRit Superfund Site and proposed channelization or day-lighting of the Rose Valley Creek.

A public stakeholder meeting was organized by the Project Team with the help of the Advisory Committee. Following intense advertising and outreach efforts, approximately 115 stakeholders attended the meeting, held in a venue located within walking distance of the EJ community. After an hour-long open discussion, the stakeholders of three municipalities (Ambler Borough, Upper Dublin Township, and Whitpain Township) staffed three separate stations in the venue to share their experiences with recent flooding events. They responded to a number of questions included in a survey. This session was facilitated by 15 volunteers from local municipalities and Temple University.

All attendees agreed on the importance of addressing the flooding and stormwater issues this area has been facing for decades. Nearly all of the respondents (90%) reported that their properties have been flooded at least twice in the past 10 years, with 52% of respondents reporting their properties have flooded five or more times in the past 10 years. Some respondents even reported that their properties flooded twice a year. Slightly more than 40% of respondents reported having flood insurance. More than two-thirds of respondents described flooding of their basements, incurring the loss of various appliances and personal effects. Many respondents also detailed structural damage to their finished basements, including damage to drywall and carpeting. Damage to exterior features, including landscaping, sidewalks, or driveways was also described. For some, flooding was so severe that vehicles parked on the street and in driveways were totaled.

Just over half of the respondents reported either taking action themselves to mitigate future flooding or knew that their municipality was taking action. Most reported that they had taken action themselves on-site: some of these actions included the installation or upgrading of sump pumps, different types of drains and drain pipes, berms, and reinforced or glass-block basement windows. Actions taken by municipalities that respondents described included commissioning studies, widening riparian buffers and replacing culverts. Many ideas and suggestions were offered as to what could be done to mitigate flooding in the future, ranging from the general to specific. Many respondents supported, in general, the restoration of riparian buffers and wetlands in the area, as well as improving existing detention basins. Some suggestions directly related to the pipes running under regional rail tracks, indicating that they should be replaced or redone. The installation of storm sewers and detention or retention basins on specific locations were also recommended.

3.2. Understanding the Watershed

Stormwater management planning must take numerous surface features into account, including topography, soils, land use, and impervious cover, as well as existing stormwater collection and discharge. Since the Ambler area watersheds are located at the center of Wissahickon Creek Watershed, a broader understanding of the Wissahickon Watershed was needed, especially for continuous data sets such as precipitation. Primary data were created by the Project Team and its sub-contractors. Secondary data were collected from various sources. After field verification of secondary data, which was complete by January 2013, the Project Team decided that some data needed enhancement and new ortho photography and elevation data were created and used in the analysis.

The Project Team conducted GIS analyses regarding watershed characteristics and runoff, including flash flood potential, land use, and precipitation. Analyses were also conducted in order to further understand stormwater and flooding issues in the area. The results of this assessment follow.

The Wissahickon Watershed is vulnerable to heavy rainfall from tropical weather events. Damaging tropical storms in recent years have included Floyd (1999), Allison (2001), Ivan (2004), Irene (2011) and Lee (2011). For the 30-year period from 1981 to 2010, precipitation at the National Weather Service (NWS) rain gage at nearby Springhouse averaged 47.4 inchesⁱ. This annual total, however, is not uniformly distributed over time and space, and extreme events can produce eight inches of rain or more in some areas in a single day. Although extreme storm events trigger the most damaging flooding in the

Wissahickon Watershed, most storms produce less than one inch of rainfall. These smaller storms produce a significant portion of annual runoff. For this reason, stormwater management measures designed for infiltration or extended detention of these smaller runoff events are effective in reducing non-point pollution loadings and stream erosion.

The elevations over the watershed range from 155 feet to 397 feet. The EJ community has the lowest elevation values. Runoff characteristics of various land uses vary with the underlying hydrologic soil group designation, and information on the location of hydrologic soils groups was used in the hydrologic modeling for this study. Hydrologic soils in the most part of Ambler area watersheds have medium to high runoff potential with low infiltration rates. Almost half of the study area has single-family detached residential land use, and about 7% is multi-family residential. The National Weather Services' Mount Holly Weather Forecast Office has conducted a GIS-based analysis of flash flood potential, based on digital data available for soils, slope, forest density, and land use. According to this data, the EJ community and surrounding areas have highest flash flood potential.

Based on field observations, digital ortho-photos, land use data, and outfall and drainage data provided by the Philadelphia Water Department (PWD), it was estimated that stormwater collection systems of various capacities have been installed in most of the study area, although many places have poor drainage. Based on field visits, the Project Team concluded that many existing detention basins within the watershed were not properly designed to address small storms, and runoff from these storms passes directly through the facilities. These structures represent opportunities for retrofitting to provide additional storage, infiltration, and extended detention.

Stormwater problems are created because of increased impervious cover, destruction of riparian buffers, extensive floodplain development, more frequent extreme precipitation events, extensive channelization and piping, higher peak flows, higher runoff volumes, loss of upstream storage, erosion, and obstructions to flow. Water quality problems are due to both point-source and nonpoint-source pollutions. All three creeks in the study area are designated as "impaired" in Pennsylvania's regulatory 303(d) list due to siltation, caused by urban runoff/storm sewers and habitat modification. Surface water quality is impaired from a lack of stormwater runoff management and nonpoint source pollution control. The Ambler area was almost completely developed prior to the Pennsylvania Stormwater Management Act of 1978 and lacks suitable runoff controls (PWD, 2007). Analyzing data created by the Heritage Conservancy, the Project Team concluded that increasing urbanization in the watershed has led to the destruction of riparian buffers, which has increased erosion and sediment loadings, leading to the widespread loss of habitat for both aquatic and terrestrial species, as well as propagation of invasive plant species. In terms of point source pollution, the Superfund Site was discussed in a prior section. Another source of pollution is contamination from wastewater treatment plant discharges and infiltration and inflow from sewer lines during storm events.

The study area has experienced severe flooding in many recent storm events, including Hurricane Irene and Tropical Storm Lee in 2011. Both storms produced peak flows larger than the 100-Yr flood used by FEMA as the basis for the current FIRMs. According to existing FEMA FIRMs, 101 building structures have been identified within 100-Yr floodplains and 163 structures within 500-Yr floodplains. There are many locations in this study area where existing FIRMs have become outdated. Figure 2 shows such as area (in a red dotted circle) that has faced severe flooding in recent large storm events, but is not inside FIRM flood-zones. Based on individual flood insurance claims data provided by FEMA, the highest density of claims has been in the lower reaches of the three tributaries within Ambler Borough (including the EJ community), with very few occurring in the headwater areas. According to FEMA statistics as of December 31, 2013, a total of 179 flood insurance claims had been filed in Ambler Borough alone with 157 of these claims paid, for a total payment of \$4.02 million since the start of the flood insurance program in 1978.

3.3. Engineering Models and Outputs

The Project Team used ArcGIS, HEC-HMS, and HEC-RAS software to conduct hydrologic and hydraulic modeling for portions of the Wissahickon Creek and three tributaries (Rose Valley Creek, Tannery Run, and Honey Run/Stuart Farm Creek) within the study area. The CSC is a FEMA cooperating technical partner (CTP) for floodplain mapping and has approved floodplain maps created by the CSC in recent years for other watersheds in the region (i.e., Pennypack and Sandy Run). New 100-Yr and 500-Yr floodplains for this area are preliminary pending final approval by FEMA.

Model results for the design storms were generated after calibration of the hydrologic model. The model outputs included peak flows, flow hydrographs, and runoff volumes for subbasins, junctions, and stream reaches. Two versions of the model were used in the study. Model outputs for current conditions were used to generate peak flows for determining flood elevations and flood maps. A second version was developed to represent future conditions assuming that upstream stormwater improvements proposed in this study would be put in place.

Figure 2 shows a comparison of FEMA and preliminary CSC 100-Yr floodplains for the study area. A significant portion of floodplains for the Rose Valley Creek in the West Ambler neighborhood (inside EJ community) was not previously mapped and is not included in FEMA's existing flood insurance rate map. This high hazard flood area is now included in the new preliminary maps and flood prone structures will become eligible for federal buyouts. In addition, most of the upstream portions of the tributaries were not included in FEMA 100-Yr floodplains, but are now within the new mapped areas. According to this new delineation, 136 structures are within 100-Yr floodplains (previous number 101) and 212 structures are within 500-Yr floodplains (previous number 163).

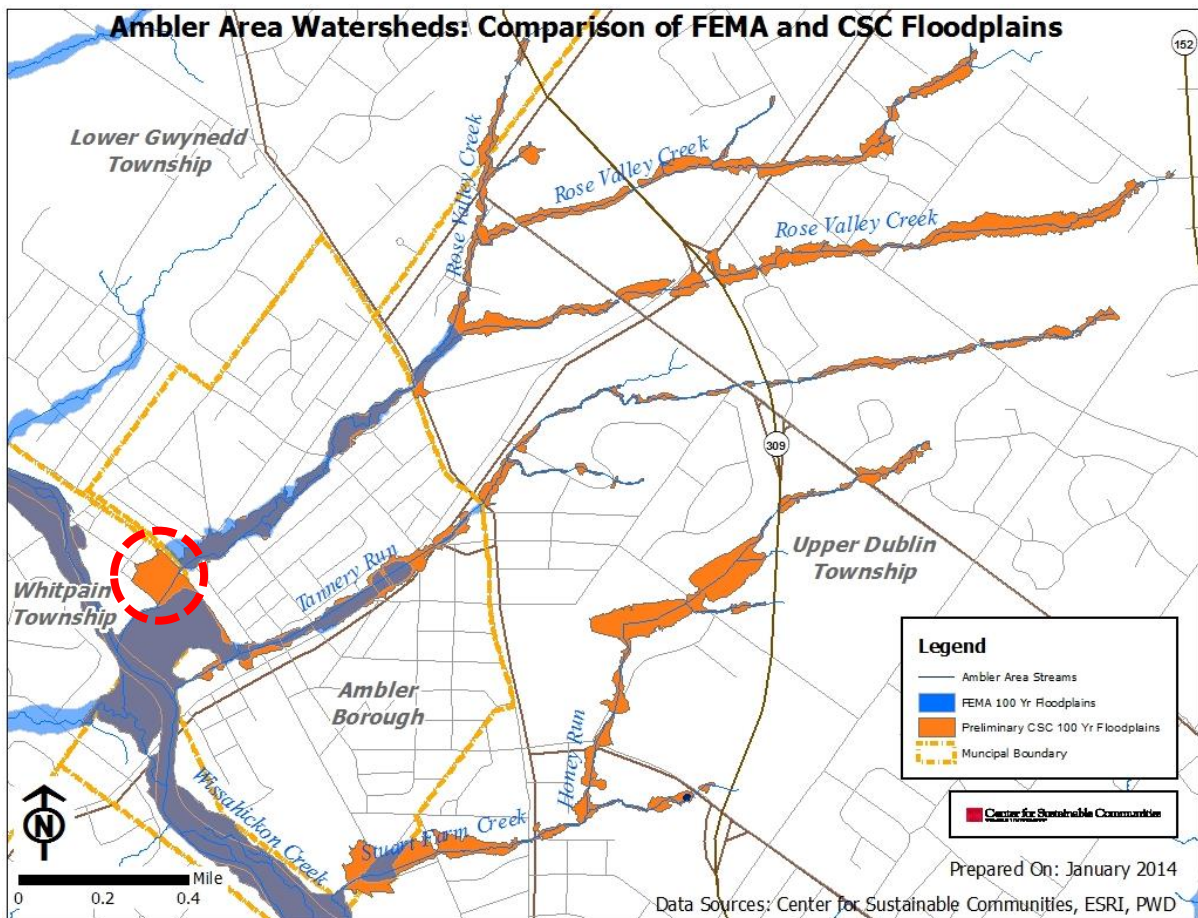


Fig 2: FEMA and preliminary CSC floodplain comparison

3.4. Stormwater Management Recommendations

Based on input from municipalities, community residents, and environmental groups as well as the field surveys, watershed assessments, and hydrologic and hydraulic modeling performed for the study, the Project Team recommended location-specific stormwater infrastructure (SI) facilities throughout the study area. In order to reduce runoff peaks and volumes, and address the widespread water quality impairments caused by stormwater runoff in the study area, various types of opportunities for improvements were evaluated, including but not limited to retrofitted detention basins, infiltration galleries and trenches, constructed wetlands, rain gardens, pervious paving, day-lighting streams, and riparian buffer. These recommendations are consistent with community needs, and community projects, initiatives, and plans.

As this watershed is essentially “built-out,” the Project Team concentrated much of its research on identifying opportunities for retrofitting existing stormwater facilities and finding locations for new SIs in areas not currently served by them. Additional flood control or mitigation options for the West Ambler neighborhood (EJ community) were evaluated. Because structural measures such as channel expansion and culvert enlargement can reduce floodplain storage and increase flows downstream, it is important that these measures be completed in combination with other stormwater control measures (i.e., stormwater best management practices – BMPs) that increase upstream storage. This approach would help prevent adverse downstream impacts.

After identifying potential SI projects and their possible locations, the Project Team assessed the hydrologic and water quality impacts of the proposed improvements. The proposed SI improvements were incorporated into a “Future Conditions” HEC-HMS model run, following same modeling approach described in previous section. In some locations downstream from potential improvements, the reduction in peak flow rates is sufficient to reduce water surface elevations for smaller storms. The combined potential additional storage provided by the three categories of improvements was estimated at 98.6 acre-feet, or approximately 33 million gallons. This volume of storage is equivalent to 0.47 inches of runoff from the 4 square mile watershed. The reductions in peak flow and volume would help reduce scour and erosion potential along stream reaches, and would be helpful where stream restoration is planned or has been completed. In addition, the recommended projects would provide for settling and storage of sediment in runoff and reduce sediment loading in the watershed. To provide a means of prioritizing further investigation of the proposed improvements, each site was rated based on three factors: (a) Effective use of additional storage during small storms – 50 percent weight of the total score; (b) Cost per acre-foot of storage provided by the site – 25 percent; and (c) Location in the watershed, with the upstream portion of the watershed receiving the highest score – 25 percent.

Recommendations include some structural measures within existing downstream floodplains. While such measures substantially lower flood risk, flooding would still occur if storms exceeded the design of the control measure. For the lower Rose Valley Creek analysis, the 500-Yr storm was used to determine the size of the enlarged channel, which would significantly reduce flooding in the West Ambler neighborhood. The Project Team recommended the site-specific projects only if the water released would be compensated with upstream storage or infiltration. All these recommendations were consistent with community input as well as the *West Ambler Revitalization and Action Plan*. Some of the site specific recommendations would impact many building owners. However, through daylighting the stream, the area subject to flooding could be greatly reduced, particularly in the West Ambler EJ community. While some properties would be impacted by this process, the damage inflicted overall by flooding would be cut back significantly.

The implementation of low-impact SIs will not likely impact flood control to a significant extent, due to their limited size, but have been proven to significantly improve water quality on a local scale. The placement of 5,940 rain barrels would absorb on average 1 acre-foot of rainwater and 100 rain gardens of 200 cubic feet each would absorb 0.46 acre-foot. Such projects may reduce stormwater marginally, but improve water quality by catching rainwater before it is polluted (rain barrels), by filtering pollutants out, or a

combination of both. In the case of rain barrels, the water can be reused for several household purposes.

3.5. Implementation Plan

After presenting the findings to municipal officials and Advisory Committee members, the following implementation strategies were proposed to the municipalities: the adoption and enforcement of new Flood Insurance Rate Maps (FIRMs), implementation of the stormwater improvements and flood control projects, adoption of municipal stormwater ordinances, institution of a flood warning system, and participation in FEMA's Community Rating System (CRS).

The municipalities were encouraged to independently or jointly submit the proposed new FIRMs to FEMA in the form of a letter of map revision (LOMR) and to adopt them as "best available information" for floodplain management purposes until the new maps are formally approved by FEMA and subsequently by the municipalities. The federal flood insurance program provides funding for voluntary buyouts of flood-prone properties. This plan identified several candidate properties. Typically, the federal government through FEMA provides 75% of the funding for property acquisition with the remainder of the funds coming from state and local government. The designation of properties as residing in a flood hazard zone through adoption of FIRMs is a critical step in the buyout process.

The municipalities were also encouraged to construct the stormwater improvements identified in this plan by increasing each municipality's capital improvement program funding. The various improvements were assigned a priority according to their location, cost – effectiveness, and capture potential, and municipalities could use this ranking as a basis for funding projects over a long-term period. Various state-level and local funding sources were listed. Flood control projects are eligible for federal funding. The three municipalities were encouraged to participate in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) to get discounted flood insurance premium rates. A flood warning system for small watersheds requires forecasting, rainfall and water level monitoring, and response when flood rainfall rates or levels are triggered. The plan included initial recommended steps for the municipalities.

3.6. Post-Study Community Outreach

In March 2014, an early draft version of the final report was submitted to three municipalities (Ambler, Upper Dublin, and Whitpain) and Advisory Committee members for review. Based on feedback, corrections were made and a final draft version was prepared and eventually shared publicly in October 2014. An interactive online GIS map (<http://goo.gl/6yZBNG>) was published showcasing the comparison of existing FEMA floodplains and the new floodplains. Six weeks were allocated for public reviews and comments on the draft plan. Comments were received via emails, phone calls, and even personal visits. In late November the Project Team presented the study results in front of about 100 community residents, business owners, and other stakeholders (including federal, state, and local agencies) in a location within walking distance of the EJ community. Majority of the comments were received during and right after that presentation.

The presentation event transitioned into an interactive open conversation between the residents and the Project Team, the municipalities, and federal government agencies. Among the many Ambler Borough residents who have been subject to the accumulated effects of increased runoff, the concern of property damages caused by flooding being comprehensive and significant was greatly expressed. Indisposed with anticipation to address such concerns, the microphone wove through the audience as residents shared specific questions, suggestions, and comments. The Project Team received two general types of comments: informational and concerns or suggestions.

The informational comments were both general and study-specific. The general comments included questions regarding terminology (i.e., daylighting, floodplains), funding/ implementation/ timing, stormwater ordinances, and proposed developments in the area. The study-specific comments mentioned were questions about details of the SI projects and

explanations of the floodplain changes. At the public meeting, a resident questioned why most of the properties being removed from the floodplains after the stormwater measures were commercial and not residential. Several residents posed questions about plans for the development of a four-house subdivision in the Rose Valley Creek watershed and whether the study considered these plans.

The concerns and suggestions received can be broken into three primary categories: a) floodplains, b) stormwater management projects, and c) miscellaneous. Comments about the newly delineated floodplain maps were major concerns and/or opposition about individual properties being included in the preliminary floodplains. Concerns were related to expensive flood insurance, loss of property values, and restrictions on home improvement within flood zones.

Residents were informed that the Project Team used latest technology and data available for floodplain mapping and that they followed all the established standards and protocols set by FEMA. They were also informed that these preliminary floodplain maps would be scrutinized by FEMA and the Army Corps of Engineers (ACE), then revised by the Project Team if needed. On the other hand, many residents were delighted by seeing their houses or properties in the new floodplain maps. They acknowledged that this is the correct information. Some people commented that if they live in a high-risk flood area and are now required to get insurance, they will actually be able to purchase the flood insurance (because, according to the respondent, they are having problems getting the insurance), so “this is a win-win situation”.

There were concerns and suggestions in regards to the specific stormwater management projects proposed in the study. Residents questioned why certain areas and projects were or were not included and offered ideas for other projects to be considered. Some raised concerns about property acquisition. Based on public input, three additional site-specific SI facilities were included in the final report. There were only minor comments on the proposed detention basins, infiltration areas, and riparian buffer areas.

The remaining concerns and suggestions were on miscellaneous topics, such as problems related to FEMA flood insurance program, removal of the asbestos dumps that could free up over 70 acre feet of much needed lands for flood waters, and consideration of proposed developments in the engineering models. The Project Team forwarded the comments related to flood insurance program and superfund sites to FEMA and EPA respectively. Proposed developments were not considered in engineering models. The watershed is almost completely built out, so models were run considering the fact that land use would be mostly unchanged.

4. Conclusion

The Project Team used various community engagement tools throughout the Ambler study, including stakeholder meetings, surveys, websites, and direct interaction. While these tools were not specifically designed for addressing environmental justice questions, they were very useful for this purpose because the West Ambler community was specifically targeted by the project team and municipal officials for input and engagement. The Team’s experience with this study strongly suggests that direct contact with residents is preferable to the other tools as it enabled us achieve an initial level of trust with local citizens.

The municipalities also engaged the West Ambler community, which enhanced our study efforts. Whitpain Township created a West Ambler Revitalization Committee that includes local residents as well as officials. The committee meets quarterly at the municipal building. The township also holds quarterly public meetings in the evening with local citizens in West Ambler. At both venues, Project Team members briefed municipal officials and local residents on the status of the flooding study. These meetings provided an opportunity to directly engage local residents and receive more exposure and input for our study. Ambler, Upper Dublin, and Whitpain also participate on the BoRit Citizens Advisory Group created to advise EPA of actions taken at the Superfund site adjacent to the West Ambler neighborhood. The group, which meets monthly, includes over twenty members including the West Ambler Civic Association.

Sometimes community engagement raises difficult issues that might not have surfaced without it. Engagement does not always lead to public support. The flooding study led to the identification of many flood hazard areas that were not delineated on FEMA floodplain maps. While helping flood-prone homeowners better understand their flood risks, this information and designation as flood prone also was disconcerting to many Upper Dublin residents as their properties undoubtedly would be perceived as less valuable. At the stakeholder meetings several homeowners expressed this concern and sought to challenge the entire study. In contrast, community engagement was clearly positive for West Ambler as the routinely flooded sections of the neighborhood had not been officially mapped as flood prone and homes were not eligible for technical assistance and buyouts. The study and maps provide the means to make this happen.

The Ambler flooding study was conducted as a partnership between Temple University and the three municipalities. While funding was derived from multiple sources, the individual contributions of the municipalities and their willingness to hire the university were critical factors in securing financial and political support for the study. The university began forming these watershed partnerships back in the 2003 when it enlisted eleven municipalities to help finance a flooding study for the Pennypack Creek Watershed, also in suburban Philadelphia. The university raised \$100,000 from them, which it used to secure over \$1 million in funding from other sources, including a foundation and several federal and state agencies. Subsequently the university forged several other multi-municipal studies, including the Ambler Flooding study. Why has this been successful? This is most likely due to the Team's neutral/ independent status, student involvement, and comparatively lower cost may be contributing factors.

Acknowledgement

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Co, the possibility of a relational urbanism

Oscar GENTIAL, up - urbaplan, Switzerland

Prologue

Urbanism is a creative practice.

The constantly increasing number of parties and the shortened timeframes jeopardize the time of creativity and in return the time needed for creativity involves to extend the project process and to restrict the number of people sitting around the table. Therefore it is important to reconsider our methods.

The traditional practice in many design situations in Switzerland and in Europe in general consists of the implementation of processes such as competitions, competitive dialogues, etc.

Driven by panels of experts typically composed of professionals of urbanism and architecture as well as representatives of the project holders, these processes have the obvious interest to bring out a series of contrasting, creative and ambitious visions of a situation by submitting the same question to several teams. They develop their proposals along processes that normally last - from their initiation to their final conclusion - between nine or twelve months.

However, these kind of methods raise two critical issues related firstly to the control of the content – in that extent that the projects selection is delegated to a panel of experts, and secondly to the control of time. Moreover, because of formalism of its panel, we lose the opportunity of a truly dynamic and real-time confrontation of everyone's ideas.

Finally, the calendar of a competition or similar process engages the project leaders to “wait” for the results and their validation before continuing their reflections which will then be integrated into formal procedures, legal plans, regulations, etc. However, it is difficult to “freeze” the current projects for such a long period.

Alternatively, the project leaders could be attributed to a single private office the mission to develop a coordinated vision on the same site of intervention. This office would be responsible for defining the constraints and the opportunities of the site, and then would prepare several alternative development schemes that would come out with an overall strategy.

If it has the merit of simplicity and rapidity, this alternative is questionable because it would deprive the projects developers of the benefit of a creative ideas confrontation, which is undoubtedly essential to the emergence of an ambitious vision.

A third way is possible. It aims to combine the efficiency of a direct commission and the benefit of the confrontation of ideas in a competition.

The creative workshop allows both to open the debate on the challenges of the site in question, to focus the discussion on a significantly shorter period of time while preserving the decision control by direct association of projects leaders in the whole process. In this manner, it combines vision and pragmatism.

The creative workshop is based on the search for ideas immediately debated to bounce and make evolve them quickly. It includes several groups of players involved to varying degrees along the process (design group, critical group, moderator). They are gathered in a co-production working mode on a short and intense period.

Beyond the strict method of creative workshops, the approach seeks to develop a new vision of urbanism.

Through comparisons of realized experiences and references in urban planning and other creative disciplines (sciences, arts, etc.), we aim to theorize an approach praising uncertainty and process, revealing a critical issue in any collaborative and creative approach: how to bring out the ideas of a group?

1. Vision

A neighborhood, a city, or even a territory are living organisms shaped by the different players that constitutes it. Users, leaders, community groups, developers or experts (engineers, economists, architects, sociologists, etc.) are among those involved in both the development and the mutation of these organisms. The context in which an urban project is inscribed is made of a multitude of players with various opinions and skills. This diversity, which is *a priori* wealthy, could show signs of weakness when its management is inappropriate. Ideas coordination and confrontation play a key role in the project's quality and outcomes. It is therefore necessary for any project promoter to take into account the different perspectives and to build an ambitious and shared vision.

The creative workshop is a tool that comes to offer - for a short and defined period – a cell for intense exchange and brainstorming for different players, that aims to find a shared consensus, that eases potential issues, starts or revitalizes a project. Qs q result, the workshop enhances the project by confronting the skills and opinions of the multiple experts in real time on one hand, and on the other one brings out a common vision in a relatively short time.

The workshop directly questions our practices, our expertise, our interactions. It clearly reveals a critical need for sharing of knowledge. The evidence of a collective approach is not always implemented in practical developments of strategies or projects. Since forever, we find ourselves to share a meal, to play cards; why should we isolate ourselves to work?

2. Learning from crisis

The first creative workshops designed by urbaplan are linked to moments of crisis. We had to go beyond the traditional methods of urban planning to create transversal approaches between multiples players and to bring out new and shared proposals.



Figure 1: From crisis to praxis

The creative workshop, developed at first for this urgent start, has become a widespread practice that can be adapted to many situations and time frame. It imposes to better define the workshop as a process and to understand its possibilities and its conditions.

3. Atelier

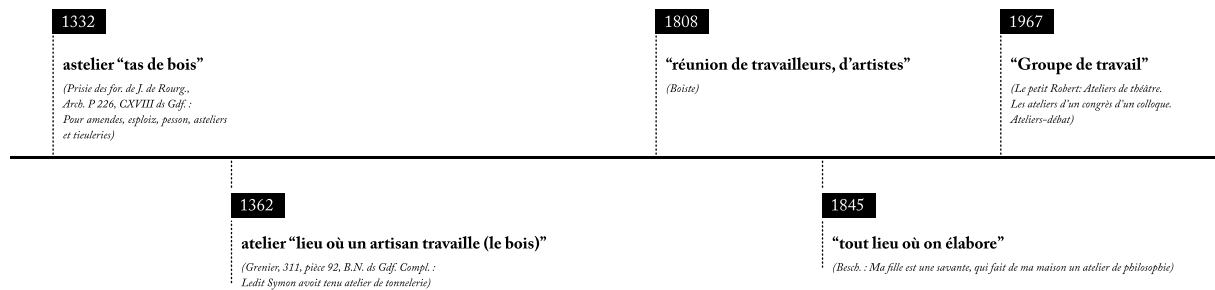


Figure 2: French etymology of "atelier"

The multiple meanings of the word "atelier" - which designates both a manufacturing site, a place for design or a group of people - reveals the evolution of what it means, changing every time the society changes its own concept of working - production and manufacturing - over the economic, social and political transformations (Encyclopedia Universalis, MONDZAIN-BAUDINET).

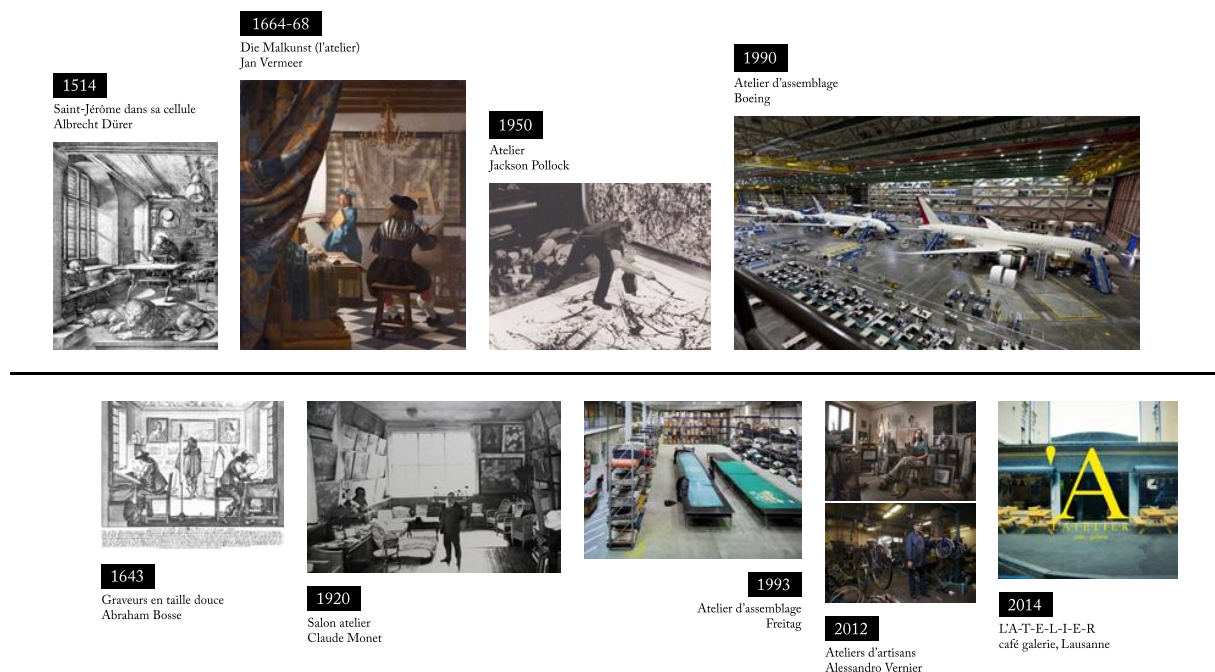


Figure 3: Chronology of the atelier

4. Tribute to process

How to bring out the ideas of a group? From art to science, creative processes can take various forms depending on the disciplines they're applied. Some similarities or differences can be found that may be vital supports for reflections and improvements of our own methods.

In a creative sense, the process requires to tell it as a story, to use it as a project. The storytelling becomes an evident communication tool and influences directly both the construction of the process itself and the strategic directions of the project.



"The creative process is a cocktail of instinct, skill, culture and a highly creative feverishness. It is not like a drug; it is a particular state when everything happens very quickly, a mixture of consciousness and unconsciousness, of fear and pleasure; it's a little like making love, the physical act of love."

Francis Bacon



"A process cannot be understood by stopping it. Understanding must move with the flow of the process, must join it and flow with it."

Dune, 1965
Frank Patrick Herbert

Figure 4: Quotes about process

5. Stimulation

Stimulation is part of any creative process. In the case of creative workshops, it emerges from the interlacing of intrinsic and extrinsic factors.

Regardless of a particular project context, curiosity is a creative engine for urban planners and more generally for all the players of urban fabric. This curiosity seems motivated by the understanding and analysis of complex mechanisms to raise up intervention strategies.

The circumstances of a workshop, its integration into a process and a context, its temporality, etc. create essential extrinsic stimuli that make each situation unique. The need to act in a crisis time – core of a dramatic action – results in a dynamic full of tension and intensity. Nevertheless, the uncertainties brought by every single situation constitute the principal stimulation. The dizziness that inevitably arises from dive into the unknown propels us into the creative craziness.

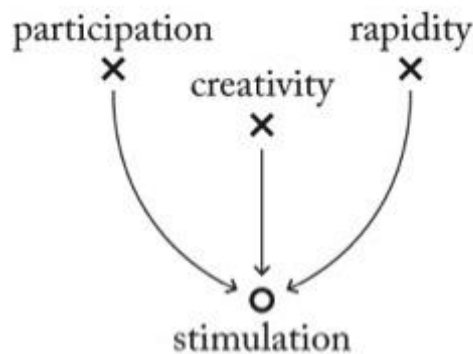


Figure 5: Stimulation

Three combined dynamics are the sources of stimulation of the creative workshop. Participation, or the ability to work together, to multiply forces. Creativity, or the invention beyond common sense, intuition or restrictions. Rapidity, or the intense compression of a working process period.

6. Simultaneity

“The effectiveness of urbanism depends on its ability to combine the imagination and the operational : to ensure the consistency between vision and action, willpower and realization, project and execution. These two registers have a singular propensity to discord: visions giving up the reality to prefer endless reveries; actions forgetting their purpose to be materialized on a case by case basis. That is why we must periodically retune them.” (QUINCEROT, 2013 – about the workshop *Nyon, cœur de ville* led by urbaplan)

The “*charrette*” is a widespread practice among designers – architects, planners, etc. Mostly suffered, couldn’t we use it in another way? Originally defined in the sense of an extensive work in anticipation of a possible delay in the execution of a project, its actual plural use reveals its drift. Indeed, the “*charrette*” means in North America a public meeting or a workshop devoted to a concerted effort in order to solve a problem by designing appropriate solutions.

The whole challenge of the creative workshop is to gather dynamics that traditionally can be dissociated during a process. The understanding of the challenges – framing, the buildings of arguments – storytelling, and the elaboration of solutions – design, are developed simultaneously.

The creative workshop defines a space-time where these actions take place “at the same time”, but also “with” multiple parties. These two notions – group and simultaneity – fit perfectly together in the prefix “co”. It becomes the essence of the vision of urbanism driven by creative workshops.

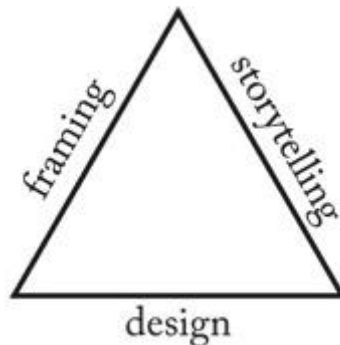


Figure 6: Simultaneity

7. Potentials

The workshop can take place during different phases of a process to achieve various objectives.

Firstly, it can be required in the case of a “crisis”. The concept of crisis can be shortly defined as the need for a decision for the proper development of an ongoing project. The workshop becomes a tool to deal with a looming uncertainty.

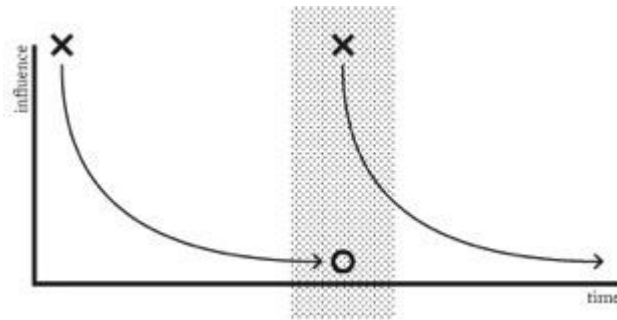


Figure 7: Crisis time

The need for the establishment of a workshop may be relevant when starting a project. It helps to define the mission, its specifications or a common vision to the different parties.

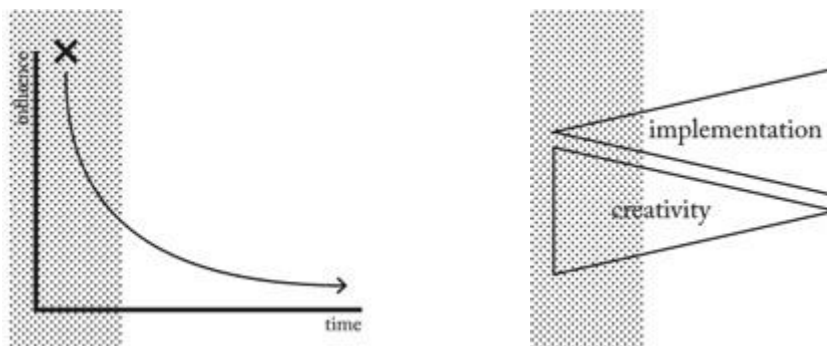


Figure 8: Start-up time

The workshop can then be seen as an opportunity to review a project under development. It is used as a downtime and allows to redefine the projects guidelines.

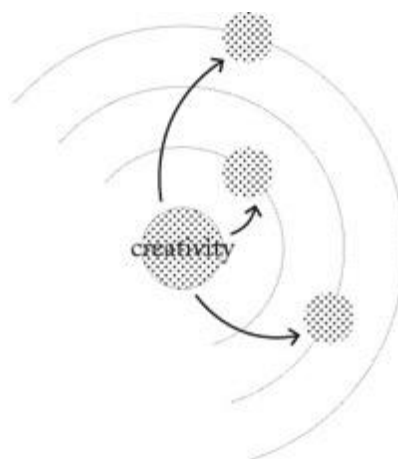


Figure 9: Downtime

8. Comparisons

There is no specific scale of intervention for the creative workshop. It may prove appropriate to plan the development of an entire region, a city, a neighborhood or a simple plot.

Numerous experiences allow us to validate this hypothesis which makes the creative workshop a-territorial: the Advisory Panels of the Urban Land Institute (ULI), the Charrette System of the National Charrette Institute, the Ateliers de Cergy or the Ateliers Nationaux are just a few examples.

Each situation and each method are unique. However, by developing a common base – type of parties, key moments in the process, etc. – we can try to compare them.

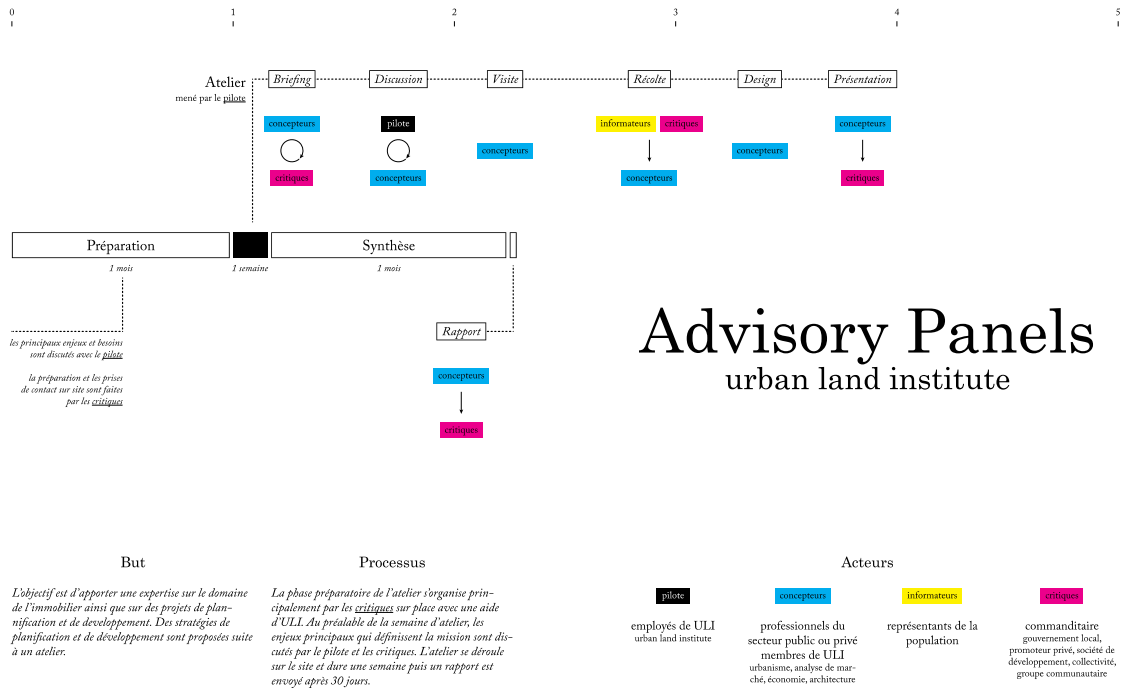
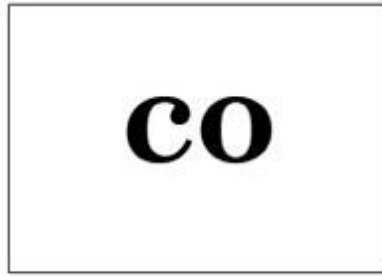


Figure 10: Example of comparative panel – Advisory Panels process - ULI

9. Tribute to uncertainty

Beyond the strict method of the creative workshop, the approach seeks to develop a new vision of urbanism.

The iconic image of the hand of Le Corbusier over the model of its *Plan Voisin* - a tabula rasa of the *Marais* district in Paris – demonstrates the omnipotence and the determinism of the planner. The creative workshop reveals a new vision – collaborative and flexible – based on a constant uncertainty in both the aimed objectives and the proposed results. Uncertainty is the new keyword of this open and collaborative urbanism.



Determinism	Uncertainty
Rigidity	Flexibility
Omnipotence	Collaboration
Closed process	Open process

Figure 11: New vision of urbanism

10. Leader and experiences

The experiences of creative workshops conducted by urbaplan are numerous and their objectives originally defined have upgrading. The creative workshop is now applied both in times of crisis, at the beginning of a process or during the development of a project. Nevertheless, it can not be used *a priori*, it always meets a specific need and can in no way be inevitable in every situation.

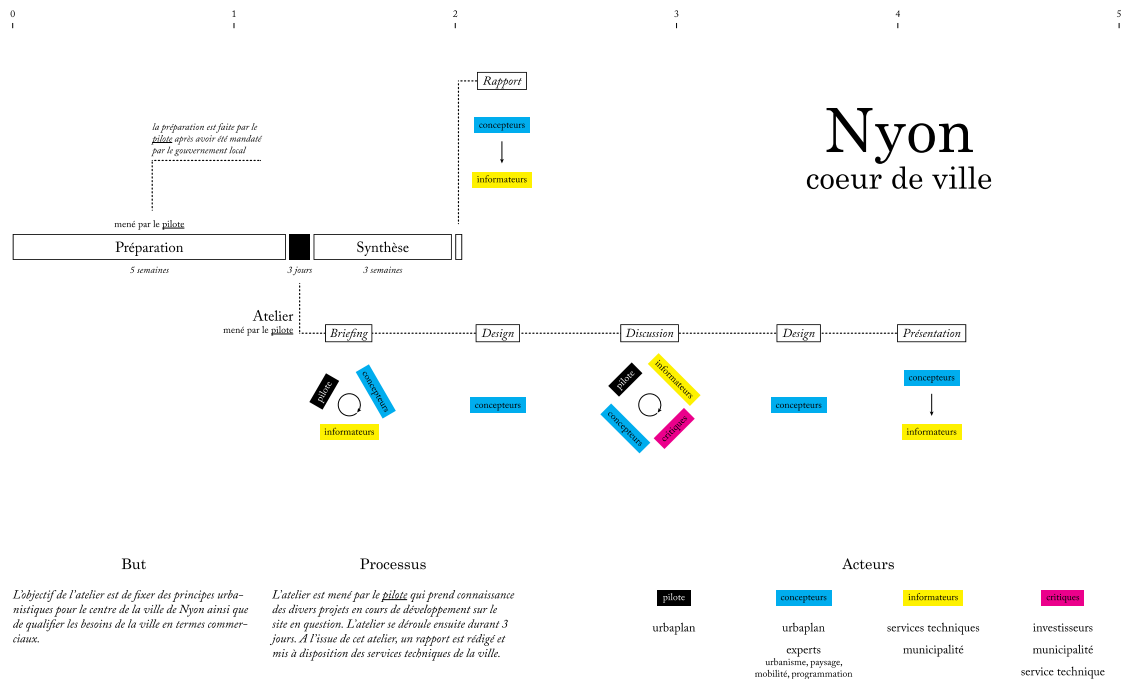


Figure 12: Example of comparative panel – Nyon cœur de ville, urbaplan

The keys of the creative workshop remained the same: to prevent a sideslip - rapidity, to ensure the projet quality – creativity – and to integrate external criteria – participation.

Participants of the creative workshop are diverse and numerous. They represent multiply interests depending on the situation and provide specific skills.



Figure 13: Participants à l'atelier créatif

The role of the “leader” has largely been clarified and strengthened since the first experience to the latest. The leader is more than just a moderator. Indeed, the moderator has a mission of neutrality, detachment regarding the particular situation and synthesis; while the leader is involved in the project, so he has the responsibility that obliges him to make choices. To describe the ideas shared with the participants is not enough; he needs to take responsibility for the choices made and the proposals designed by the whole group.

11. Postulates and conditions

To ensure its success, the creative workshop is based on different postulates. We need firstly to recognize the value of reflection and creative work in order to release a potential of exploration that is also guaranteed by the respect of the informal values of the workshop – work-in-progress, unfinished. Then this exploration helps to build the overall coherence of the project by incorporating the multiple factors and actors.

Finally, the workshop is based on a progressive enlargement governance, consultation or decision “circles”. The exploration is presented and debated from the bottom to the top – step by step – to ensure its legitimacy and its unifying role.

Conditions must also be met to ensure the smooth running of the creative workshop. The concern either the chosen location or the equipment provided that the number of participants, their attitudes and their relationships with each other.

12. Conclusion

The uncertainty is both a success factor – by the excitation it represents – and a difficulty factor – as the solution is not obvious. The stimulation is intrinsically linked to the success of a creative workshop. This philosophy helps to develop an approach that results in a technique that was built naturally, over the situations and projects, almost in spite of us.

The creative workshop reveals and carries a new vision of an urbanism that has no predefined form but chooses the uncertainty as a stimulant. Its ultimate aim is to generate relations. They define what's next.

“The opposition of intelligence and intuition tends to ignore the fundamental part of an immanent intelligence which is explained in the operating practices in which it engaged and that is transmitted through collective participation (savoir-faire transmissions).” (DEBAISE, 2004)

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Note:

All the comparative panels of creative workshops conducted by urbaplan or other parties realized for this research are not displayed in this document. The full research, led by up – reflexive agent within urbaplan – will be published in September 2015 and will be presented at the 51st Congress ISOCARP 2015.

Submap: a conceptual and physical model of a spatial database for collaborative planning

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1 Introduction

This paper presents the second stage of a three stages PhD research investigating the potential of Geographic Information Technologies in promoting learning during collaborative decision making processes in planning. The first stage of research (Giupponi, 2015 under review) explored the limitations of specific applications such as Scottish National Statistics and Area Profiles in representing the lived space of communities during decision making. This was done by looking at the content of the spatial database used in Area Profiles and by identifying theoretical shortcomings within its conceptualization. The lack of spatial data semantically related to the subjective dimension of space is explained both pragmatically and theoretically: on one side, it is not practical to integrate subjective representations of space including multiple scales and temporal dimensions to formal data structures developed in existing geographic information systems while, on the other side, limited understandings of human cognition have ignored the eventuality that scientific evidence witnessed by planners “might not always be relevant to their plans” as other factors influence important cognitive processes of decision making.

This research responds to the need of adopting information technologies for creating imaginaries of cities capable of symbolizing relational and subjective spaces while influencing decisional processes. The online governmental technology of ‘area profiling’ is scrutinized for its ability to represent relational space and “enhance, rather than replace, dialogue” (Hoch, 2015); Giupponi (2015, under review) finds that the conceptual design of area profiling ignore the relational dimension of space and an innovative technique is presented in this paper that address the pragmatic and theoretical challenges of doing so. Cartographic design principles are applied for creating ‘Submap’: a map –and the techniques needed to create it- in which the spatio temporal dimension of subjective space is represented and symbolized. Examples are then provided of different applications of this technique using a pilot study in the Gorbals, Glasgow. Eventually, a conceptual model for a relational spatial database relating the data content of Submaps to the data content of traditional area profiling is proposed to explore the possibility of crossing between the quantitative and qualitative chasm (DeLyser, 2012) and access holistic representations of cities which could trigger sense making during decision making. Before moving on with the physical modeling of such database, in the next stage of research, a series of Submaps will be validated for their ability to promote sense making activities in different Communities of practice in planning (local communities, planners, architects, housing associations etc.) by comparing the breadth of the dialogues promoted by traditional area profiles to the breath of the dialogues promoted by traditional area profiles and Submaps.

2 Background

2.1 Urban regeneration and social displacement

“We are not building cities for people to live in; we are building cities for people to invest in” (Harvey, 2015)

In the last three years, Inner London boroughs have moved 50000 families to outer London neighbourhoods as a result of soaring rents (Douglas, 2015). This process is not new to urban planning history: in 1946, Sir Patrick Abercrombie’s Clyde Valley Report stated the need to disperse between 250,000 to 300,000 people from central Glasgow (Maver, 2014) in order to address urban decay. After 70 years, Glasgow remains ‘root-shocked’ from such mass displacement making it the perfect example for scholars writing about the idea of planning as intrinsically dealing with “problems from the past”. In the last thirty years, UK growth strategy for post-industrial cities like Glasgow has been the one to literally ‘make

space' in well connected city centres for Financial Districts and affluent communities. In 2011, Glasgow was in the European top fifteen Global Financial Centres which measured 75 financial centres across the world (Z/Yen Group and Qatar Financial Centre Authority, 2014). One year later, In 2012, Greater Glasgow scored the highest level of self-reported poor health measures among 33 other European cities (Grey et al, 2012) calling for a critical analysis of the relationship between growth and prosperity.

Spatial decision making processes (SDMP) and the Communities of Practice (CoP) involved in them, are often the focus of studies in urban research willing to understand the phenomenon of social displacement in relation to urban regeneration which undergo the umbrella term of 'gentrification studies' (Atkinson, 2000; 2008). Political economy approaches can illustrate the role of markets and governments in implementing values and rules which do not only influence SDMP (Smith, 1979;1987) but also affect the implementation of information technologies within them (Georgiadou et al. 2010). Diversely, this research takes a socio-ecological approach to the phenomenon of gentrification treating cognition and the environment in which SDMP occurs as important variables for creating broader discourses onto the paradoxical positive relationship between urban regeneration and social inequality. In fact, however enlightening results from political economic studies could be, their ability to improve SDMP is limited by the ability of SDMP of improving themselves. It is then suggested that there is a need to better understand learning in SDMP acknowledging both the role of organisational inertia (Hannan et al, 1984; Kelly et al. 1991) as well as the potential of 'reflexive social learning' and 'evaluation' in achieving effective SDMP (Sanderson, 2002) . Informal interviews to senior planners revealed that assumptions exist about the ability of the planning system to systematically 'pick up' lessons from the past to avoid "reinventing the wheel again". This kind of thinking is based on the hypothesis of information being automatically processed during cognition which contrasts with the idea that no boundaries exist between the 'processor' and the 'information' setting the grounds for a critical engagement with the topic of learning in planning. It is not the aim of this paper to study learning in SDMP on a theoretical level, but instead, to show examples and techniques of how information technologies in existing planning practices can be designed to address a key activity of reflexive social learning : sense-making.

2.2 Learning from the past: the idea of collaboration

Planning authorities willing to learn lessons from past regeneration experiences have engaged in promoting more socially inclusive and collaborative approaches involving stakeholder engagement to ensure that local communities have a voice in planning. However, moving from manipulative and consultative stages of participation to the empowerment of communities (Arnstein, 1997) has demonstrated quite challenging (Lawson L. et al. 2010) calling for an exploration of better strategies considering the paradoxes of control and collaboration in governance (Sunduramurthy et al. 2003, Whitehead M. 2003). In the same way, the non-transformative nature of collaborative processes legitimating traditional power structures of SDMP and reinforcing existing inequities (Plummer et al. 2007, Swyngedouw 2005, Van Bortel 2009) call for deeper and more detailed analysis of the existing codes and forms 'making' collaborative planning in order to allow for a 'purposeful' manipulation of these codes in the view of improving collaboration strategies. In the attempt of doing so, this research isolates the spatial information –grouped into different spatial datasets- which is currently used for area profiling in Scotland Neighbourhood Statistics (Scottish Government 2015). Their ability to provide adequate spatial representations helping their 'users' to better understand the societal needs of a particular area and promote collaboration is put under scrutiny theoretically and practically. A conceptual model is eventually suggested that could enable the integration of subjective spatial data to traditional database used for area profiling.

2.3 Urban governance through spatial technologies: metrics and new metrics

“Any account of a potential technology needs to avoid reading governmentality into outcomes (Cherney, 2004) and assuming that a particular technology will deliver a particular rationality. Instead, it needs to pay attention to the actual engagement of actors with such technologies and to the contingency of particular cases, rather than assuming that the implication of adopting a particular policy tool is effective ‘conduct of conduct.’” (Rydin, 2014)

After having set the need of improving learning in decision making processes in urban planning based on the emerging problem of social displacement and its related phenomena of polarization, marginalization and segregation (Kohn, 2013), the spatial unit of the neighborhood is isolated to carry out a theoretical and practical investigation into how the social dimension of lived space can be represented during area profiling. Three limitations of current representations of the spatial unit of ‘neighborhood’ are found in the literature: subjectivity, multiple scales and temporality (de Ham et al. 2013). These dimensions of space find some theoretical ground in Lewin’s ecological psychology (Burnes et al. 2013) which emphasize the univocal relation between the individual and his/her environment explaining how one shapes, rather than dominates, the other. Following this, objective representations of spatial realities are criticized for their inability of representing the relational dimension of space opening up new avenues to find different techniques leading to the production of spatial representations inclusive of relational subjective spaces. Considering that “what human beings are and will become is decided in the shape of our tools no less than in the action of statesmen and political movements” (Feenberg, 1992), the role of the tools adopted during spatial decision making in shaping our cities should not be underestimated. In the same way a magnifier allowed us to better understand the functioning of human organs moving beyond the limits of a cognitive system with poor sensorimotor skills, remote sensing technologies such as aerial photography, transportation monitoring, environmental sensors and cameras, allowed us to access information about cities we would not be able to access as limited by the constraint, for example, of being unable to be in two different places at the same time. However, there is a subtle difference between these two technologies: while a magnifier put the object and the observer in a direct relationship by improving the quality of the lenses through which we look at the world, remote sensing is, by definition, ‘remote’, and remove the physical contact between the object and the subject. Spatial representations of cities produced using remote sensing technologies have then the peculiarity of removing the physical relationship between the observer and the phenomenon and, whenever a physical connection is broken, something like a representation is required (Chemero, 2011).

From this perspective, planners, unless planning their own lived spaces, deal most of the time with representations of spatial realities which is what the critical work of Lefebvre on the three parts of the dialectic of space (lived, abstract and conceived) discusses (Lefebvre, 1991). It is then argued that representing both abstract and lived spaces during decision making can accelerate a holistic understanding of cities and eventually improve decision making. Before proceeding with such endeavour, it is important to identify the mechanisms, structures and rules of spatial representations in planning as well as the methods and elements used to produce them. This is done in Giupponi (2015, under review) by dissecting the content of the spatial datasets used for area profiling by the Scottish Government (2015) and showing the gap within the existing database structure of spatial information which can be semantically related to the societal need of ‘relatedness’ (de Haan et al. 2014). Moreover, direct observations¹ of contemporary efforts in providing ‘alternative’ representations of cities, revealed that existing representations of relational space, because of their informal data structure, cannot be integrated to existing formal spatial database which exist in planning

¹ The researcher has followed the initiative of community mapping organized in Glasgow as part of the bigger Future city agenda worth £24m (Future City, 2013) and got actively involved as a volunteer in a Community Mapping project for a Charity for people with learning and physical disabilities.

support systems like Geographic Information Systems, remaining therefore marginal tools to decision making in planning.

It is then iterated that reviewing the design of Spatial Information Technologies (SIT) and spatial data infrastructure (SDI) could be “an important experiment in governance that may be transformational not only to our identities as planners, politicians, or communities but also to the relationships that are shaped between us” (Miller, 2005). These tools are adopted to facilitate and mediate abstraction processes of future spaces (Feenberg, 1992) leading to the generation of “alternative ways of knowing to open up new possibilities at the level of interpretation and represent a vehicle to change, learning and transition” (Legendijk et al. 2014). Legendijk et al (2014), uses the word ‘metrics’ to describe abstractions used in planning for the representations of spatial realities; metrics can therefore be interpreted as the spatial datasets of variables relating to employment, access to services, education, pollution in a specific spatial unit (e.g. the datazone in the UK, or the Census Tract in the US) like n. of people using the local library, n. of people holding a degree, distance to contaminated site etc. In this paper new metrics are presented which can be used to collect, store and retrieve spatial information on ‘lived space’ by adopting the codes and forms of Information Systems implemented in current practices.

3 Background

3.1 Previous work in representing subjective spaces

The definition of ‘lived space’ as “directly lived through its associated images and symbols” (Lefebvre,1991:39) suggests that lived spaces are essentially subjective and collection methods of subjective data belong to qualitative science. The field dealing with representations of qualitative data in GIS is known as “Qualitative Geographic Information Systems” (QGIS) and spans between the fields of machine learning, artificial intelligence, feminist and public health research. The introduction of qualitative data in GIS enabled, for example, the exploration of natural language variations associated with different spatial variables (Shariff et al. 1998, Xu 2007, Eisenstein, 2014) as well as the identification of gender, age and cultural differences in spatial activities patterns and experiences of place (Kwan 2000, Mennis et al., 2013, McLafferty, 2005). These studies demonstrate an emerging approach in research for integrating qualitative data and qualitative analysis to traditional GIS defined by Jung et al (2010) as Computer Aided Qualitative GIS (CAQ-GIS) which “enable researchers to take advantage of the geo-visualization and spatial analysis capabilities of GIS as well as the qualitative analysis tools available in CAQDAS”.

Methods adopted in Qualitative GIS are essentially mixed as they can merge ethnographic methods and narrative analysis to spatial statistics (Pavloskaya 2002, Matthews et al. 2005, Bagheri, 2013, 2014, Curtis et al. 2014). Research in Qualitative GIS has been on the rise since 2002 and date back to the early work of Hagerstrand (1970) on time geography as a discipline in which the geography of everyday life is understood in terms of “the interaction between space and time and their joint effect on the structure of human activity patterns in particular localities” (Kwan, 2002). Time geography analyses human activity patterns and movements in space-time requiring detailed individual data and representations of space including the dimension of location, timing, duration, sequencing and type of activity; these are often used to explore migration, residential mobility, shopping travel and commuting behaviour useful for neighborhood planning.

A Qualitative GIS mixed method approach fits the purpose of this research, enabling the ‘lived space’ of neighborhoods to be represented in tandem with existing quantitative approaches which mainly draw on the ‘space-time of human activities’ originally developed with the purpose of exploring patterns in household activities and travel behaviour (Kwan 2000, 2006, 2014; Weber et al 2002, 2003).

3.2 Representing phenomenological 'lived space': from limitations to opportunities

The concept of phenomenological 'lived space' is approached via the notion of neighborhood. The vision of a neighborhood as self-sufficient container was introduced by urban ecological theories of the early 20th century like the garden city (Howard's, 1902) and Burgess's concentric model, and has persisted as a sociological orthodoxy until recently (Chaskin,1997); two main problems have emerged in the literature as a result of adopting representations of neighborhoods as bounded, static and a-temporal phenomena summarized in Kwan (2012): the first is known as the uncertain geographic context problem (UGCP) and it arises because of 'the spatial uncertainty in the actual areas that exert relevant contextual influences on each individuals under study'; the second is known as the modifiable area unit problem (MAUP) in which 'analytical results are biased by the zoning scheme'. Meanings and definitions of neighborhoods have clearly evolved as limitations of different interpretations were being unveiled. Van Ham et al (2013) makes a synthesis of the necessary shifts for carrying out studies on neighborhoods considering both UGCP and MAUP providing a theoretical framework for this work in which (selecting only a few of his recommendations) :

- Studies need to focus on the relationship between the built environment and the subjects of the neighborhood
- Subjective data should be considered
- The temporal variable should be considered (people's and places' histories)
- The spatial variable should be considered to broaden the neighborhood's horizon and include other spatial context which matter in addition to the residential neighborhood

Following this, it is understood why Qualitative GIS methods mapping subjective spaces of neighborhoods should directly engage with communities to spatially represent subjective and experiential spaces. In the context of information technologies for planning, these methods undergo the umbrella term of Participatory Geographic Information Systems (PGIS). PGIS methods aim to engage non experts to identify the spatial dimensions of social and cultural landscapes (Brown et al, 2014) via the implementation of different methods developed in virtual environments and digital game with the overall aim to improve participants' immersion by focusing on "the depth and breadth of user experience" (Gordon et al. 2011), therefore enhancing participation. PPGIS is described by Tulloch (2008) as "the field within geographic information science that focuses on ways that the public uses different forms of SIT (Spatial Information Technologies) to participate in public processes such as mapping and decision making. Private GIS-based businesses and public GIS-based services are growing in cities adhering to the smart city agenda and often provide tailored packages (phone applications) of map-based software tools. Users of these toolkits are citizens and there is a need to ensure that such information can be used to inform decision making processes at a city planning level. However, the formal structure of traditional Planning Support Systems such as Scottish Neighborhood Statistics discourages the utilization of unstructured spatial data ,such as subjective mappings, during traditional decision making processes. In order to address this barrier to collaboration, the following section shows how subjective spatial data could be formalized via the creation of 'Submap': a map of subjective spaces moving beyond a positivist approach to human geography. Examples of Submaps are provided in this paper and they will be validated for their ability to trigger sense-making in different Communities of Practice (CoP) in the next stage of research. The paper concludes with presenting a sketch of how a relational database including both subjective spatial data and official Scottish Neighborhood Statistics would look like opening up the possibility of integrating quantitative and qualitative for area profiling.

4 Extended Mapping and Submap

4.1 Extended mapping: maps as processes rather than knowledge

Cartographic design principles are used to guide the creation of new spatial representations and the first step in cartographic design is to consider the real world distribution of the phenomenon which is being represented (Slocum et al, 2014:240). Based on a literature review on space time geography and neighborhood research, it is understood that this is not possible when representing relational space since there is no such thing as a ‘one real-world distribution’ in subjective space but multiple ‘real worlds’ are accepted. From this perspective, spatial representations themselves are not interpreted as final products but as *processes* for investigating individual meanings of relational space and the possible existence of a collective relational space by representing cumulatively different individual spaces and identify patterns: this agrees with Montello (2002) who suggests that maps do not necessarily communicate knowledge but rather, stimulate and suggest knowledge through the transmission of information (Slocum et al. 2014). In order to distinguish this kind of mapping from the mappings in which spatial realities are defined and evaluated we define these mappings ‘Extended mappings’ for their ability to contribute to a process of sense making rather than merely communicating spatial knowledge.

In the second step of the design process, Slocum et al (2014) , the purpose of the map should be determined. As stated above, the purpose of this work is to add on representations of subjective spaces to decision making processes while considering the spatio-temporal dimensions of lived space. Neighborhood studies associate social networks, spatial occupation patterns, activities, residential history, perceived safety, perceived neighborhood, perceived landmarks etc. to the concept of lived space .By taking a pragmatic approach, nine face to face 60 minutes interviews to planners from four different Local Authorities in the West of Scotland were carried out to discuss the relevance of different socio-spatial concepts to decision making in planning in order to test their validity in a practice based context. These interviews resulted in the selection of fifteen elements to generalize subjective space (Table 1).

Before showing how the spatio-temporal dimensions of these elements can be represented using cartographic devices, it is important to take another crucial step of cartographic design which could strongly influence the breadth of sense-making during decision making processes: identifying the intended audience.

ELEMENTS OF A SUBJECTIVE MAP (SUBMAP)	
<i>Submap spatial</i>	
	My home
	My people
	My perceived neighbourhood
	My spatial movements in a typical week
	My perceived changes (positive, negative, indifferent)
	Place/s I think require change
	Place/s I want to stay the same
	Place/s I go often to in my free time
	My problematic areas (where I experienced problems in the past)
	My food shop/shops
<i>Submap spatio-temporal</i>	
	Residential history since date of birth
	Future prospect of moving out the area? Reason? Where to?
	How many hours per day outside your home
	How many hours per day outside your neighbourhood
	How many times away from home for more than one week in one year

Table 1: Selected elements representing spatio temporal patterns of subjective relational space

4.2 Sense Making and Gestalt psychology

“Because we do not believe there is any single correct ‘solution’ to such challenges –of contemporary urban theory-, our questions are intentionally open-ended. The goal, we repeat, is to open up horizons for thought and action, and through collective dialogue, investigation and debate, to begin to explore these horizons.” (Brenner, 2010)

The identification of the audience of a map is another important prerequisite to map design; different user groups will in fact have different previous experiences with map reading as well as with the phenomenon being represented. It is possible to imagine how a map of the geology of Scotland could differ if it was for a 10 years old or a 25 years old Geology graduate student. In a context of collaborative planning, representations of subjective lived space are intended to address different communities of practices (CoPs) involved in collaborative decision making such as community groups, architects or researchers. The common denominator between these groups is their interest in the socio-spatial processes of a specific area and their will to engage in some kind of sense-making activities. The purpose of subjective spatial representations is to create representations of relational space to different communities of practice involved in decision making processes of regeneration at different stages and trigger different sense making activities that can be used “ through collective dialogue, investigation and debate to begin to explore horizons for thought and action” (Brenner, 2011). In order to achieve this, it is important to get some basic understanding of how our cognitive vision system organizes spatial information and, both consciously and unconsciously, influence our generation of meaning. According to Gestalt psychology (Wagemans et al. 2012), Bertin’s (1983) principles of spatial organization such as closure, proximity, similarity are important criteria of relevance of spatial information for all users and choices on color, contrast, spatial hierarchies, size and other visual variables can be manipulated to make sure that confusion and clutter do not interfere with users’ spatial organization processes. Just to illustrate the relevance to users of carefully selecting different visual variables in the spatial representations of lived space some examples are provided.

In Figure 1 the Gestalt principle of ‘proximity’ is used to identify certain patterns of utilization of place during the free time of three different subjects. In Figure 2, different areal size shows the diversity of perception of neighborhood while in Figure 3, different linear size, color and spacing show different mobility levels at different scales for three different users. In Figure 4, the qualitative phenomena of ‘perceived changes’ (good or bad) is represented using the visual variable of color hues and, through the Gestalt principles of ‘similarity’ one understands that there is more positive rather than negative elements in the map. After demonstrating how different visual variables can influence sense making, the following paragraph illustrates how the challenges of representing multiple scales and temporality have been addressed.

4.3 Submap: a techniques for including multiple scales and the temporal dimensions in the spatial representation of lived space

No research has previously attempted to provide spatial representations of lived space which collect and represent data both at multiple scales (from local to global) and consider the temporal dimension within GIS. Creativity was essential to address these challenges and develop a mapping technique called ‘Submap’ for collecting and representing spatial data at multiple scales and including temporality.

Figure 5 is a simplified version of an A2 Submap which is used to collect data for surveying the fifteen different elements of lived spaces illustrated in Table 1. Four scales (local, city, national and global) are included in four different quadrants (Fig. 6) of a 2D Cartesian plane in which one unit is 16 pixel. A grid of 16X16 pixel is then overlaid on the Cartesian plane; through this simple manipulation, it becomes possible to collect, digitize and represent in one single database spatial datasets existing at different scales by using a coordinate system in which one unit (one side of one cellgrid) is 16 pixel. Open street data is used for the

background maps at different scales in order to avoid copyright issues. Figure 6 gives a better idea of the layout of the different scales in the four different quadrants of the Submap. Each 16x16 gridcell can be then defined by two integers using the Cartesian Coordinate system. The 16 pixel unit was carefully selected in reference to the size of the Submap in order to ensure that one cell could locate states in the global map and identify buildings in the local map. The choice of the paper size was influenced by the need of moving beyond the constraint provided by the size of common desktop screens limiting sense making activities to the common practice of zooming in and zooming out different scales denying the possibility of relating different scales. On the left and on the right sides of the simplified version of the Submap in Fig 6, two boxes are used to collect spatio-temporal (e.g. residential history since birth, willingness to move and time spent out of neighborhood and out of city). Fig. 7 is an example of an 'extended mapping' developed for the representation of space-time fields for different subjects.

These illustrations represent the first trial of the method and their aim is to refine existing map design and test surveying strategies. Although only three people were surveyed in a Park in the Gorbals in the Glasgow it is possible to observe similarities and differences in spatial perception and utilization patterns. By collecting core demographic data pooled from the main National Surveys such as the Household Survey, it is possible to explore whether patterns vary between different spatial and/or demographic variables. For example, if we consider the three space-time fields in Fig 5 it is possible to speculate areal size of perceived neighborhood to the different space time fields in Fig. 7. A bigger sample is required to test the procedure and collect representative data: a total of twenty community groups operating in the area have been identified by accessing the local library and will be contacted for collecting a sample which can be used to see whether further exploration of this technique could unveil unknown socio spatial correlations.

Digital mapping and door to door surveying are not seen as feasible methods for lack of resources and time but their advantages in collecting a more representative sample and improve the efficacy of the digitization process is recognized. After a larger sample is collected, Gorbals's Submap series, including a selection of visual displays similar to the ones presented in this paper, will be showed to different communities of practices in order to determine whether users find these maps useful and informative which is the final step of cartographic design process (Slocum et al. 2014).

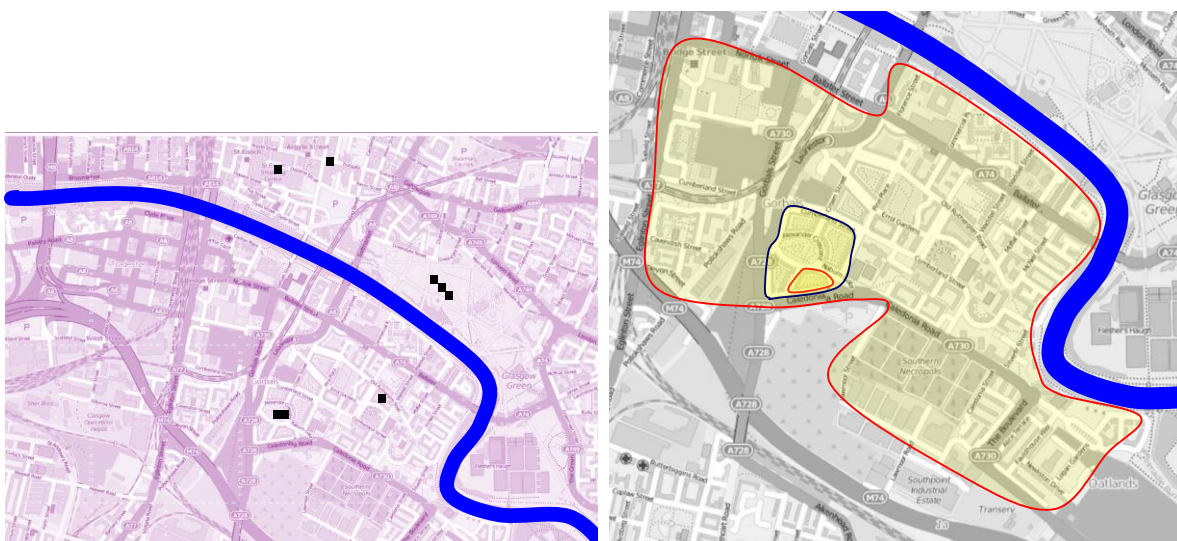


Fig. 1 (On the left) 'Myplaces' at local: cumulative for three Authors ; Figure 2 (on the right) 'My neighbourhood' for three different Authors. Both are snapshots from Fourth Quadrant in the Cartesian plane (the local scale map).

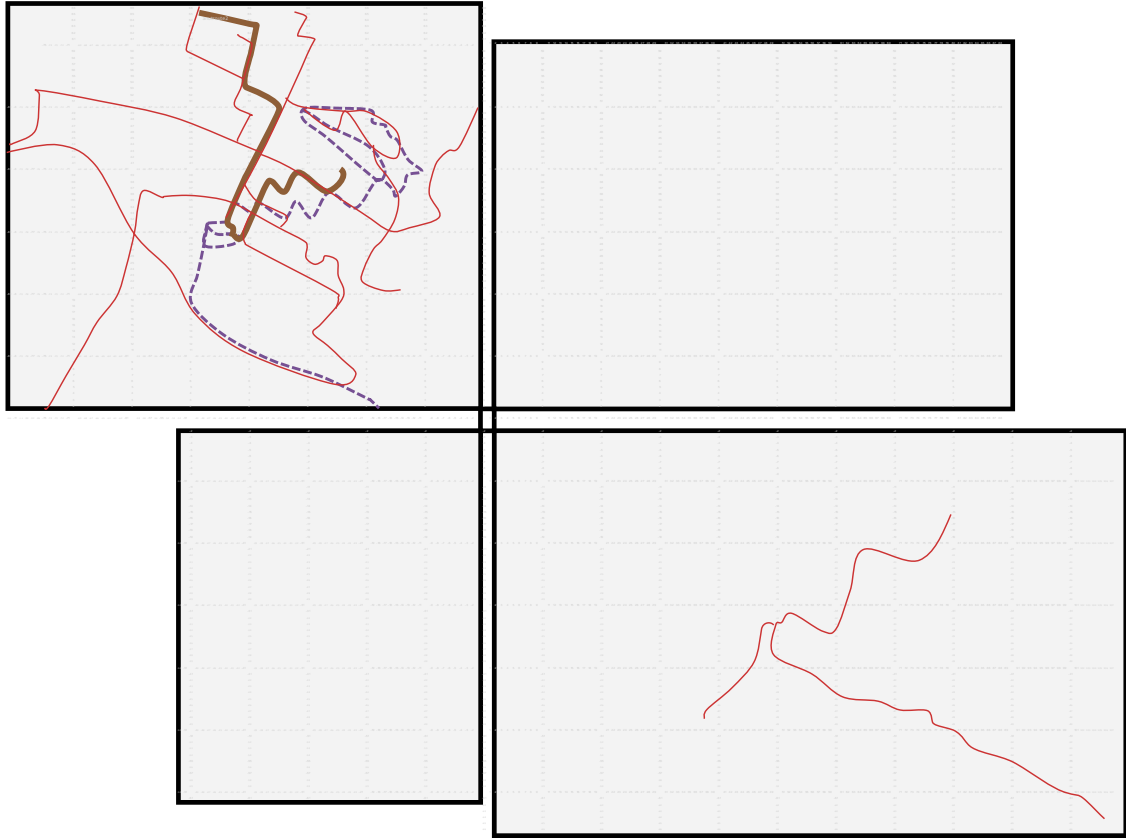


Figure 3 “My routes” in one typical week for three different Authors distinguished by different graphic devices

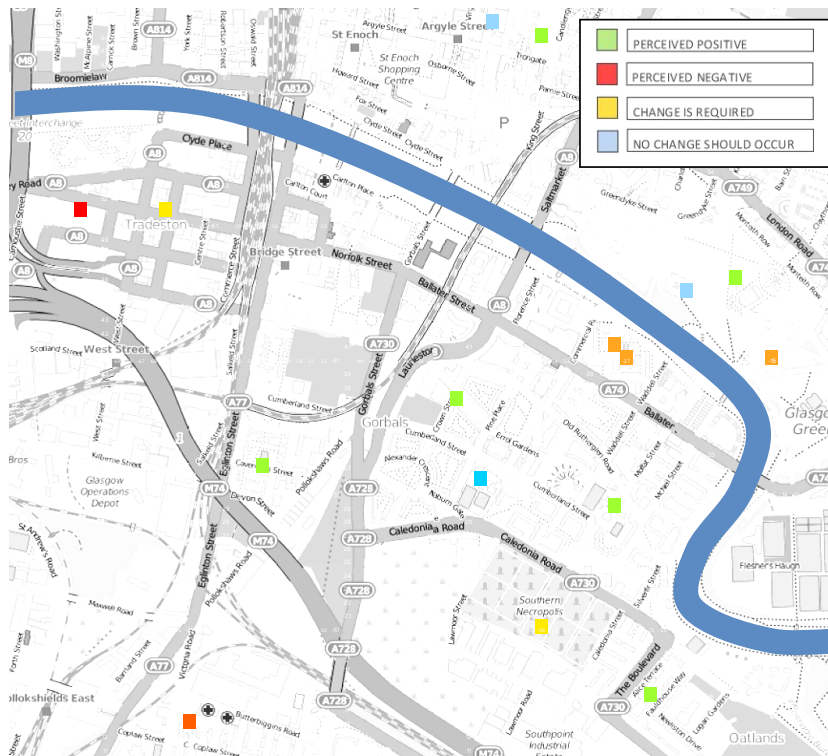


Figure 4: Perceived changes (for all authors)

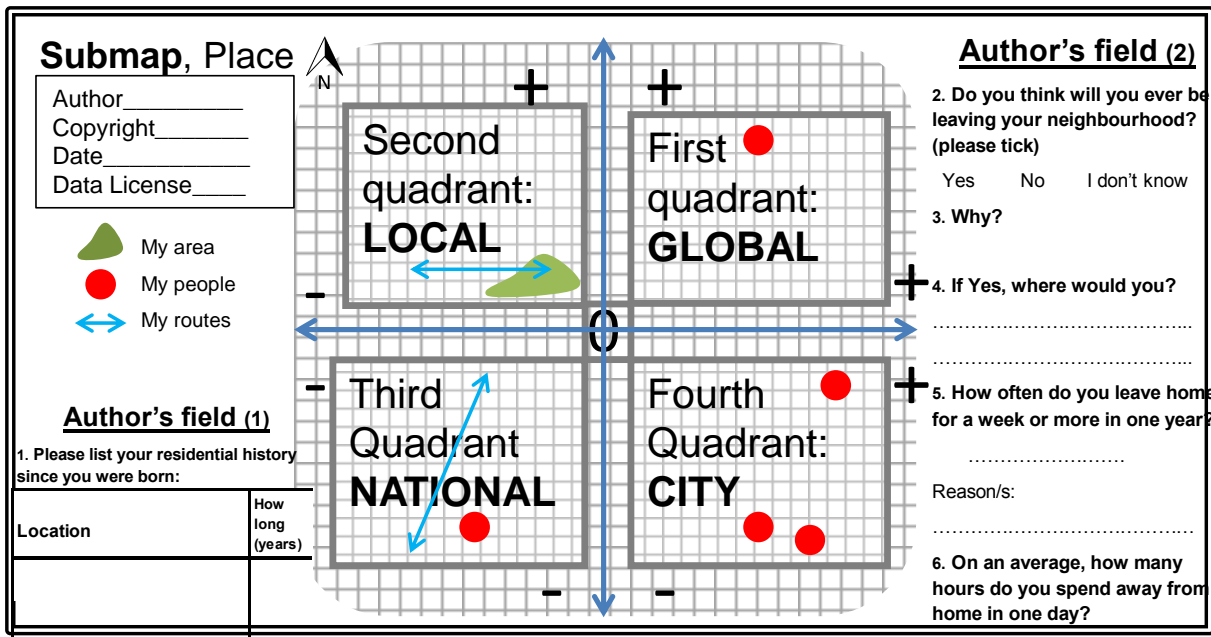


Figure 5: 'Submap': elements and simplified layout (original size is A2)

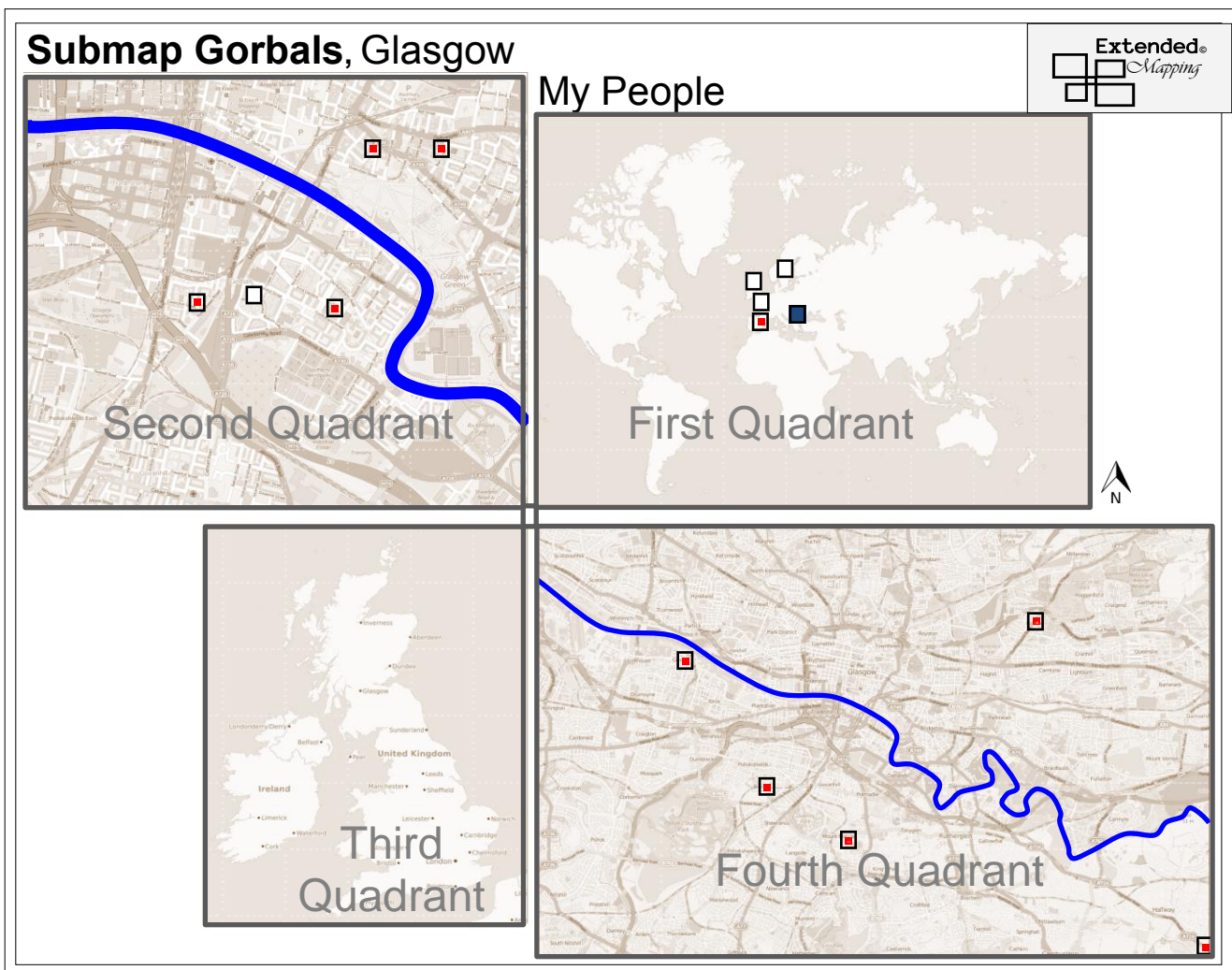


Fig.6 'My people' Submap showing the location of kinships at different scale for three different authors

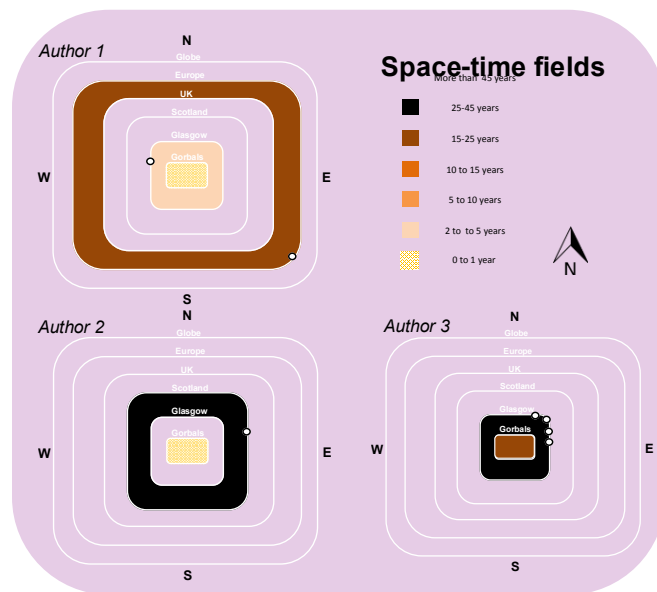


Fig. 7 'Extended mapping' for visualizing different space-time fields for different authors using residential history (from birth)

5 Conclusions and future research: A relational database for inclusive area profiling

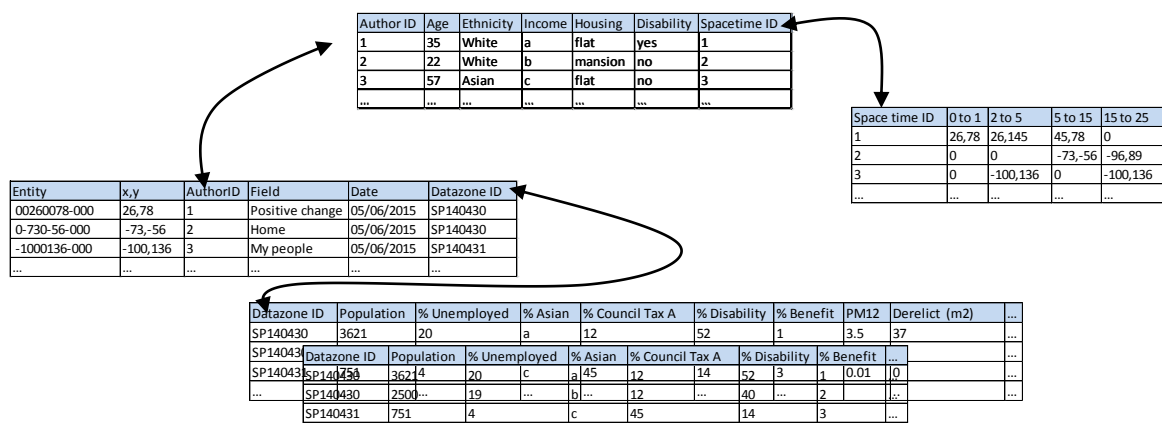


Figure 8: An hypothetical relational database for collaborative planning including subjective lived space

In Figure 8 an hypothetical relational database for GIS able to retrieve and represent both relational and non-relational spatial data is presented. This conceptual modeling is based on the idea of relating subjective mappings to demographic profiles and datazones. An important requirement of this relational database is the one of 'interoperability' between quantitative and qualitative spatial data. Submaps have been designed with this in mind by overlaying a grid system to a two dimensional Cartesian plane. Every cell in the grid system is given unique coordinates while being associated to a datazone and every spatial entity mapped by any author is instead associated to a cell in the grid system. In order to avoid replication of data, every spatial entity mapped by every subject is uniquely identified by a 12 digits code in which the first six digits are used for including the coordinates of specific spatial entities and the last three digits for numbering each entity uniquely. By relating these two datasets, Geographic Information Systems can store and retrieve quantitative and qualitative spatial data opening up new avenues for area profiling and monitoring which have not been explored before. More importantly, the symbolic inclusion of subjects in subject-free database is seen as a step towards the consideration of the paradox of 'control and collaboration' in planning.

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Księży Młyn in Lodz, Poland - an example of a successful rehabilitation thanks to the social engagement

Małgorzata Hanzl

1. Introduction

The project of the social rehabilitation of Księży Młyn in Lodz, Poland conducted by the Association for the Heritage Protection of Lodz from July 2010 to July 2011 was focused on community empowerment of the small neighbourhood of 19th century workers' residential estate. The project was financed by the Stefan Batory Foundation as a part of the program Democracy in Action – Participation. The housing unit historically belonged to an industrial complex of Scheibler's textile factories, which once occupied a portion of over 70 ha of the downtown of Lodz. The estate, along with the huge cotton mill, are located in the very core of the complex and pertain to its most representative part. The layout of workers' houses, which are lined along the composition axe perpendicular to the edifice of the spinning mill, is considered the most characteristic part of the whole area.

During the transformation period the workers' houses, belonging formerly to the factory, became the municipal property. The initial renovation of the first house started in 1999 did not bring the expected results and a desired income of new inhabitants did not take place. In 2007 the workers houses were planned to be redeveloped to a gated residential estate, and inhabitants were promised new flats in the blocks of flats in the outskirts of the city. However the crisis made these plans impossible and the inhabitants were left behind without any decision about their future. The buildings, not renovated since their construction in the end of 19th century became deteriorated and the problem was more and more persistent.

The initial frustration of citizens living in Księży Młyn estate in the period when the social rehabilitation project occurred the main problem to be solved. During the year between July 2010 and July 2011 the project team conducted numerous activities with the objective to provide support and advice in order to let the inhabitants to become an active stakeholder in the further decision process with regard to the estate's future. The initial aim to create a common strategy of redevelopment of the estate was very difficult to undertake and the consultations and the actual work on this project could only start in the last phase of the project. However difficult did this occur, the Strategy of redevelopment was finally elaborated with the participation of the local citizens. Yet the most important results were the social capital and the start of the rehabilitation project by the Municipality of Lodz. Directly after the end of the social project, thanks to the popularisation of the topic as a result of its promotion and local citizens initiatives, the local government decided to assign a budget and to establish an administrative unit in order to start the renovation works. The project continues successfully until now.

The current paper presents details of the social rehabilitation scenario, evaluates the outcomes and provides conclusions with regard to other projects conducted for similar neighbourhoods.

2. Initial diagnosis

The project was conducted for the part of the workers' estate of the former Karol Scheibler and Ludwik Grohman's United Factories in Księży Młyn Street in Lodz. The delimitation of the site results from the presence of a concise unit of urban fabric perceived as a factory housing estate of clearly idiosyncratic character and specific spatial features. Moreover the site selection was a consequence of the former attempts to convert the area into a gated residential estate deprived of the current social housing component. The voice of the

previous inhabitants of factory houses was missing in the debate on the future of this site, challenging also from the heritage conservation perspective. There had been no attempts to solve the problems of the estate with the participation and empowerment of its inhabitants until the beginning of the project discussed in the current paper.

2.1 Historical background

Started in 1853 by Karol Wilhelm Scheibler, the textile enterprise developed in several phases to finally evolve in 1921 into a concise industrial complex of Karol Scheibler and Ludwik Grohman's United Factories, which covered the area of 500 ha and took 1/7 of the total surface of the town in its borders from 1914 (Ginsbert 1962). The enterprise considered the largest in the world at the time (Małagowski 1998), the total cubic footage of all its grand industrial plants exceeded 1 000 000 m³ and it was served by its own spur line (Ginsbert 1962). The name Księży Młyn (Priest's Mill) was derived from the former use of the site owned since the 15th century by the Lodz parish and where a water mill was located (Koboжек 1998). The first part of the workers complex erected between 1873 and 1875 along with the remaining edifices of the mills factory was further extended in the period 1884-1885 to Fabryczna street. Moreover at the turn of the Eighties and Nineties subsequent houses were built in Tylna, Widzewska and Kątna Streets. In ca 1888 in the total number of 46 buildings belonging to the factory there were 900 flats inhabited by 4785 people (2912 adults and 1873 children). Next buildings were added in 1891 to reach the total quantity of 65 (Pytlas 1979). The merger of two family enterprises in 1921 gave beginning to the United Factories, which continued until the World War II. After the war the enterprise restarted as a state-owned company, which since 1962 was known as Uniontex. The complicated history of the property changes: communalisation and afterwards privatisation during the period of transformation led to the final shutdown of the enterprise in 2006. While several of its properties have been since renovated and reused for various purposes, including housing and the whole range of services and industrial production, many premises still remain abandoned and ruined.

2.2 Composition and cultural values

The current elaboration refers to the initial phase of the development of Scheibler's factory houses constructed between 1873 and 1885 (Fig. 1). The first part of the estate comprised 18 two storey workers houses distributed in three parallel rows of six buildings. Centrally located alley planted with lime trees reveals along the axis of symmetry of the largest spinning mill of the factory and leads to its characteristic main entry topped with a clock. Another row of buildings faces Przędzalniana Street. The first extension comprised a set of seven further workers houses of which five were larger than the former ones. All unplaster brick buildings were accompanied by a characteristic c-shaped one-floor back-structures initially hosting outhouses and storage. The residential complex comprised also an industrial school attended by the workers' children, a canteen, a grocery shop, a hospital, a fire depot and a play hall. The estate was surrounded with a decorative iron fence, and there were guards posts next to the gates. The backyards contained gardens, initially planted by teachers of the local school and factory foremen.

The characteristic rhythms remaining until now the main idiosyncrasy of the estate are probably the reason for often repeating comparisons to the military barracks. The rhythms of buildings, windows and doors openings and panels on identical rude brick walls, along with the rhythmical planting of trees in the main alley and in the smaller lime alley in Koci Szlak, all these features offer the local unique atmosphere. The rhythmicity of enclosures and clear distinction between public and semi-private spaces provide the notion of order and stability.

The recent alteration of the sociometric layout of the estate in the form of spontaneous extensions of the backyards structures convey to the picturesque image of the estate. As a result the former uniformity of the site has been replaced by a range of smaller enclosures. The notion of idiosyncrasy of the estate is further enhanced thanks to the foliage of trees planted along Magazyńska street.

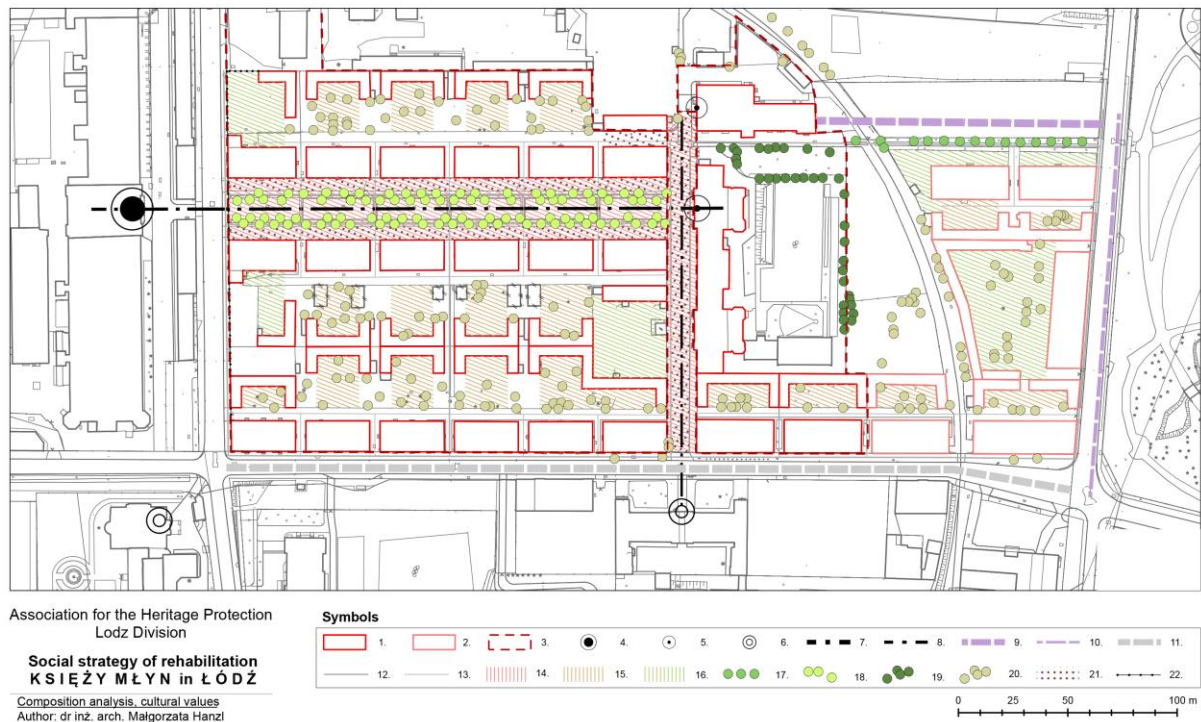


Figure 1: Composition analysis and cultural values. Symbols: 1. individual buildings in the Heritage Register, 2. entry A/44 to the Heritage Register, 3. areas listed in the Heritage Register. Composition values: 4. distant landmark, 5. landmarks – closing a composition axe, 6. local landmarks, 7. main composition axis, 8. perpendicular axis, 9,10,11. edges, 12. main paths, 13. remaining paths. Enclosures: 14. public, 15. semi-private, 16. private. Vegetation: 17. row of lime trees along Koci Szlak, 18. Lime alley – Księży Młyn Street, 19. old trees next to the school, 20. remaining trees. Other symbols: 21. preserved pavements, 22. iron-work fence.

The composition analysis of outside links next to the aforementioned relations with the edifices of New Spinning Mill and of the play hall in Przędzalniana Street, as well as the connections with the villa formerly belonging to the Herbst family, brings around the role of clear edges of the site: Fabryczna Street with Źródlińska Park on its opposite site, Przędzalniana Street which nowadays carries heavy traffic, and border with Textorial Park business centre.

2.3 Social situation

While circa 75 percent of the current population of Księży Młyn moved from other regions of Lodz, 12 percent have been living there since their birth. The remaining group are successors of the former employees of the Enterprise, who inherited rights to communal dwellings. During the project period the 25 workers' houses comprising 421 flats (including 4 social units) and 6 commercial premises, were inhabited by 932 people (in 2007 after Hanzl 2011). The popular opinion points at the deprivation and low social status of this small community, which require verification in order to avoid stigmatisation.

Considering all the four factors required for the delimitation of the area of rehabilitation: unemployment, poverty and living conditions, crime and education, in the case of Księży Młyn these conditions are fulfilled except for the level of crime which is not high, mainly because of the location distant from major urban nodes. The social criteria listed above are accompanied by degradation of urban structure, such as technical degradation of buildings, lacks of infrastructure, etc. Further characteristics includes: considerable share of elderly people, living on their limited pensions, which affects the general financial condition of the

neighbourhood. Next factor is the high level of unemployment, which generates negative social attitudes.

Poverty is considered the most common cause of the social degradation. At the same time the lack of sufficient funds for basic needs influences also other aspects of functioning of the family and community, including absence of proper education of children. Księży Młyn is considered one of those regions in Lodz where the poverty is inherited. Next common phenomena is failure to act and demanding attitudes as an effect of long-term unemployment and lack of interest in starting a permanent job. This by turn may lead to further pathology, such as crime and transfer of passivity to children. The phenomena, very popular among people of law education, gets stronger in the situation of structural unemployment, e.g., like in Księży Młyn, as a result of liquidation of the workplace. Here however the perceived level of safety is higher because of the presence of multiple interpersonal relations, this observation is confirmed by the location of multiple spots where children play. In addition the presence of strong neighbourhood relations makes the estate a lively place, where inhabitants meet, hung around together, socialise with each other, discuss perched on benches, etc – different than in most of the estates coming from later periods or constructed recently.

Moreover the positive image of the neighbourhood is influenced by several institutions of culture located in the proximity, the most significant among them: Book Art Museum in 24 Tymienieckiego Street, Lodz Art Centre in 3 Tymienieckiego Street. There are also periodic events, such as Księży Młyn Summer Resort in Grohman's Villa in Tylina Street. In the estate there are few institutions and firms: Post Office, Daily Stay House for Elderly People, Venaverte – Advertising Agency, Księży Młyn Publishing House, Posting Bookshop, Association of Children Friends (by Łódka Association), Information Point Księży Młyn, Career Development Office, Bajkad grocery shop, Ikona Art Gallery and Rapacholin Consortium – an art workshop. The school which continued the traditions of vocational school funded yet by Karol Scheibler, has been closed and the buildings are being renovated for the Academy of Fine Arts. In the beginning phase of the project there were two associations in the area: Citizens Association Adamus gathering mainly the owners of dwellings, which reactivated thanks to the project, and Women Club of Księży Młyn which was then officially registered.

2.4 Events preceding the project

The major redevelopment projects of the estate previous to the current ones:

1. a pilot renovation of the building in Księży Młyn 2 by the Municipality of Lodz (1999),
2. plans to move the inhabitants out to newly built blocks of flats in Widzew (Olechów), followed with buildings' renovations and conversion of the estate into the apartment complex by a private developer,
3. plans to recast Księży Młyn as a creative industries district within a framework of application for Lodz European City of Culture 2016.

During the renovation finalised in 1999, the pilot building was equipped with all the housing installations, including central heating. The dwellings were to be sold within a public bid, however due to the lack of interested buyers the building was in large part converted into social housing unit. The failure of the marketing of the pilot renovation led to the abandoning of the former plans of conversion of the estate into a bohemian neighbourhood. In the period of this project the plans to include Księży Młyn to the List of UNESCO cultural heritage were started. The survey conducted for this project showed that circa 40% of inhabitants want to remain in their flats, similarly to 15% of elderly people who also were to stay. The temporary moves out were to be scheduled for the renovation duration only.

In 2007 the Municipality of Lodz (the Resolution of the City Council of Lodz No. XXII/464/07) started preparations to a large-scale project of giving over of 25 buildings in the heritage

estate to a private developer firm in exchange for their renovation and providing new dwellings for the former inhabitants. The heritage site were to be converted into gated apartment complex. These plans were severely protested by the Association of Księży Młyn Residents Adamus, which gathered the 53 flats' owners. Eventually the project failed on the one hand because of the world's financial crisis and on the other because of the negative publicity. The legal situation introduced with the aforementioned Resolution constrained individual renovation activities or transactions. .

As a result of the preceding events, at the moment the current project started the inhabitants' confidence in the local government activities in the neighbourhood was virtually null. Former occurrences had conveyed to the demanding attitudes among local citizens, accompanied with utter lack of self-confidence when it referred to influence on the situation or improvements of their own living conditions. One of most important reasons for their helplessness and vulnerability was the inability to execute the proper maintenance of the buildings and their surroundings. The failure of the functioning of the managing unit led to progressing deterioration of the technical state of houses' substance and thus to the worsening of living conditions of the dwellers. As the citizens reported even the basic repairs of gutters, downspouts or deck flashings had required submitting repeating claims regardless the fact that lack of the proper and prompt intervention resulted in a more substantial damage afterwards, such as dampness of the walls or fungal coverage. Also the state of pavements was continually raised as an element which is left behind without proper maintenance. The aforementioned project of the conversion of heritage housing estate into the higher standard apartment blocks led to the emergence of two different approaches: people who wanted to improve their living conditions through displacement to another location and people who, in most cases having formerly acquired their flats, felt attached to the place and expected improvements of the situation.

3. Methodology of public participation in the project

The project initially aimed at *“the implementation of a concise program of the redevelopment of the area, which would be based on a comprehensive analysis of the initial state and potential development scenarios, as well as a large scale social debate on the topic, and which would be socially acceptable, both by the local citizens as well as the economic, cultural and all the remaining stakeholders from Księży Młyn and more generally from the city of Lodz”* (excerpt from Democracy in Action – Participation, Project initial proposal).

The initial attitudes of citizens in the estate, a direct consequence of the former unrealised plans described above, made crucial the tasks related with enhancement of mutual relations and interpersonal contacts within the estate. In order to start working efficiently the priority for the coordination unit had to be gaining trust and empower local citizens.

Thus in the early stage of the project the event for the “Andrzejki” celebrations was organised with the objective to enhance the integration of the inhabitants. A huge advantage to the program was a location of the consultation point in a local gallery Ikona. The direct proximity facilitated its availability for citizens and enabled direct consultations and individual discussions, this way providing a handy tool for explaining and clarifying all doubts, and gaining trust. Besides, other local institutions such as the Book Art Museum and Lodz Art Centre, actively participated in the preparation to meetings and exhibitions, providing location and cooperating in the organisation of events and projects. Moreover, in order to complement the participation process the website <http://naszksiezymlyn.pl> was started, which contained the current information on the project as well as gathered knowledge, photographs, etc. All exhibits were also available online.

In the project's framework, the following forms of direct participation were implemented: (1) plenary discussions, (2) individual consultations, (3) picnic targeted at all the citizens of Lodz, (4) neighbourhood picnic, (5) Future Game workshop, (6) mental map – a survey targeted at local school pupils, (7) workshop inspired with the Future Search Conference. A comprehensive scenario of all the events in the project is presented in the Figure 2.

3.1 Events and exhibitions

One of the crucial parts of the project became the exhibitions and events prepared by local citizens themselves and supported by the project organisers. This practice started from the initial celebration of “Andrzejki” (Andrzej’s name day) which gave the opportunity for the Club of Women of Księży Młyn to form. As part of the project Księży Młyn – Kaufhaus Interactions, the citizens from both neighbourhoods: Księży Młyn and Kaufhaus in Ruda Śląska in Silesia prepared two expositions answering the topic “Creative neighbourhood or deprived housing estate”. The Kaufhaus exhibition was presented in Lodz, in Art Books Museum and Księży Młyn exhibit was displayed in Silesia (Morozowska 2011). Both presentations were warmly received both by local citizens as well as the representatives of the local government. The events became also occasions to meet and discuss similarities and differences of both rehabilitation sites.

The project team participated in and co-organised several events addressed to the general public of Lodz. Beginning with the Picnic in Księży Młyn in September 2010, which served the promotion of the concept of Lodz City of Culture 2016, the Neighbourhood Picnic in 2011 was co-organised by the Project group. Such events serve the promotion of the site, they aid establishing the group of visitors enhancing their links with a site, they also provide the opportunity for all the citizens of Lodz to recognise the neighbourhood’s values and eliminate potential doubts referring to the choice of place for living or working.

3.2 Workshops and other methods of direct consultations

During the course of the project there were many workshops and direct meetings in order to put together an arrangement which could be possible to implement and satisfactory for all the stakeholders. Apart of regular plenaries and individual or group meetings, which were hold following the needs, the last phase of the project included several workshop sessions.

The concluding workshop consisted of three meetings. In the beginning of the first one, inspired with the methodology of the Future Search Conference (Wates 2014), participants together with a moderator knowledgeable in the site’s history revisited all the major events from the past of the estate, recalling their personal memories from those times. During the next phase they analysed strengths and weaknesses of the area, which was followed with a discussion and brainstorming on the vision of the best future. The last phase referred to the action plan for the formerly elaborated vision. The second meeting addressed the future of the site using the scenario building method. The two proposed alternatives of the redevelopment of the site were constructed, which was followed by a choice of the best path. The last meeting served the definition of priorities of development and its potential constraints (Boryczka 2011).

Also in the last phase of the project a workshop was conducted with 25 pupils of 4th grade of a local school. Children participating in this event were asked to draw their personal maps of the estate which afterwards served the discussion on positives and negatives of the site and on their dreams and wishes. As a kind of a complimentary activity yet in the beginning phase of the project, students of BArch course Architecture Engineering from International Faculty of Engineering, Technical University of Lodz directed by local citizens made photographs illustrating the deficiencies of the technical state of buildings in the estate and of their direct surroundings. Photographs, which answered the most common complaints of the citizens, were presented in the projects website and in the form of a catalogue.

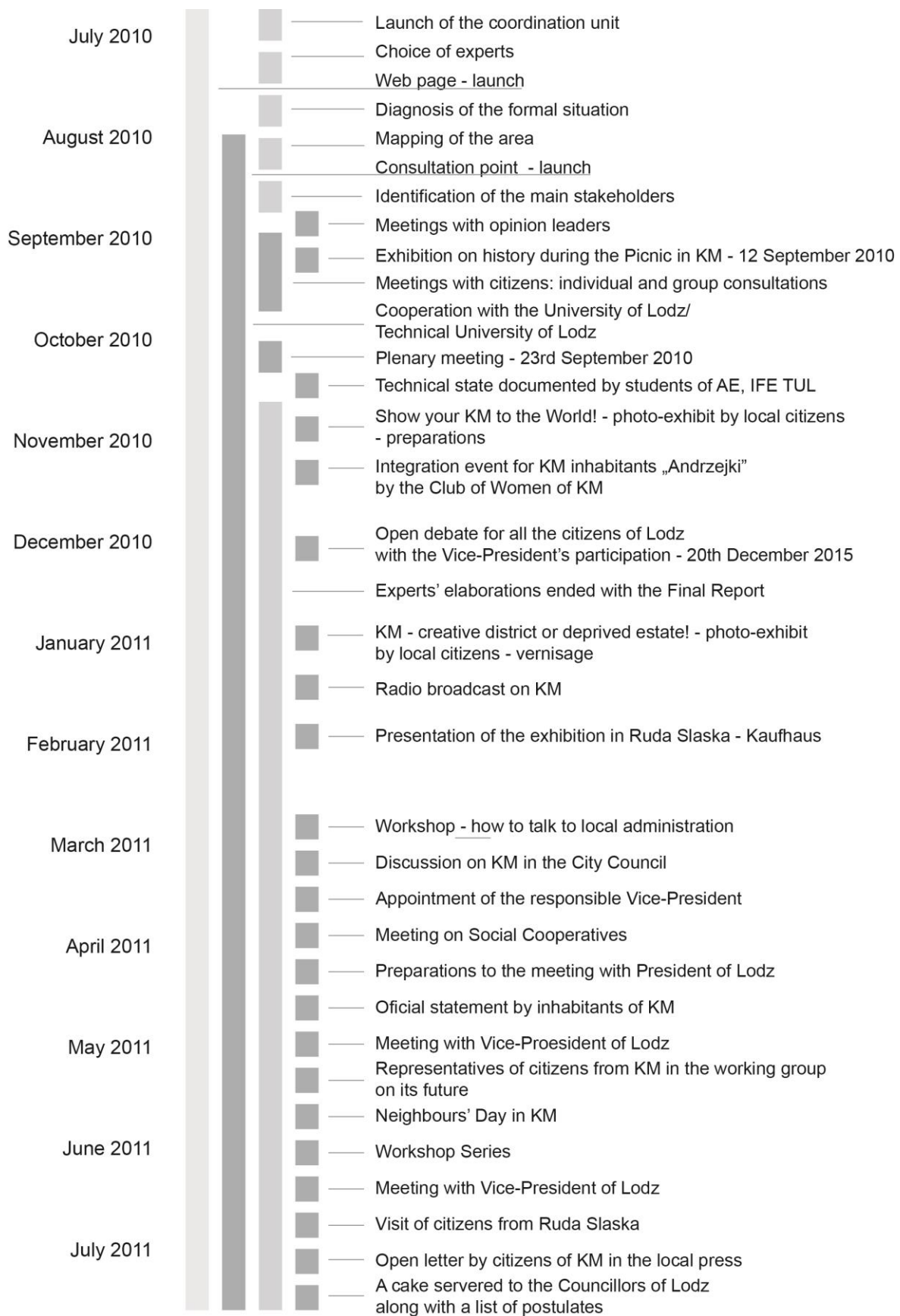


Figure 2: Graphic presentation of the scenario of social participation in the KM project

3.3 Other methods of empowerment

In order to enhance the citizens' skills with regard to communication with the local authorities, legal regulations and writing successful formal documents, as well as organisation, there were a few meetings and consultations with specialists organised. The results of these meetings were afterwards visible in the changed conduct and increased self-confidence of the local community.

4. Outcomes - evaluation

Among multiple activities performed in the framework of the project major efforts were put into the empowering of local citizens and encouraging them to undertake initiatives on their own. The efforts brought about positive effects in terms of increased self-confidence of the local citizens, which exhibited itself in the idea of inviting representatives of the local government to the debate on problems of inhabitants of Księży Młyn. The members of the Club of Women of Księży Młyn baked several cakes on this occasion and brought them to the town hall. Another spectacular outcome was the enhancement of the social capital, which manifested itself in the reactivation of associations formerly present in the area: Association of Citizens of Księży Młyn Adamus, and formation of new ones: Club of Women of Księży Młyn.

As a result of the current project the former strong and clearly opposite attitudes of readiness to leave and hopelessness of those who owned their flats, weakened and for a large group the initial desire to move out was replaced with the attachment to the site and declared willingness to become proprietors of the dwellings they lived in.

In the beginning of the project substantial difficulties resulted from the aforementioned distrust of the citizens, bordering with hostility. A barrier was a consequence of several instances of negligence. First the former pledges given by the local administration with the support of the private investor, to exchange old dwellings for new ones, were not fulfilled. Second the deficiencies of the proper maintenance of buildings, along with the constraints to inhabitants' initiatives and the feeling of hopelessness which followed, led to the negative approach to all forms of institutional support. These attitudes put off the actual start of work on the common strategy, the first few months being spent on building the social capital and mutual trust. The efforts and care to ensure proper collaboration finally turned the project into success, which as Sanoff (2000) emphasises is the value of consensus.

The survey performed directly after the last phase of the final workshop enabled citizens to submit proposals of immediate measures and long-term solutions for Księży Młyn. In the first group the most urgent tasks are the renovations of buildings and pavements and installation of central heating in all the dwellings. A substantial part of the proposals referred to the organisation of renovations. In the respondents opinion selling out the flats and creation of housing cooperatives may enable their owners participation in the modernisation costs. On the other hand those inhabitants who want to move out should be given such an opportunity. The inhabitants complained on the presence of social housing in the estate and on the negative influence of their locators' behaviour. Another remark referred to planting new trees and rehabilitation of existing green spaces. Moreover creation of art galleries, services, and gastronomy could attract tourists and other potential users to the estate. Furthermore local citizens were also asked about their ideas on more distant future of the estate. In their opinion the neighbourhood should become a creative district, which would integrate arts and crafts, based on the values of the local heritage, inviting Lodz designers and using uninhabited flats. The program should be complemented with cyclical cultural events, art exhibits, etc. Other proposals conveyed ideas on opening of a design school, development of tourist services and infrastructure: souvenirs shops, gastronomy, etc, as well as development of more comprehensive cultural programs based on the current environmental and historical assets of this part of the city. Some elements of similar concepts repeated also during the

workshop with local children. All the inhabitants' answers emphasised the need for immediate actions, which should comprise investments in renovations of heritage substance but also organisation of the efficient cooperation between all stakeholders and efficient promotion addressed to citizens of Lodz and potential visitors.

The final strategy prepared as the main part of the project outcomes by the experts involved in the project used the results of the survey. At the same time the last phase of the project, thanks to its publicity attracted media and public interest. The started cooperation between local groups of citizens and the Municipality of Lodz continued after the project end. The Decree No. 983/VI/11 of the Mayor of the City of Lodz of 22nd July 2011 set up the Team for the Rehabilitation of Księży Młyn. In the team, headed by the Vice-President of the town Agnieszka Nowak, there were also three representatives of the local community, as the result of the current project. A separate administrative unit was created for the estate, which since has been successfully managing its renovation. The unit's head Arkadiusz Bogusławski was engaged because of his former experience of the work for Zgierz Municipality on a similar topic. The Resolution of the City Council of Lodz No. XLV/843/12 on Integrated Program of Rehabilitation of Księży Młyn was approved on 4th July 2012. Since that time the renovation of three houses has started. There were two public bids open to the local artists for the spaces in the estate, which attracted several newcomers. Besides the works on modernisation of pavements and planting new vegetation began, along with the installation of new urban furniture following a comprehensive project.

Along with the renovations of the urban structures Księży Młyn became a place of multiple and various cultural and artistic events. The tradition of the organisation of Neighbourhood Picnics in Księży Młyn has been continued since the project times. There are several fairs of handcraft and artistic works organised each year for various occasions, which attract more and more visitors. Other events comprise meetings with interesting people, discussions with representatives of local government, urban games, workshops on various topics, concerts, historical walks and photo-walks, etc. Along with feeling of the places for artists the profile of events shifts towards more sophisticated artistic events, like plain-air painting or audio-walks with mp3 files presenting historical stories of the site. Apart of the official webpage of the estate http://uml.lodz.pl/miasto/rewitalizacja_i_zabytki_/ksiezy_mlyn/ there are now also several others referring to the variety of activities which take place there.

5. Conclusions and recommendations

The case study project turned out successful. As it is proved above the undertakings by the local government continued the once established course of actions. The artists and craftsmen accepted the invitation and look for new opportunities creating a special cultural atmosphere. The social capital which resulted as the effect of the project has been continued and developed through a network of direct personal relations. The atmosphere of trust facilitates collaboration in the redevelopment process. The role of the experts, who were involved in the project was mostly advisory. The direct and very tight collaboration with local citizens turned out successful. After the project termination its impact helped establish an efficient platform of collaboration with the local municipality, which owned or managed all the houses in the estate, and financially contributed to their maintenance and renovation along with applying for EU funds.

Citizens treated as partners of the local administration have willingly accepted the on-going changes. Multiple redevelopment concepts, which were elaborated for the housing estate of Księży Młyn in the former projects as well as within the currently discussed one, and both by the project experts and in the discussion with local citizens, involved similar solutions. In all of them the major task, which had to be performed immediately, was renovation of historical structures, including both residential buildings and their direct surroundings. The profound analysis and multiple discussions on the site renovation led to the situation that local citizens were able to articulate both immediate measures and long-term visions. Actually the current redevelopment process conducted in the neighbourhood since the end of the project may be

perceived as its direct continuation. Nearly all the ideas defined in the project strategy have been implemented. The management unit which was created after the project termination continued the project's course of action and used the social capital achieved as its result.

The bottom up character of the project was one of its main features, which strongly influenced the course of actions. The projects objectives were the same as the general goals of the Association for the Heritage Protection (TONZ) that had been confirmed in its former activities focused on the popularisation of the local tradition and heritage and their protection. As it has been mentioned the initial hostility and lack of trust was replaced with the cooperation and mutual respect. The reorganisation of the local administration structures and establishment of the unit located in situ helped to continue the direct contacts.

In conclusion this case study clearly demonstrates the role of cooperative attitudes in relations between various stakeholders of the rehabilitation process. The importance of the social capital and mutual trust cannot be overestimated. When local citizens are given opportunity to stand for themselves they are able to define solutions which are both short and long-term, taking into account even the most complex preconditions. In consequence the changes of physical development are accepted and the neighbourhood quality may improve unhindered.

6. Acknowledgements

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Housing Cooperative Movement as an Alternative Way of Thinking, Planning and Designing Residential Neighborhoods

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1. Introduction

The Uruguayan Cooperative model for housing arose from new paths that constituted Uruguayan civil society during the decade of 1960. Such model widespread through Latin America and eventually reached Brazil during the Decade of 1980, within the new Brazilian democratic context. The end of dictatorship period and the opening of Brazilian politics brought on new key actors, who, in leading urban social movements struggle for housing, tried to reset their repertoires of action, adding to the requirements postures a set of designing propositions for production of urban environment with effective participation of civil society. Movements for decent housing began to support self-management and mutual aid with a focus on housing designing projects, where direct participation of community members involved the giving up individual choices in order to build up an alternative formulated for and by the collective.

From the early 1980s, experiences that took places in different cities in Brazil showed some of these Right to the City ideas and principles. The municipality of São Paulo, in 1989, was the first to design housing cooperatives public policies addressed to low-income population. Eventually, in 2004, the Brazilian Government created the Crédito Solidário - Credit Supportive Program - that was the first national program addressed to the financing of decent housing to social movements active in Brazil. In 2009 came up at national level the program Minha Casa, Minha Vida - Entidades – My Home, My Life - Entities - expanding the volume of financial resources to low-income population housing cooperatives.

This program is carried out by a Non-profit Organizations that organizes low-income families to manage the entire production process of housing and “neighborhooding”, which means: from the conception of physical-space designing, through the production work to the social and urban management of the new neighborhood. A national housing program in a wide country as Brazil leads to multiplied and varied procedures according to local cultures. However, recent researches on social habitat production in Brazil – in which we were researchers – demonstrated that some practices had been extremely successful in designing cooperative neighborhoods. One example is the pilot project Parauapebas, managed by Fundação Bento Rubião - Bento Rubião Foundation - in the State of Pará in the northern region of Brazil. The project involves 500 families that currently are actively participating in social and urban architectural project designing. Parauapebas is a city of almost 200 thousand inhabitants located in the Carajas region, which houses the largest iron mine in the world. The city has a very specific demographic, economic and social dynamics. In a context of political apathy, in which families are not used to decision-making processes, the organizer and its technical assistance have sought to build a series of mechanisms to effect such participation.

Through community meetings and workshops, families involved have their voice heard and are enabled to compare their housing reality and what would be the ideal place to live. They are also enabled to make choices according to social, economic and cultural constraints of

their living context. In addition, eventually they reach the best design for the urban environment, planning of the public areas, collective spaces and even their own houses.

In this paper, we searched to analyze the genealogy of the cooperative housing production in Latin America and Brazil. Accompanying a pilot experience – in which families involved can recognize each other and make decisions collectively – we tried to show that solidarity and participation on management of the city are the way to the construction of fairer and democratic cities.

2. The source of the Brazilian model of social production of housing: the Uruguayan case

The beginning of housing cooperative production in Uruguay has begun since three pilot projects implemented in three country towns in the year of 1966. On the enterprise of Centro Cooperativista Uruguayo – CCU (Uruguayan Cooperative Center), a non-profit organization founded in 1961, the three projects proposed the house construction by organized families in cooperatives, with their own labor (called “ayuda mutua”, mutual aid) and with technical orientation (architects, social workers, accountants, lawyers).

The CCU proposal has received support from Uruguayan National Government, Inter-American Development Bank – IDB and from MISEREOR, a German Catholic Bishops’ organization for development cooperation. National Institute of Affordable Housing (National Government) provided the funds from an IDB’s financial loan and MISEREOR promoted the land access to the projects.

At the end of 1968, the Uruguayan Congress approved the National Housing Act, developed by a government initiative to answer the economic crisis of real state that involved the country in the late 1960s. In chapter ten, the Act regulated the system to financing the housing cooperatives.

In December 1969 was regulated the chapter about cooperatives in the National Housing Act and in May 1970 was concluded the first CCU’s pilot project, in Isla Mala. At that moment was founded the Federación Uruguaya de Cooperativas por Ayuda Mutua – FUCVAM (Uruguayan Federation of Cooperatives for Mutual Aid) that begins to represent the housing cooperatives constructed with own labor cooperatives.

In chapter ten, the National Housing Act establishes different housing construction modalities by cooperatives, so organizing the Uruguayan housing cooperative system that will be famous around the world. There is a first distinction between the “property cooperatives”, in which the house after construction will be property of cooperative family, and the “user cooperatives”, in which the house will be property of cooperative and the family will have a quota as a housing unit.

The construction system may be done by two ways: mutual aid, in which the nuclear family offers its labor to housing construction (21 hours weekly), corresponding to ten percent of the housing financing; and previous saving, in which the nuclear family contributes financially, before building, with fifteen percent of housing financing, doing just the project management¹. In 1969 is founded the “Federación Nacional de Cooperativas de Vivienda” – FENACOV (National Federation of Housing Cooperatives) representing the previous saving cooperatives, and in 1970 is created the Federación Uruguaya de Cooperativas por Ayuda Mutua – FUCVAM (Uruguayan Federation of Cooperatives for Mutual Aid).

From 1970, the Uruguayan Government starts to finance systematically the housing cooperatives. They should have the legal personality granted and the housing projects

approved by Government, besides contract the technical assistance, with the “Institutos de Asistencia Técnica – IAT” (Technical Assistance Institutes), to elaborate the project documents and provide building orientation.

The Uruguayan experience shows how possible is, through built environment, express desires of a different life. We believe that the good architectonic quality materialized in the pilot projects had helped to disseminate the image of a successful housing public police.

On June 27, 1973, there was a military coup in Uruguay. The first contracts between cooperatives and National Government were signed and the houses construction were beginning. In the initial years of military regime, the housing cooperatives were not considered as an “enemy” to militaries and the Government did not repress them. Thus, the housing cooperatives became “democratic islands”, where the militants wanted by dictatorship could take refuge.

In the early 1980s, FUCVAM adopts a political stance to struggle against Uruguayan dictatorship. As an answer to the Government’s legislative proposal to extinguish the collective ownership in user’s cooperatives, FUCVAM presented a counter-offer to promote a popular referendum to approve that legislative proposal (as foreseen in the Uruguayan Constitution). This strategy (with massive signature’s gathering to referendum initiative) gave a new political status to FUCVAM inside Uruguayan civil society after dictatorship’s end in 1984.

With the democratic opening after 1984 and the neoliberal context, FUCVAM again reinvents its political action. The entity operates in four lines action in the 1990s: struggle for urbanized land, organizing low-income workers, central area rehabilitation for housing and expanding the housing cooperative system to other countries in South America. In 2005, there is the election of the party “Frente Amplio” (Broad Front) to Uruguayan National Government. The Frente Amplio is a party organization of the left forces in Uruguayan politic. Then, the cooperative house system begins to get priority in the public police of the last two governments from Frente Amplio, with Tabaré Vázquez (2005-2009) and Pepe Mujica (2010-2014). During Mujica’s presidency, the cooperative system represented 37.5% of all the investment in housing policy, contracting to construction 9,913 housing units.

The large housing cooperative developments in Uruguay during the 1960s and 1970s demonstrates how the urban experience can be successful. With the gathering of several cooperatives and with public regulation, there are several cases of housing developments with excellent leisure, cultural and commercial areas, and good health and educational equipments (as example “Mesa 1”, figure 1).

After almost half century of history, the housing cooperative system became a great political force in contemporary Uruguay, influencing several countries in Latin America and in the world.



Figure 1 – Development Intercooperative “Nuevo Amanecer, Mesa 1” – 1971/1975.

Source: Flávio Henrique Ghilardi, March 2015.



Figure 2 – Cooperative “COVIVEMA V”, first building over 5 floors under construction for mutual aid.

Source: Flávio Henrique Ghilardi, March 2015.

3. The contribution of Uruguayan cooperatives in the Brazilian context

The late 1970s and early 1980s mark out the re-democratization process in Brazil, when the military dictatorship begins a soft and gradual process to politic opening. Thus, the urban social movements start to strength and to structure in a national articulation, resulting in creation of the National Movement for Urban Reform.

The Catholic Church and the Base Ecclesial Communities, linked to Theology of Liberation (Christian theological current born in Latin America, which considers that the Gospel requires preferential option for the poor), had wide importance in social movements conformation. This importance is because other political articulation spaces, like politic parties, autonomous trade unions and civil associations, have had their operation blocked or hindered by military dictatorship.

In the 1980s, just the city of São Paulo had more than 1,300 neighborhood associations (SACHS, 1999). Those associations begin to claim a new political way to access the urban services, putting themselves as interlocutors to public authorities. With this claim and the moment of national economic crisis, the state started to develop housing programs that intended to encourage the employ of own population labor.

The project “Vila Nova Cachoeirinha”, initiated in 1981 in the city of São Paulo, represented a new paradigm to the social production of habitat in Brazil. The project tried to embody the Uruguayan system of housing cooperatives that was being publicized by some technicians with a video made by the engineer Guilherme Coelho in his visit to Uruguay (Baravelli, 2006).

The development of the program “FUNAPS Comunitário” (a kind of municipal public fund) in the city of São Paulo since 1989 represents a turning point in the housing public policy directed to urban social movements. For the first time a Brazilian public administration organizes a housing program to promote self-management, stablishing the roles of the state as project financing, of the social movement as leading actor throughout the process, and of the technical assistance as the offerer of technical conditions needed to project development.

However, the economic, cultural and legal specificities of Brazil reduced the action possibility of the housing movements. The main specificity to restrain the action of housing movements is the legal impossibility to constitute housing cooperatives. Unlike Uruguay, Brazil does not have a legal framework to create a housing cooperative with users' property, because the General Act of Cooperatives (Act number 5,764 from 1971) does not foresee that kind of cooperative.

Beyond the city of São Paulo, some municipalities in Brazil developed specific experiences in social production of habitat. In Rio de Janeiro, during the early 1990s, the non-profit organization called “Bento Rubião Foundation” began some pilot projects of social production of habitat. The organization became the entryway to social production of habitat in the city and region, despite the several difficulties experienced with no support from local public administration.

Nevertheless, after the second half of the 1990s the volume of the experiences in social production of habitat decays. Only with the election of Workers Party to National Government in 2003 and the creation of Ministry of Cities in the same year, the housing movements gets to influence more forcefully the government to create a public program to support self-management in housing construction.

Since then the housing movements in Brazil have proposed – and have accomplished – important advancements and some steps backward in the self-management housing policy. In a succession of public programs, in 2004 was created the Program Credit Supportive and in 2008 the Program Social Production of Habitat, with resources from National Fund of Social Housing. In the year of 2009 was created the Program My House My Life with the funding line called “Entities”, directed to projects proposed by social movements.

One of the basic differences between the social production of habitat in Brazil and Uruguay is the question of property. While in Uruguay the property is collective, in Brazil, after the end of construction the property of each housing unity is privatized. This property condition induces to the retreat of families’ solidarity ties after the building conclusion.

4. The Pilot Project Parauapebas

The Pilot Project Parauapebas is inserted in the context of social production of habitat, through self-management process. Planned as a proper pilot project of construction of ways to live in the city, the housing production through self-management arises as an alternative practice towards the capitalist structuration of the city.

Another important context to understand this project is the complementation of resources offered by Vale Foundation² for housing projects developed through public policies in accord to the criterions of the Urban Seal Quality. When complied with a series of quality standards of built environment foreseen in the seal, the project can benefit of a substantial financial contribution.

The Bento Rubião Foundation is the project’s organizer, being responsible both by organizing 500 beneficiary families in partnership with local social movement called “Pastorais Sociais” and by administrating the resources from Program My House My Life – Entities. The Municipality of Parauapebas is another partner in the project, which ceded the urban land where the project will be built.

In the Brazilian context, the production of dwellings with social interest had a significant increase in the last presidential terms since 2003. Nonetheless, that sort of production have serious problems with remote location from urban centers, lack of services, equipments and public spaces, monotony of standard housing developments, and low architectonic and constructive qualities.

In order to prove the possibilities to increase the quality of built environment, the Bento Rubião Foundation has attempted to promote a participatory project as a way to leverage the public resources from Program My House My Life – Entities for construction of cities more just, inclusive and fair.

4.1. The urban and social context

In the late 1960s, researchers founded the largest mineral reserves in the world in Carajás, at that time in the city of Marabá, state of Pará. Years later, the Federal Government granted to “Companhia Vale do Rio Doce”, a state-owned company (nowadays it is privatized), the rights to mine iron ore, gold and manganese in Carajás, an area secularly occupied by Xikrins, a group of indigenous people from Cateté.

In 1981 has begun the implantation of the Project “Iron Carajás”, when, in Parauapebas River Valley, also begins the construction of the Parauapebas Village. The news about the village construction induced an intense population movement to the area. Soon, the village grew up wildly, without planning. From that village was formed the present city of Parauapebas.

According to Brazilian Institute of Geography and Statistics, the city of Parauapebas has a total area of 6,886 km², a population do 176,582 inhabitants and a population density of 22.35 inhabitants per km². The IBGE data points that the population more than doubled between 2000 and 2011, with a rate growing of 123.88% in the period. The Parauapebas population is urban (90.11%).

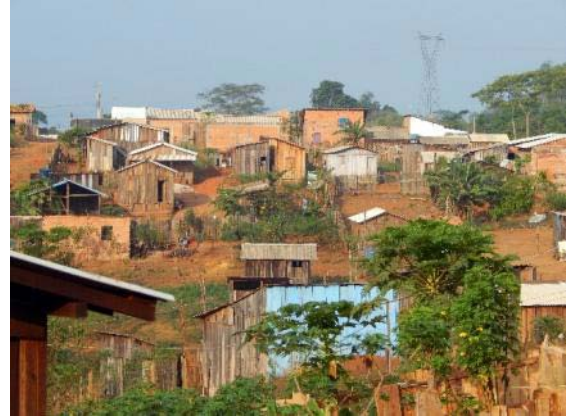
The housing deficit in Parauapebas indicates a crucial question to be faced by the municipality. A study based on the data of Census 2010 shows that fourth of Parauapebas dwellings is considered as housing deficit, needing to be replaced by new housing. By absolute numbers, the housing deficit is more than 10,000 dwellings. The most aggravating is that the housing deficit more than tripled in the last decade.

The 500 families that will be benefit by the project are that with higher priority in social and economic terms. They must already reside in Parauapebas and have a monthly income up to R\$ 1,600 (EUR 400), as required by the rules of the Program My House My Life. In addition, the families cannot have a previous public housing benefit and residential property own or housing finance. Within the partnership between promoter institutions of the project, three institutions organize the families’ selection: Vale, municipality and Pastorais Sociais (local social movement).

The social profile of the families is composed by different family arrangements: single mothers with few and with many children, cohabitation with uncles and cousins as an economic strategy, and some singles. There are many recent migrants, mainly from state of Maranhão, and from Pará, Tocantins, Goiás and Northeastern states. Also, appear many unemployed with unstable income. There are also autonomous and outsourced employees and Vale service providers. Predominates horizontal house experience with open spaces for recreation and cultivation of plants.



*Figure 3 – Project participant family home, Ipiranga neighborhood, Parauapebas.
Source: Bento Rubião Foundation.*



*Figure 4 – Urban settlement where lives a family project participant, Parauapebas.
Source: Bento Rubião Foundation.*

4.2. The project team

The Pilot Project Parauapebas has the particularity of being a social project with repercussions on the physical plane. Thus, the project team has this double entry, focusing on interdisciplinary process with social workers, architects and urban planners.

The social team was coordinated by Bento Rubião Foundation, which had the sociologist Flavio Ghilardi, social architect Sandra Kokudai, the social worker Valerio da Silva and the social agents Maria Vanda Lopes and Wanderlei Nascimento.

The urban project has Arche Consulting, Planning and Projects as responsible technical, with the architects and urban planners João Paulo Huguenin, Elsa Burguière and Patrick Gomes. The housing typologies has authored by Arche Consulting, Planning and Projects, together with the architect Nanda Eskes, from Atelier 77.

4.3. A participatory methodology

The housing self-management means the capacity of a group to manage all the processes needed to build the own house, from the land access until the construction of house units, through the design of architecture and urbanism plans.

The option by the participatory project is a possible response to political and social problems involving architecture and urbanism. Even with limitations, the differential in this methodology is to capacity the families to organize collectively the build of a better housing and living in the city. The house, as a product of this collective organization, would be only the first step in the political transformation and development of citizenship.

To reach this, several activities are taking place with the families since June 2014, through meetings and workshops explaining how will be the project development and collecting information about the families imaginary of the “ideal house”, with drawing for example.

Encouraging the self-management

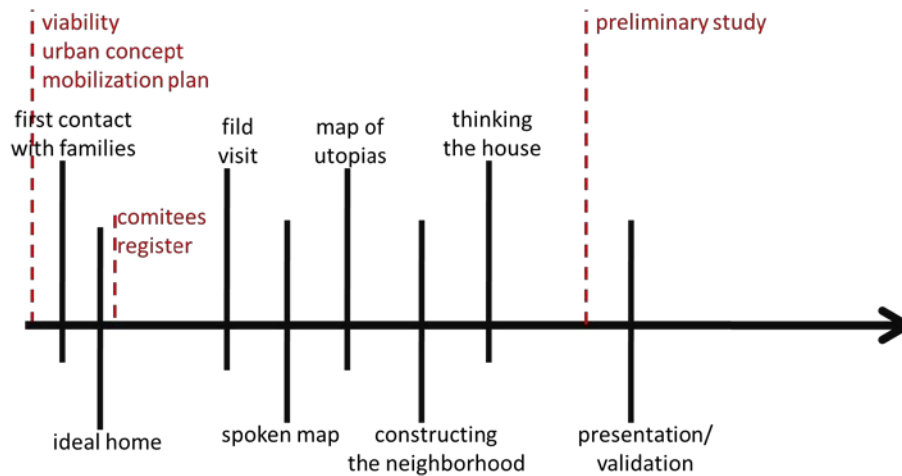


Figure 5 – Stages of the Pilot Project Parauapebas.
Source: Arche Consulting, Planning and Project.

In August 2014 has begun the initial activities of architectural and urban design. The big challenge was to carry out participatory activities with a large number of families (500). Therefore, the team formed nine groups with 55 families each, coordinated by three technical doubles (one architect and one social technical) and promoted two days of workshops in three shifts (morning, afternoon and evening). Each pair followed the idea of collecting information and subsidies to the development of three different housing typologies. Then, two typologies were developed by Arche Consulting, Planning and Projects and the other one by Atelier 77.

The first activity carried out in the workshops was the "spoken map", which aimed to visualize where each person does their daily activities in the current place of residence and, from that, reflect on the changes that the project will bring to their daily lives. Then the "map of utopias" identified activities, services and facilities demanded by the group according to their need. Going beyond the project land boundaries and covering issues beyond the physical structures of the neighborhood, participants put their views on the city they think is ideal.



Figure 6 – "Spoken Map" activity.
Source: Bento Rubião Foundation / Arche Consulting, Planning and Project.



Figure 7 – "Map of Utopias" activity.
Source: Bento Rubião Foundation / Arche Consulting, Planning and Project.

The third activity - "building the neighborhood" - worked the scale of the housing in a model in which participants by manipulating wooden blocks representative of housing units were able to view some spatial implications of the proposed development, such as density, clusters, verticalization, free and community spaces. Finally, the activity "thinking the house" made families reflect on the possibilities of indoor configuration and spatial organization of future housing.



Figure 8 – “Building the Neighborhood” activity.
Source: Bento Rubião Foundation / Arche Consulting, Planning and Project.



Figure 9 – “Thinking the House” activity.
Source: Bento Rubião Foundation / Arche Consulting, Planning and Project.

The validation of the first housing and neighborhood design occurred in November 2014 when were presented the first architectonics drawings. Also were realized an organization of social mobilization of the families to the future management of collective and condominium spaces. The families were organized in “cells” (about nine families per cell) for communication and decision-making processes.



Figure 10 – Assembly: presentation of housing complex in model.
Source: Bento Rubião Foundation / Arche Consulting, Planning and Project.



Figure 11 – Assembly: presentation of building typologies in model.
Source: Bento Rubião Foundation / Arche Consulting, Planning and Project.

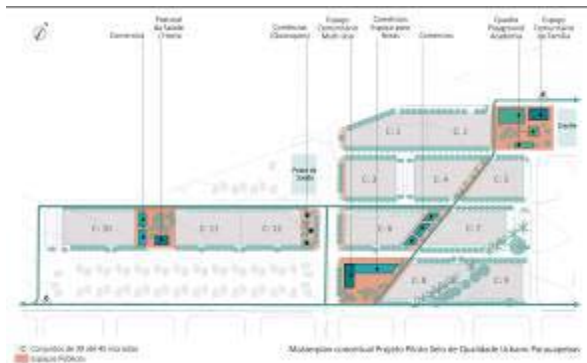


Figure 12 – Master Plan

Source: Arche Consulting, Planning and Project.



Figure 13 – View of a neighborhood unit

Source: Arche Consulting, Planning and Project.

The next architectural design activities are: assembly to approve the neighborhood and housing design; approval of the projects at City Hall; detailed design of the neighborhood and the house for building and complementary projects (structure, installations) and planning the build. For social organization, the following activities are planned: analysis of the social profile of families; preparation of social work project; guidance on life in condominium; decision about the form of building self-management; validation of committees; and assembly to approve the social work project.

The main challenges facing the project are: traditional way of housing and conflict with new proposals (vertical and condominium); defining moments of decision on the project (regulatory and projective limits); organization, mobilization and decision in large groups; definition of the collective spaces, condominium, socio-productive and public spaces; and articulation of social organization activities with the architecture and urban planning discussions.

5. Concluding words

The cooperative way for housing, as emerged in Uruguay, shows several qualities and benefits, and may be a large different way of housing production compared to market production. In addition, it allows creating ties of friendship and solidarity among the people involved in the self-management process. In Brazil, the way the model was adapted to the legal and cultural realities reduces the possibility of strengthening these ties, mainly because the question of individual land ownership and the little concern about how the built environment can interfere in the social relationships.

Even though the public policy for housing self-management in Brazil restricts some innovations in the ways of living, some projects have achieved advances forward the production of social housing as a whole. In this sense, Pilot Project Parauapebas brings important contributions to take into account that all housing cooperative is realized through an architectural object, which influences on urban space. Thus, the active participation of families proves that the proposition of quality environments, stimulants, with public and private setting is part of the challenge for setting up a housing cooperative.

The differential of this pilot project is to enable the beneficiary families to organize collectively a better way for housing and living in the city. Therefore, the house, as a product of this collective organization, should be only the first step in the political transformation and development of citizenship of these families.

Endnotes

¹ Each cooperative must create its internal regulations governing all process of construction and ownership. The law also defines the form of cooperatives organization for building construction, by creating boards and special committees. The law also stipulates the existence of "central" and "branches" cooperatives. The first develops the role of "incubate" and support the emergence of the branches cooperatives.

² Vale is one of the Brazil's largest private sector companies. Besides being the leader in the country's mining sector, the company also has major operations in the areas of logistics, energy and steelmaking. Vale Foundation is a corporate foundation that promotes economic, environmental, and social projects in the regions where Vale operates.

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Affordable Housing Through Cooperative Urbanism

Shared Amsterdam | Affordable Housing through Cooperative Urbanism

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Abstract:

Dutch housing organizations ensure that more than 2.4 million households have access to adequate and affordable housing aimed at improving the quality of life for the low and middle-income communities. While the proportion of affordable housing has continued to remain a national priority in the Netherlands and is the highest in Europe, the owner occupancy rate is still below the set European standards due to the absence of middle-income dwellings for rent, home-ownership or cooperative housing, unoccupied surplus accumulation by housing associations and unaffordability of social dwellings. Given the current trends in urbanization, McKinsey Global Institute (2014) contends that the affordable housing gap would increase from 330 million urban households to 440 million affecting 1.6 billion people who cannot secure a minimum acceptable housing unit for 30 percent of their annual income leading to an increase in affordability gap (the difference in amount between the income affordable for a housing unit by the low income groups and the actual development cost of the housing unit) and substandard living conditions. Due to growing shortage based on migration and income trends, McKinsey and Company (2014) contends that by 2025 households will either be 'financially stretched by housing costs' or be living in 'crowded, inadequate and unsafe housing.'

This paper has two principal objectives. Firstly, it explores the key regional trends in housing policies affecting affordability with a particular emphasis on housing type, tenure, target groups, providers and financing structures embedded in four social housing contexts- Austria, France, Germany and The Netherlands. In doing so, it analyzes affordability challenges and access to improved social housing across the countries to position the proposed urban concept of '*Cooperative Urbanism*'. After that, the four cost reduction levers as proposed by McKinsey and Company (2014) to the global affordable housing challenge are applied to connect policy level implications to strategic urban planning initiatives.

Secondly, this paper explores cooperative urbanism whereby through the lens of critical urban theory (Brenner, N. 2009) it proposes shared participation deploying collaborative city gaming and design thinking as innovative methods to generate strategic urban planning and design instruments that tackle the provision of affordable housing challenge in Amsterdam. To that end, the strategies formulated enhance and support differentiated housing supply and demand driven programming to leverage mainstream participation that is empowering to all, particularly to the lower income groups incentivizing citizens as collaborators, facilitators and managers to negotiate and empower others as agents of change. The paper further recommends to explore and test cooperative urbanism as future research to underpin and analyze local participation deploying new spatial paradigms to contribute in rethinking planning and policy initiatives in achieving affordable housing solutions under rapid urban, social and economic transformations.

Key words: Affordable Housing, Cooperative Urbanism, Participation, Collaboration, Social Housing

1. Introduction

Affordable housing is a global challenge for cities in both in developing and developed economies alike. With relatively well-established land and financing arrangements, evidence suggests that social rented housing is most prevalent in north-western Europe that is delivered through a variety of landlord models providing 'wider affordability' role than 'safety

net' role (Stephens *et al.* 2002; cited by Gibb, K *et al.* 2013). According to the Europe 2020 strategy (EU Commission 2011; cited by Pittini, A. and E. Laino 2011, p.1), 'the cost and quality of housing are a key determinant of living standards and well-being, especially for the most vulnerable people'. Further, in the particular example of the Netherlands, housing demand and supply vary between cities due to spill over effects with changing urbanization and metropolitan restructuring in the Randstad Region causing unavailability of affordable housing, unstable housing markets and lack of diversity in housing stock.

With over 35 percent of social rental housing in the entire stock, the Dutch housing associations are independent, non-profit organizations with public responsibility (AEDES 2013). Dutch housing organizations ensure that more than 2.4 million households have access to adequate and affordable housing aimed at improving the quality of life for the low and middle-income communities (Ouweland, A. and G. V. Daalen 2002). While the proportion of affordable housing has continued to remain a national priority in the Netherlands and is the highest in Europe, the owner occupancy rate is still below the set European standards due to the absence of middle-income dwellings for rent, home-ownership or cooperative housing, unoccupied surplus accumulation by housing associations and unaffordability of social dwellings.

This paper has two principal objectives. Firstly, it explores the key regional trends in housing policies affecting affordability with a particular emphasis on housing type, tenure, target groups, providers and financing structures embedded in four social housing contexts - Austria, France, Germany and The Netherlands. In doing so, it analyzes affordability challenges and access to improved social housing across the countries to position the proposed urban concept of '*Cooperative Urbanism*'. After that, the four cost reduction levers as indicated by McKinsey and Company (2014) to the global affordable housing challenge are applied to connect policy level implications to strategic urban planning initiatives adopting market-based measures applicable to any local context across all income groups, particularly aimed at reducing cost to increase the provision of affordable housing.

Secondly, this paper explores cooperative urbanism in the specific case of Amsterdam whereby through the lens of critical urban theory (Brenner, N. 2009) it proposes shared participation deploying collaborative city gaming and design thinking as innovative methods to generate strategic urban planning and design instruments that tackle the provision of affordable housing challenge in Amsterdam. To that end, the strategies formulated enhance and support differentiated housing supply and demand driven programming to leverage mainstream participation that is empowering to all, particularly to the lower income groups incentivizing citizens as collaborators, facilitators and managers to negotiate and empower others as agents of change. The paper further recommends to explore and test cooperative urbanism as future research to underpin and analyze local participation deploying new spatial paradigms to contribute in rethinking planning and policy initiatives in achieving affordable housing solutions under rapid urban, social and economic transformations.

Accordingly, the paper seeks to answer the main research question – How to build the city in a cooperative way to specifically tackle the challenge of affordable housing in a complex urban environment?

1.1 Definition of Housing Affordability

The definition of 'Affordable housing' changes depending on the context but broadly constitutes a financial component with low income communities as the principal target group incorporating household sizes, tenure options and income levels as eligibility criteria for housing assistance. UN-Habitat (2011) defines housing affordability as affected by many factors and is multi-dimensional involving more than often-used simplified conception of the ratio of house purchase price to household income. Housing affordability depends on two main variables – Capital variables and Occupation variables. The capital variables are predicated on the households ability to purchase a house as influenced by the purchase cost

including the sum cost of land, infrastructure, building materials, labor and profit while the occupation costs is the ability to finance the purchase including subsidies, payment requirements and balance of household savings (UN-Habitat 2011). Alternatively, the McKinsey Global Institute (2014) defines affordable housing on the basis a financial threshold module based on the share of the income devoted to housing, a standard module for what constitutes socially acceptable housing servicing selected income groups and income threshold module targeted at households that need housing assistance.

1.2 Measuring Housing Affordability

To address the increasing unaffordable and inadequate land and housing that affects a vast proportion of the vulnerable who often lack access to services, safety nets and political representation (UN-Habitat 2011) creating wider differences between social groups – low income, single parent or women-led households, UN-Habitat (2011) encapsulates on what constitutes an agreed measure for ‘affordable housing’. The first is house price to income ratio in which the ratio is divided by median house price by median household income indicating the annual median salaries that takes to buy a median priced house. The second is the house rent to income ratio in which the ratio is the median annual rent by the median annual renter household income. The third is the residual income assessment indicated as the percentage of household income spent on housing related expenses with the household’s ability to finance services without negotiating on non-housing related expenditure (Yang, Z. and Y. Shen. (2008); cited by UN-habitat 2011). Generally, housing is seen as affordable when the household spends less than 30 percent of the annual income on housing expenses including mortgage repayments for owner-occupied dwellings, rent payments for tenant-occupied dwellings and other direct expenditures related to taxes, insurances, services and maintenance payments. However, these parameters are deemed contextual and vary between countries depending on planning, quality and finance that support the provision of affordable housing and housing policies.

1.2 Affordable Housing Models – An Overview

Affordable housing plays a key role in the development of the city. The type of affordable housing models however significantly differ in terms of tenure patterns but on the basis of production and consumption of units can be broadly classified into two major models – Social or non-profit housing and Intermediate affordable housing for private-rental or private-owner occupied (EUROCITIES 2009; UN-Habitat 2011). Social or Non-Profit housing are rented units owned by local authorities and managed by housing associations, social landlords, NGOs or cooperatives while intermediate affordable housing provides housing at rates lower than market rates for private rental or ownership (EUROCITIES 2009) for single and multi-household dwellings for the vulnerable communities depending on the demand due to urban and economic restructuring in cities. To that end, without having to oversimplify the tenure forms adopted across European member states, it is critical to note that tenure choices can impact long-term housing, market stability and access to adequate and affordable housing. Although financially attractive on the long term, UN-Habitat (2011) report on affordable land and housing in Europe indicates a polarized tenure structure with high share of owner occupancy rates and fewer alternatives pushing newer households into rental housing that are financially stretched. Additionally, substandard housing conditions in terms of dampness, inadequate space, darkness and lack of access to basic services can affect the low-income vulnerable groups with poor quality, unsafe and unhealthy living environment.

2. Methodology

In the recent decades, affordable housing has been a widely debated political agenda at the national and local governments across Austria, France, Germany and the Netherlands. The methodology is divided in two parts in line with the two main objectives – First, outlining an

overview of major trends in affordable housing practices across Austria, France, Germany and the Netherlands and second, exploring the proposed definition and urban concept of *Cooperative Urbanism* with a particular emphasis on Amsterdam affordable housing supply.

Deriving evidence from secondary resources including statistical policy reports, pertinent literature and case studies, this paper analyses existing affordable housing practices at the policy level in Austria, France, Germany and The Netherlands to study the major trends and implications of top down planning, as indispensable to the creation of bottom-up strategic urban planning initiatives (Pittini, A. and E. Laino 2011; UN-Habitat 2011; EUROCITIES 2009; Whitehead, C. and K. Scanlon 2007). Although the affordable housing models significantly differ between the surveyed countries, the six housing indicators in terms of housing type, tenure, target groups, providers, financing and resultant trends will effectively present an overview of current practices in place. However, an urban dimension is critical to improving or renovating the existing housing stock that meets the aspirations of lower income and vulnerable households and build new stock with purchased land or renewal projects. To achieve that, the four cost reduction levers as proposed by McKinsey and Company (2014) to the global affordable housing challenge are applied to connect policy level implications to strategic urban planning initiatives adopting market-based measures applicable to any local context across all income groups, particularly aimed at reducing cost to increase the provision of affordable housing.

Following which through the lens of critical urban theory (Brenner, N. 2009), the historical growth of Amsterdam as 'A Connected City'¹ is captured to reflect the shift in the urban structure of the city – from a politico-economic, socio-cultural and urban-morphological standpoints (DIA 2012) impacting affordable housing provision. Further, to explore more on Cooperative Urbanism, key trends underlying the residential market in Amsterdam (CBRE 2014) are outlined to understand the implications of 'Shared Amsterdam' to mainstream participatory urban planning through a combination of 'Human-Centered' processes including collaborating city gaming (Tan, E 2014) and design thinking methods (Brown, T. and J. Wyatt 2010). Thereof, the subsequent sections package and link cooperative urbanism to appropriate strategic instruments towards devising housing affordability with respect to scaling density, mix programming and adaptive reuse as recommended high impact solutions to addressing housing affordability in the context of complex urban environments.

2.1 Defining Cooperative Urbanism

The paper proposes '*Cooperative Urbanism*' as a combination of strategic human-centered planning and design processes applying generative city gaming (Tan, 2014) and design thinking (Brown, T. and J. Wyatt 2010) techniques to tackle urban challenges. Taking an incremental and collaborative approach to developing urban solutions, *Cooperative Urbanism* is both a platform and a mindset aimed at achieving socio-spatial inclusiveness with a particular emphasis on developmental agenda, critical urban theory and social innovation. Embedded in the context of changing socio-cultural, politico-economic and geo-technical relations in complex, modern urban environments and expanding further on conventional participatory planning approaches, *Cooperative Urbanism* is an interaction of deep values and identities set in a particular context. Aimed at resolving the problem of affordability and spatial segregation in city spaces, *Cooperative Urbanism* focuses on mainstreaming local participation through enhancing and supporting developmental opportunities – like creating self-sustaining neighborhood's, establishing incentive structures, generating jobs and income diversification, facilitating empowerment, promoting good practices and innovative funding programs etc. Underpinned by systemic approach to problem solving and capacity building of citizens and stakeholders in complex urban environment, *Cooperative Urbanism* mitigates piecemeal development through strategic urban development negotiating power relations, priorities and preferences.

While the paper takes an epistemological and developmental standpoint to analysis, the concepts and processes described are limited to secondary knowledge in terms of affordable

housing and promotes *Cooperative Urbanism* as a strategic underlying urban principle to tackle lack of integration at the nexus of top-down and bottom-up approaches. However, it studies major regional trends aligned with that of existing urban practices as applicable to Europe and the Netherlands. In doing so, the proposed definition of *Cooperative Urbanism* seeks to justify and contribute to the current policy and planning level debates on affordable housing provision (demand and supply-side interventions) to effectively adapt and contextualize urban solutions as firmly anchored in both individual and collective identities and empower citizens to empower others as agents of change; and recommends further research as part of a wider extended discussion. As will be shown in section 4, in the case of Amsterdam, *Cooperative Urbanism* will critically explore and suggest strategic instruments to housing affordability.

3. European Housing Affordability – Key Regional Trends

In the recent years, there has been much debate around the future of affordable housing in Europe with particular emphasis on adequate housing stock availability, management and provision for all in achieving mixed communities and avoiding social segregation. Whether it means cost-based social rental housing in Austria (Hills, J. 2007; cited by Whitehead, C. and K. Scanlon 2007, p.4) or France's ambitious targets for new social house-buildingⁱⁱ; or Germany's approach of establishing a 'socially integrative city'ⁱⁱⁱ; or seeking potential alternative uses to housing surpluses accumulated in the Netherlands^{iv}; the aim is mainly to present a comparative insight of the key regional trends and a broad overview of the tenure patterns in Austria, France, Germany and The Netherlands. To retain the focus of this paper the study was limited to the above four member states in the Western European union with a high share of social or non-profit housing that builds on the existing body of knowledge and addresses gaps in the underlying social housing system, where necessary.

CECODHAS (2012) report defines eligibility to the allocation of a social dwelling in Europe through the use of income ceilings, wherein the maximum income is set to the highest to allow for income mixing in countries including Austria, France and Germany (Pittini, A. and E. Laino 2011). However, the eligibility criteria varies depending on the local needs and demands in the housing markets – to attract certain types of migrants, to provide housing for students, young people and single family households or to revitalize areas with ageing population etc. Further, the general trend is towards declining municipal involvement and increasing diversity in the range of actors notably through public-private partnership. Consequently, with the increased involvement of the private sector, the government subsidies and funding allocation are increasingly targeted and limited (Whitehead, C. and K. Scanlon 2007).

The following sub sections outline the major trends in Austria, France, Germany and the Netherlands according to individual country profiles on Housing Europe Review (Pittini, A. and E. Laino 2011; cited by CECODHA 2012) and *Social Housing in Europe* (Whitehead, C. and K. Scanlon 2007).

3.1 Austria

Type of Social Housing – In Austria, the social housing stock currently represents 23 percent of the total housing stock in which municipalities and public companies own 60 percent. Municipal housing or public housing is rental housing provided by municipalities. Limited profit housing is rental and owner-occupied provided on non-profit basis by investors with access to public subsidies. Housing promotion schemes define the type of housing and providers with rent limits and income limits for new residents.

Tenure Form – 56% owner occupied; 17% private rental; 23% social rental and 4% others with a balanced tenure structure offering a ladder of opportunities ranging from social to private renting to homeownership (2008).

Target Groups– Municipal housing focuses on working class and disadvantage people (working immigrants who arrived in 1960s and 1970s) while for-profit and public funded private sector focuses on middle class people. Newer municipal housing is inhabited by younger middle-class elderly occupy the older estates. In summary, the municipal stock is polarized with an old stock housing the elderly, very poor and disadvantaged and the new stock similar to that of housing associations.

Providers – As a limited-profit sector, social housing is provided mostly by cooperatives and limited companies with a small component subsidized by for-profit companies.

Financing – Austria combines long term public loans and grants at the level of federal provinces with commercial loans raised via HCC Bonds and developer/tenant equity. A typical social housing project comprised of - 20–60% conditional subsidies (grants, low cost loans) with limits to keep construction and financing costs down; 5–15% equity of developer; 0–15% equity of future tenants (right to buy in some circumstances) and 50–70% commercial loans, financed by commercial bonds and Housing Banks.

Key Trends – Much of the recent developments focus on a substantial reform plan in terms of public housing promotion with include the central state withdrawal from financing and federal provinces facing financial restrictions with the overall public grants decreased to 25% in 2010. Ongoing debate embedded in strong corporatist tradition also known as social partnership is undergoing economic and political restructuring impacting urban development with an increasing risk of socio-spatial segregation. Due to the high demand particularly with the level of immigration to Austria in urban centers, there is an expected shortfall in the supply of affordable housing with emerging concepts around ‘Public-private partnership’ and ‘new governance’ (Whitehead, C. and K. Scanlon 2007).

3.2 France

Type of Social Housing – Social housing is provided by HLM (*Habitation à Loyer Modéré*, organizations providing housing at moderated rents) organizations that are specific actors designated by the state. The social housing sector accounts for about 17% of the total housing stock in France overseen by legislative and regulatory bodies according to the Construction and Housing Code and broadly divided into 3 types – standard, upper and lower social housing for rental and home-ownership. Social housing is predominantly urban – 62% located in towns or cities with more than 100,000 inhabitants and 14% in towns and rural areas with less than 10,000 inhabitants. The spatial polarization in terms of affordable housing availability is particularly high in Paris, Lyon and Marseille and less acute in cities like Lille or Rennes (Whitehead, C. and K. Scanlon 2007).

Tenure Form – 57% owner occupied; 22% private rental; 17% social rental and 4% others including furnished units, sub-tenancy and free housing arrangements (2008).

Target Groups – Social housing allows for a certain degree of socio-economic mix and access to social housing is limited by income ceilings. Preference is given to bona fide applicants who are homeless, people at risk of eviction with no alternative housing, people with temporary accommodation, people residing in unhealthy or substandard accommodation, households with children in overcrowded units and disabled.

Providers – HLM organizations and to a lesser extent semi-public enterprises (*Société d'économie mixte*, SEM) and few non-profit organizations build and manage social housing in France. HLM organizations include both publicly and privately owned companies operating on non-profit basis under the control of the Ministry of Housing and Finance.

Financing – State and local authorities provide subsidies that lower the rents based on net construction cost and provide tax incentives. Housing benefits are made available to support the poorest groups paying the rent in line with the household's income proportionate to income ceiling. CDC (*Caisse des Dépôts et Consignations*) lends finance loans for new constructions and provides funds from ‘Livret A’ accounts, a savings fund with regulated

interest rate and subject to no tax. Other financing systems include employers grants and discounted loans from local authorities or the HLM guarantee fund. A typical financing scheme for a housing project (2009) comprise of – 76.5% from CDC loan (Livret A); 10% equity capital; 8% local authorities subsidies; 3% state subsidies and 2.5% employers grants.

Key Trends – The social housing sector has seen a steady increase in the proportion of poor households which is currently 35% of all HLM households having income become poverty line. According to the '*Grenelle de l'Environnement*', HLM organizations are engaged to renovate by 2020 targeting 800,000 social housing units to improve energy efficiency. With a long history of social housing, the market structure is unable to cope with the housing needs and the private rented sector devoted to affordable housing is reducing with very high cost of ownership and costly new incentives that may limit the capacity for further growth in the sector. Further, the social housing stock is expected to grow fragmented with increasing decentralization due to disconnect in responsible programming between local and national authorities to overcome socio-spatial segregation. In addition to that, l'Union sociale pour l'Habitat, a single body bringing together HLM federations is launching a new business model that takes into account the needs for affordable housing in France and the financial stress on public funds.

3.3 Germany

Type of Social Housing – In Germany, the social housing refers to publicly subsidized housing or housing promotion representing an overall 5% of the national housing stock and is market based. All housing companies are considered market actors with municipal housing companies acting in compliance with local policies and housing needs. There are three strands of social housing in Germany – The first strand is social rented housing with strict income limits and rent ceilings at €4/m² and increases as subsidies fall; the second strand is the elevated social housing developed through grants from new-build or rehabilitation and receive a subsidized mortgage with low interest rate with tax reductions; the third strand consists of the owner occupied social housing which households purchase. An increasing number of specialized units have been built in the recent years that include experimental live/work units, mixed generation housing and elderly homes.

Tenure Form – 42% owner occupied; 53% private rent and 5% social rent (2008).

Target Groups – Households who cannot secure adequate accommodation and need support are primary targets with particular emphasis on low income households with families, children, single parents, pregnant woman, elderly and the homeless.

Providers – The public intervention in housing policy is not linked to specific providers but entails public subsidies enforced by income ceiling and lower rents. Publicly subsidized housing include municipal housing companies and cooperatives from the traditional non-profit sector together with private landlords, commercial developers and investors.

Financing – No centralized funding systems because social housing programs have evolved over time with municipalities and provinces having a great deal of responsibility. Public subsidies are provided to builders including grants and tax relief systems covered gaps between perceived rent and cost rent. Dwellings can be let or sold at market prices at the end of amortization period which is typically 20-40 years for newly built dwellings and 12-20 years for renovated dwellings. All social dwellings in Germany is legally private where municipal housing companies act as private entities governed by commercial law.

Key Trends – New urban problems have emerged – regional economic disparities, demographic changes, urban polarization with over a million vacant homes make it necessary to address the need for appropriate forms of social housing in the reformed welfare state (Whitehead, C. and K. Scanlon 2007). The role of the public sector is towards reducing the cost gap between social and market housing. Emergency housing provision for homeless, refugees and other marginalized communities were never prioritized through

social housing finance programs but rather focused through social and health programs. Today, only a few towns and cities with the highest house prices and privatized markets focus on the production and maintenance of new social housing. The major urban initiative called the Socially Integrative City (*Soziale Stadt – Städte mit besonderem Erneuerungsbedarf*) began in 1999 to address the challenges posed in deprived areas including segregation but has been ineffective in providing affordable homes and improving local economic development through job creation markets. New interventions are being considered to support this initiative that are investment-oriented and socio-spatially sensitive to neighborhood growth to urban regeneration and creation of non-profit housing cooperatives (Whitehead, C. and K. Scanlon 2007).

3.4 The Netherlands

Type of Social Housing – With the largest share of social housing in European Union accounting to about 32% of the total housing stock and 75% of rental stock, The Netherlands dominates the affordable housing market with almost all owned by the housing associations. With the Housing Allocation Act of 1947, housing was allocated on needs-based system to cope with pressing housing shortages (UN-habitat 2011) until a choice-based letting system was introduced in the city of Delft in 1990s which is now a norm throughout the country.

Tenure Form – 58% owner occupied; 10% private rent and 32% social rent (2008). The Dutch government aims at creating better tenure mix in urban renewal projects offering opportunities for people to buy properties and attract new households. Of which 49.4% are single family dwellings; 15.4% multi family dwellings; 23.3% multi family dwelling with no lift and 12% others types (AEDES 2002).

Target Groups – The principal target groups in the lower income segments and the vulnerable communities including the elderly, the disabled, immigrants, permanent and temporary homeless, itinerant communities and asylum seekers. With a differentiated target group including the low income households and the intermediaries the social rented sector demonstrates economic and social benefits with an integrated approach.

Providers – Private non-profit organization known as *Woningcorporaties* are registered social housing organizations that operate on the basis of registration and supervision by the national government. At present there are about 425 of such registered organizations in the Netherlands. Although controlled by a legal framework, the Dutch housing organizations act independently setting their own objectives and bearing own financial responsibilities. As an integral part of the Dutch housing market, the housing organizations build, maintain, sell and rent social housing stock and provide services directly related to the use of dwellings and to the occupants.

Financing – Dutch housing organizations are financially independent from the central government since 'Brutering' or 'Balancing out' agreement in 1993 between the state and the national federations. On the basis of a 'Revolving Fund Model', the Dutch housing associations act independent in an environment of guaranteed capital market loans and rent-price regulation. With a three level security structure for funding (see figure 1) – the Central Fund of Social Housing (CFV), the Guarantee Fund for Social Housing (WSM) and the state and local authorities can intervene as last resort. The first security, CFV is a special independent public body that provides financial and project support to specific projects that operates based on the charges levied from social housing organizations. The second security instrument, WSM is a private organization that acts as solidarity fund creating incentive structures to benefit from interest rates to function in an open capital market. Thirdly, Dutch State and Municipalities act as a guarantor through the WSM, housing associations are able to borrow on the capital market at lower interest rates (Ouweland, A. and G. V. Daalen 2002).

Key Trends – Alongside changing market conditions, Dutch social housing organizations depend heavily on investments affected by tax-deductibility of mortgage interests, state

guarantees for buyers, high loans to value mortgage, strict rent regulation, restriction on special planning and state aid and solidarity instruments in social housing (AEDES, 2014). However with prudent management, low interest rates and steady rise in market values, the Dutch social housing model has been instrumental and responsible in the changing residential climate – at the level of dwelling, the residential complex and the neighborhood. The Dutch social housing sector is flexible, structured and organized and could act as a benchmark for social landlords in other contexts. However with increasing privatization of markets, lack of urban renewal projects, over priced dwellings in inner cities, unaffordable housing surpluses and noticeable shift towards owner occupied dwellings in outskirts and availability and affordability of housing stock for vulnerable groups seek for new initiatives.

3.5 Connecting Policy Implications to Strategic Urban Planning Initiatives

Although the affordable housing models significantly differ between the surveyed countries, it is clear that policy implications directly impact urban development. Accordingly, Ekim Tan (2014, p.31) in her research on 'Negotiation and Design for the Self-Organizing City' defines Bottom-up and Top-down as "Terms borrowed from systems science; In a top-down approach an overview of the system is formulated, specifying but not detailing any first-level subsystems. A bottom-up approach is the piecing together of systems to give rise to grander systems. Top-down urban processes are typically formulated in advance and are conducted by large urban stakeholders such as Cities, corporations. Bottom-up urban processes are aggregated by small scale enterprises or individual citizens, sometimes as collectives as well, formulating an urban order incrementally." According to UN-Habitat (2011), increased costs in social housing sector as explained above also have implications for access to adequate and affordable housing, particularly for the vulnerable groups. This is compounded by the irreversible trend of urbanization affecting housing affordability with significant pressure on available land and prices. Land acquisition and supply for new housing is necessary through market interventions and long-term urban planning strategies. Public-Private partnerships are becoming increasingly important to support additional funding in the form of private finance, public land and recycling existing assets (Ouweland, A. and G. V. Daalen 2002).

To mitigate the challenges posed at the nexus of top-down and bottom-up urban processes, the four cost reduction levers of McKinsey and Company (2014) are applied to address the shortage of affordable housing supply through coordinated planning in cooperation with civil society yet meeting the private and public interests through market-based measures applicable to any local context across diverse income groups. The four cost reduction levers proposed by McKinsey include unlocking land supply to open up opportunities for affordable housing; development to improve capital productivity and value engineering; operation and maintenance – improve energy efficiency and scalability to ensure quality and avoid dilapidation; and lastly, financing to reduce borrowing costs to buyers and renters and assist in developer financing (McKinsey and Company 2014). In doing so, a dedicated housing delivery platform is developed to facilitate and manage the interests of stakeholders and beneficiaries^v to offer appropriate housing solutions to local communities and create cross-subsidies with access to finance and governance structures to enhance local resilience in the delivery of units and streamline processes to monitor and evaluate performance.

4. Cooperative Urbanism – The case of Amsterdam, a call for action

4.1 Growth of the City

In Amsterdam, beyond inside and out (2005, p.1), Stephen Read describes the evolution of Amsterdam as 'A connected city', "First the welfare state with its state-sponsored housing, and then infrastructure and the explosion of mobility with the drift to the periphery, were the shapers of the further expansion of the city. In between, in the second half of the twentieth century, Amsterdam, despite its small size and population, and despite (or perhaps because

of) a paradoxical urban decline linked to global economics, played a central part in the emergence of a global urban culture.” What grew as a trading city in the 16th and 17th centuries, a bustling center of thriving activities – prosperous, expanding rapidly with an abrasive mix of merchants and shippers, shipbuilders and fishers, bankers and middlemen with a massive influx of economic migrants, itinerants and refugees (Read, S. A. 2005) has entered the network of ‘Global Cities’^{vi} (DIA 2012) with changes in modes of production shifting from a welfare state to free market. Consequentially, the municipality of Amsterdam instead of providing services to citizens provided services to corporations and investors. The switch to public private coalitions and partnerships although widely acknowledged is currently losing funds due to idle non-revenue generating derelict or uninhabited properties, unaffordable housing surplus etc. through locked investments.

4.2 Shift in Urban Structure

The development of Amsterdam that impacted the provision of affordable housing can be accounted to shift in structural planning from 3 different standpoints (DIA 2012) – first, from a politico-economic angle, with change in economic base from shipbuilding based economy to service based economy and further exacerbated by Amsterdam Schiphol International Airport, the historic inner city center, the new central business district of Zuidas that have influenced the emergence of a new polycentric city dependent on communications, connectivity and accessibilities. Secondly, from a socio-cultural angle, shifting from a social city to a multicultural city and from a creative city to a segregated city when the Dutch population moved to new towns during 60s and 70s and the relatively unskilled, non-western immigrants including ethnic groups from Surinam, Turkey and Morocco remained to be spatially segregated in outskirts or underdeveloped areas with affordable housing made available to very limited group of population. And thirdly, from an urban morphological and angle, shifting from social housing to free market housing wherein social housing is not owned by the local development but by independent (non-profit) housing associations who act as developers and provide 70% housing for sale to owner occupied units and 30% to affordable housing for low income groups. As a result, urban renewal and new housing developments have been both priorities offering a mix of tenure types and high quality neighborhoods.

4.3 Key Trends Impacting Residential Market

As stated above, the Netherlands has the largest share of social housing in Europe covering about 32% of the total housing stock, however, the Dutch residential market is evolving rapidly. As the 5th most important economic region in Europe, Amsterdam Metropolitan Area (MRA) is provides both attractive and ideal business climate. With over 2500 foreign companies (CBRE, 2014) includes 460 international headquarters, Amsterdam metropolitan area generates about 17% of Dutch GDP, a vast majority of which comes from business services, wholesale and financial services (2011). In addition to that, the strategic importance of Schiphol International Airport and Port of Amsterdam also contribute largely to the economic growth of the region. The city of Amsterdam actively contributes to about 40% of the total GDP of MRA. Market forecasts indicate a 12.5% growth in population by 2040 with 46% owned by social housing corporations, 32% owner occupied, 22% by private investors with 80% of all plots owned by the municipality and distributed on leasehold conditions (CBRE 2014) divided between regulated and non-regulated rental reforms with rents in Amsterdam as highest in the Netherlands €18.60 per sq m per year (Pararius, 2014; cited by CBRE 2014).

4.4 Cooperative Urbanism through Human-Centered Planning and Design

Recently, urban planning practices largely involve citizens more directly in shaping their communities through active engagement integrating local knowledge to mainstream participation from conception to decision making processes. Navigating complex urban processes not limited to changing demographics, people’s immediate urban needs and commercial interests requires collective vision, planning and production process aimed at

building trust, transparency and consensus that recognizes and speaks to the inherent values of the local communities. Human-centric planning and design to cities explores the 'City as a self-organizing system' through structured city-gaming techniques (Tan, E 2014) through a series of seven key urban processes in terms of:

1. Authorizing multiple agents (urban actors) including state representatives from local government, market actors and communities
2. Facilitating multi-dimensional platform that engages professional experts across interrelated planning disciplines – planning, finance, engineering, sociology and design.
3. Engaging in open dialogues collaboratively in an interactive environment.
4. Allowing for variations, interactions and iterations as part of an open, multi-agent and collaborative urban process over simple dynamic rules that influences the urban agents – land reforms, subsidies, priorities, tax incentives, spatial quality etc.
5. Simulating incremental urban development to embrace individual and collective actions of the various agents as a continuous urban process that evolves, innovates, mitigates conflicts and adapts with respect to changing urban conditions.
6. Ensuring constant learning that draws and supports collective intelligence through data management – generating, collecting, sorting, storing and sharing knowledge.
7. Operationalizing self-organizing urban processes applied to real world context.

Accordingly, city gaming method (Tan, E. 2014) offers a unique platform mainstreaming participation at the nexus of geo-political parameters – institutional plans, policies and reforms between individuals, state authorities, market authorities, individuals and collectives; and geo-physical parameters – topography, codes, regulations, infrastructure, density, land uses, prices, services and public utilities to inform policy, planning and design propositions that triggers collective intelligence of the players (see fig.1).

In doing so, cooperative urbanism proposes and develops inclusive 'micro-solutions' to 'macro-challenges' in this case with a particular emphasis on affordable housing, whereby planning decisions are highly localized and therefore, grounded in the needs and desires of local communities aimed at improving their ability to actively build consensus on the basis of shared priorities and shared values. Even more, promote self-build and self-management techniques to increase the capacities of local communities through strategic urban projects - oscillating between analysis and synthesis, between vision and action, between intuition and rationality, between the global scale of the city and the local scale of the neighborhood, and between the existing and desired spatial structure (Calabrese, L. M. 2011) – will be critical.

Taking that forward from project to people's lives is Human-centered design, it is a human-centered mindset from deep empathy and understanding of needs and motivations of people; it is collaborative benefiting from the views of multiple perspectives; it is optimistic built on the fundamental belief to create change and it is experimental based on rapid prototyping of ideas with multiple feedback loops for further iterations (Brown, T. and J. Wyatt 2010). Design thinking incorporates an in-depth understanding of consumer insights to create effective solutions addressing the needs of the people who will consume the product, service or infrastructure that enables it. Increasingly, businesses are embracing design thinking to innovate and differentiate their products and services in the market to design sustainable and scalable high-impact solutions which can effectively speak to social problems (Brown, T. and J. Wyatt 2010). As a system of three overlapping spaces, inspiration, ideation and implementation wherein inspiration is seen as the problem or opportunity that motivates the search for new solutions; ideation is the process of generating, developing and testing ideas; and implementation is realizing the program from project into people's lives^{vii}. Accordingly, design thinking taps into capacities of problem-solving practices focusing not only on the products but the process itself that is deeply human. With an ability to be intuitive, to recognize patterns and to construct ideas that powerfully associate emotional and functional

meanings of end users, design principles are generated and applied in context – be it a product, a space, a service or an entire system.

4.5 Shared Amsterdam - Strategic Instruments to Housing Affordability

As proposed, human-centered planning and design through collaborative city gaming and design thinking methods aims at understanding and investigating complex spatial processes and apply them to real time challenges. Different than conventional participatory tools, city gaming and design thinking allows for systemic analysis to changing urban structures with multiple stakeholders yet keeping the local communities at the core of design and decision making dimensions.

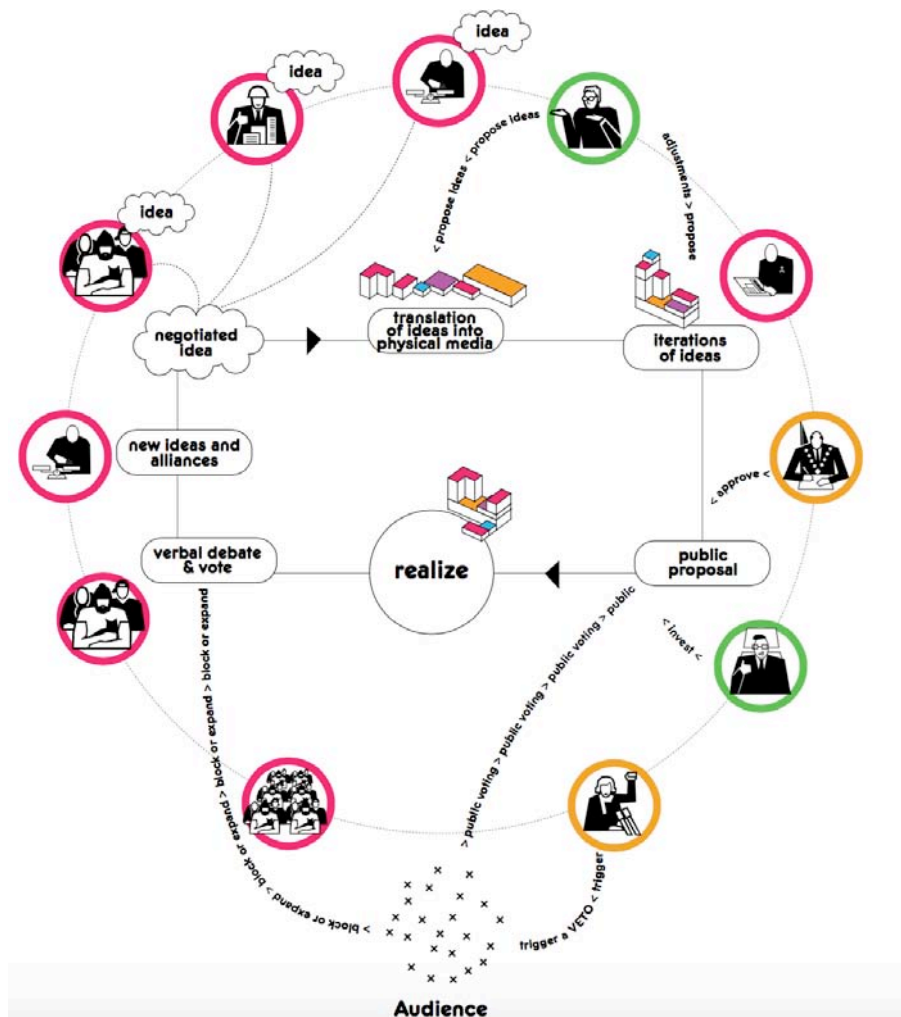


Figure 1: Generative City Game triggers the collective intelligence of players, source: Tan, E. 2014

While human-centered planning and design tools are applicable to an array of different urban problems – regeneration, renewal or restructuring of large, medium or small urban projects, this paper recommends three strategic instruments shaping the creation, development, adaptation and maintenance of a shared city in achieving affordable housing. These are applicable at both the local and policy levels and aimed at problem-solving, learning, strategizing, training and balancing power relations between politicians, developers, investors, builders and local communities. To enable and mainstream participation by means of differentiated housing supply and demand driven programming, cooperative urbanism aims at linking affordability to:

1. Scaling Density – Scaling up of high-impact urban solutions requires a three-pronged approach that factors the needs of the people, the housing and the market infrastructures with increasing returns and public good on investment. Achieving maximum scalability

through urban commonalities focused on value creation and delivery in terms of building typologies, functions, service, public utilities and particularly, density allowing compact development with increased and diversified number of dwelling units and building heights.

2. Mixed Programming – Mono-functionality to multi-functionality based on program scope and differentiation that focuses extensively on mixed-use planning integrating functions – a combination of residential, commercial, cultural, institutional, leisure, health or industrial uses and zoning – natural landscapes, street and pedestrian connectivity, public transportation to ensure and provide quality ‘individual and collective’ living standards known as ‘design for all’ towards making urban spaces livable (attractive and inclusive), accessible and sustainable for local economic development.
3. Adaptive Reuse – Urban transformation projects that effectively meet the demands of future needs with an in-depth morphological and typological understanding of local culture, politics and market structures integrated into participatory planning and decision-making dimensions.

5 Conclusions and Recommendations

Affordable housing is a global challenge for cities in both in developing and developed economies alike. However, urban processes are becoming increasingly complex and vary between countries impacting the provision of affordable housing supply and demand. While this arguably depends on the overall institutionalization and implementation of city’s wider strategic planning framework, engaging in different urban scales of the metropolis, city and neighborhood and incorporating innovative methods to planning – collaboration through city gaming and design thinking motivates and supports fair distribution of roles and responsibilities of shared urban resources. Nonetheless, with complexity emerge contradictions (Tan, E. 2014) when designing for diverse groups of stakeholders towards building of consensus and collectivities. Although evidence suggests reduction in affordable housing stock across Europe and particularly the Netherlands, mainstreaming housing affordability for the vulnerable through local participation leveraging the interests of public and private sectors has been a priority on the basis of income ceilings and households sizes. Still, the broad characteristics that make up affordable housing development often succumb to austerity measures (AEDES 2014) and policy reforms disconnecting local residents mainly the vulnerable from interrelated processes of evolution in design, planning, management, maintenance and decision-making, with limited or no choices.

This paper offers a modest attempt at clarifying the key trends that govern social housing in western European countries to highlight on the need for new spatial paradigms, as indicated above to achieve integrated and inclusive urban planning that mainstreams participation to effectively integrate top-down and bottom-up approaches. While most evidence is drawn from secondary readings, the urban concepts appropriate to the local needs and desires of the communities are deemed most fit. To that end, affordable housing practices require housing experts, planners and practitioners across Europe to adopt social innovation and strategic planning instruments stimulated by cooperation and partnerships across key urban sectors. It further recommends testing of cooperative urbanism towards deploying new spatial paradigms to contribute in rethinking urban planning and policy initiatives. Finally, it advocates for creative and collaborative Human-centered processes to systematically engage and strategize specialized approaches to affordable housing as future research. The existence and role of supply and access to quality affordable housing is both a challenge and an opportunity for economic growth for the Netherlands and Europe as a whole.

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Endnotes

ⁱ Amsterdam connected city – See section 4.1

ⁱⁱ Ibid.

ⁱⁱⁱ Ibid.

^{iv} Ibid.

^v This paper targets beneficiaries who are vulnerable defined on the basis of income ceilings in the low income communities in western Europe including immigrant workers, ethnic minorities, single households, households with women and children, multiple households, pregnant women, elderly, disabled and the asylum seekers.

^{vi} "According to Friedman and Sassen, "the social structure is polarized, mainly among ethnic lines, because global cities attract numbers of immigrants who find jobs in the lower end of the labor market or in the informal economy." This polarization, linked inevitably to segregation is not surprising anymore in the Netherlands, a country having one of the strongest European welfare states." (DIA 2012, p.27).

^{vii} Ibid.

Cooperation and Mediation. The Flexible Geometry of Public Participation. Comparing US and France Evolutionary Approach

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Synopsis

The aim of these reflections is to argue and compare the emerging innovation of some participation models, tools and actors in 'Common Law' Countries (US in particular), and 'Civil Law' ones, as France, through the "flexible geometry" issue and the hybridization of original cultures of the cooperative approach for local development, based on the emerging styles and roles of expert community managers and mediation or facilitation professionals.

1. General framework and goals of reflexions

Within Urban Studies it is widely believed that municipal policy should reflect an equitable, virtuous democracy in terms of participation and deliberation. If we assume as a benchmark that politics, in its noblest sense, is rooted in relationships between institutions, communities and stakeholders - cutting across the demarcation between public and private life - then mature governance is reached when the community itself can contribute fairly to public decisions.

The profound changes focused by Zygmunt Bauman's 'liquid modernity' concept as well as the uncontrolled individualism which has been interpreted by Alain Touraine as the 'end of social reality', create an increasingly complex and fragmented landscape of stakeholders, and enhance the difficulty of inclusively managing participatory mechanisms. Moreover the participatory phenomenon in urban neighbourhood regeneration has recently fomented new interpretations, due to the enforced role of actors and tools for mediation. Originating from two major roots - 'Common law' countries (the US, UK, etc.) and 'Civil law' jurisdictions (France, Italy, etc.) - the evolving scope of mediator and facilitation professionals, in the context of divergent cultural contexts, is currently generating interesting new approaches to fostering shared community scenarios for local redevelopment.

The aim of these reflections is to compare the innovation inherent to participatory democracy models between the different juridical domains—considering the US and France respectively—through the concept of 'flexible geometry'. It will be argued on the hybridization of original cultures into a cooperative approach to local redevelopment, based on the emerging styles and roles of community managers and mediation and facilitation profiles.

In the first part, a general overview on the contemporary crisis of representativeness and the 'ancient dilemma' of the apparent dichotomy of historical democracy models is presented, through different consolidated and emerging cultural positions, trying to focus how they are affecting the innovation of styles, models and tools for exerting virtuous participatory democracy principles in urban redevelopment strategies.

In the second part reflections are focused on the emerging profiles of particular families of actors - mediators and facilitators in particular - who although their different "dna", share the mission of "third party neutral to help multy-party work groups accomplish the content of their work by providing process leadership and process expertise" (Fleischer J.M., Zumeta Z.D.

1999). These experts are more and more involved by the main actors in urban regeneration projects in order to rebuild or strengthen the weaker and weaker bridge of public participation among the privileged actors and the recessive stakeholders in local communities. Some significant tools and case-studies are shortly explored showing the diverse cultural interpretations of the so-called 'flexible geometry approach' and its implementation in US and France.

Final comments and reflections are devoted to the effective contribution that the emerging profiles mediation/facilitation-oriented can deliver to a general innovation perspective of the participatory and deliberative democracy scenarios in urban redevelopment policies.

2. The participation issue in urban policies. Short overview

Within European urban policies, in 'Civil law' Countries particularly (France, Italy), contradictory trends are strongly emerging: on the one hand, in the general atmosphere of a widespread disappointment about the implementation local governance principles, some radical theorists are fostering forms of participation and local empowerment closer to an ideal direct democracy model, tackling the primary role of privileged actors; on the other hand public administrations, professionals and scholars are forced to admit increasing difficulties in managing the participation process which is often affected by procedures still complex, exhausting, ineffectual, often disappointing for contents and outcomes, with the great temptation of coming back to a more centralised government scenario.

In the historical evolution of the doctrinal issues, several '*maitres à penser*' have shown that both the representative and the direct democracy models, together with recognised virtues, can assume drawbacks and critical consequences.

Jean Jacques Rousseau commenting ironically the democratic condition of the British, whose representatives were elected without a binding mandate, stated that "*the people of England regards itself as free; but it is grossly mistaken; it is free only during the election of members of Parliament. As soon as they are elected, slavery overtakes it, and it is nothing*" (Rousseau, 1762).

On the other hand, it's interesting to remind the model of direct democracy 'par excellence', the Athens of the fifth and fourth Century b. C. In his masterpiece, 'The Republic', Plato explains how Socrates deemed totally inappropriate that, in the deliberative assembly, ordinary citizens could express decisions on matters defined as important 'works of art' (like relevant buildings or ships), for which an 'expert knowledge' is requested. On the contrary, according to Socrates, when 'the Polis must deliberate on the State affairs', everyone can present his point of view - blacksmiths and shoemakers, merchants and sailors, rich and poor, noble and humble - and although they speak without any specific competence, nobody should have any objection.

Concerning the inclusivity issue and the stakeholder empowerment (Shiffman, 2007), one the leading contemporary schools of thought in Politics, within its theory on democracy has listed five criteria to guarantee everyone an equal right to be involved in decision-making (Dahl 1989). One of them is particularly cogent for these reflections, the so called 'effective participation'. Citizens and recessive subjects must have both the ability and the opportunity to ask questions, give suggestions, provide reasoning, and indicate preferences that can be included on the political agenda.

In modern times the inclusionary approach of inhabitants, beneficiaries and other members of urban communities in drawing up decisions on the transformation of the city, is a decisive issue in the idea of participatory democracy in answer to the emerging demands of contemporary society. It is not one of the possible alternatives, it is now an imperative, outlining a project of social cohesion which is founded not on '*a priori*' aseptic scenario but on

the difficult search for opportunities in order to extend consensus to the greatest possible number of diverse actors in the urban scene.

The evolution process of participatory democracy as a tool of decision-making necessarily entails developing active forms of involvement in drawing up the population's decisions as well as recognizing other stakeholders concerned with the transformation of the city. It is a continuous search for a delicate balance between the two extremes of a pendulum: the rhetoric of 'broadening participation' and the risk of the asymmetry between privileged actors and weaker subjects.

Within its evolutionary seasons, participation has been related to different interpretations (Lawrence, 2006) and the scientific literature could focus some typologies related to the diverse cultural contexts in which they could be reasonably embedded.

The first family is oriented in exploring the degree of stakeholder engagement. The "ladder of participation" (Arnstein 1969) is the seminal theoretical work on the subject of community participation. Arnstein's hierarchic vision was important for reflecting on passive or progressively active involvement of the weak stakeholders among citizens (Johnson et al., 2004). However, the limitations of such a schematic view are numerous: the levels of participations in the increasing density of the urban arena reflect a more complex continuum than a mere sequence of steps. Moreover, the conception of a ladder implies that more control is always better than less one, although an increased control may not always be fostered by the community in every condition and may lead to failure without the necessary support.

The "wheel of participation" (Davidson, 1998) has been suggested as an alternative to the ladder metaphor, emphasising the necessity to embrace a 'changing geometry' in the dialectic of subjects and the consequent legitimacy of different degrees of involvement which are likely to be appropriate in different contexts, depending on the objectives of the work and the capacity for stakeholders to influence outcomes (Richards et al., 2004; Tippett et al., 2007).

The second typology deals with the nature of involvement, identifying the direction of flows among the different actors. According to this view, differently from one-way flows of information and consultation, participation is virtuously conceptualised as two-way communication or a network, building an active dialogue among subjects (Rowe & Frewer 2000).

Other families are oriented in deepening the theories of normative or pragmatic nature of participation, the former focused on process, the latter on the quality of final outcomes. There have been interesting attempts to conceptualize the contrast between normative and pragmatic participation, as for instance in the 'communicative action' theory (Habermas 1987) in which participation should be "fair", representing the full range of relevant stakeholders and equalising power between participants.

Finally, the scientific literature underlines typologies on the basis of the objectives for which participation is used. In this domain some authors underline the difference between "research-driven" and "development-driven" participation (Okali et al., 1994), others distinguish the "planner-centred" participation that is focused on outcomes from the "people-centred" participation, which builds capacity and empowers stakeholders to define and meet their own needs (Michener 1998).

The short outline shows how scientific studies on participation went in depth on its 'ontological dimension' and on the dialectics and roles of traditional and emerging actors in the urban arena in front of new scenarios of urban redevelopment.

However, many schools of thought converge on the idea that it should be mostly argued and investigated about the difficulties in managing the frequent and paradoxically increasing gap between point of views negotiated by the privileged actors of urban scene - the so called

FIRE: Finance, Insurance, Real Estate - and visions, desires and demands as expression of the weak stakeholders, as single local citizens, inhabitant associations, representatives of small local business, and so on.

So, how is it possible to reduce the distance between ideal visions and concrete implementations in the participatory process within urban redevelopment programs and projects? What are the innovative tools and virtuous interpretations of participation in contemporary urban regeneration scenarios in the western economies?

In the last decades, despite of the bubbling rhetoric of the 'imperative of public participation', the increasing gap seems to be inexorable within the general framework of the decline of political representativeness and administrative capacity together with the growing phenomena of corruption and speculation. However, a glimpse of innovation in terms of cultural regeneration and operative exploration of new tools and potentials is represented by the increasing importance of the 'interface space' among policy makers, public officers, privileged economic actors and all the complex and fragmented world of the community stakeholders within the urban arena.

An 'interface space' more and more devoted and delivered to specific subjects supposed to be 'neutral' - private professionals or specialized nonprofit organizations - whose mission is increasingly oriented in involving stakeholders, facilitating the community participation, relating actors each other, mediating conflicts, supporting negotiations, encouraging the development of participatory and deliberative pathways, managing group dynamics, keeping under a reasonable control the process development and helping the decision makers and the other stakeholders to draft texts of agreements. Many school of thoughts (Gulliver, 1979; Amy, 1987; Forester, 1989; Ozawa, 1993; Bobbio, 2008) argued about the absence of a univocal term to define these emerging actors and underlined the deep diversities in roles and cultural interpretations. The widespread 'mediator' or 'facilitator' terms, as well as other more general definitions (participation experts, animators, negotiation consultants) are often used interchangeably, despite significant diversities.

From the point of view purely etymological, "facilitate" means "to make easier", so facilitators should make easier for people to accomplish specific goals in order to improve the life quality of their community. Helping people to think more in terms of interests than positions, the facilitation strategy should be oriented in providing process leadership and management expertise.

The 'time factor' within the 'process' road-map is probably the most significant diversity between mediation and facilitation. In not specialised literature facilitation and mediation are presented in a similar way, but going in depth they are considerably different.

Facilitation is primarily used in order to prevent the *conflict* or at least intervene in a *pre-crystallized* conflict phase. Facilitators, who could be deemed as sort of 'holistic physicians' (Fleischer, Zumeta 1999), can give their best contribution pushing people to work collaboratively toward their common goal, trying the different stakeholders to get rid of possible preconceived forms of prevention. That doesn't mean there isn't the *potential* for conflict, or that episodes of tough disagreement haven't already occurred. However in general the most important feature of facilitation is its preventative role for avoiding devastating conflicts.

Mediators, on the contrary, tend to be involved when huge conflicts are already in progress. There might be privileged powerful actors facing themselves from antithetic positions and almost forcing individual community stakeholders to choose different sides. When the lines between facilitation and mediation blur, experts define this condition and the derived strategy as a "multi-party mediation." Even if the entire group of actors is not directly involved in the dispute, the entire context is negatively affected. Sometimes scholars define such multi-party mediation a "facilitation" action, simply because it is more effective for the conflict deniers or the stakeholders who don't feel involved in the dispute.

In the following part it will be argued about some intriguing hints of innovation within two different countries, US and France representing originally opposite juridical cultures, the 'Common Law' world and the 'Civil law' domain. Referring to urban redevelopment policies and tools they nevertheless are implementing partnership approaches and related cooperation and mediation 'models' of particular interest (and potential) because of their capacity of flexibility and hybridization.

3. Emerging styles and actors for mediation and facilitation in US and France

Community Development Corporations (CDCs) are well known throughout the USA as NPO which aim at community social and economic development in low income and distressed neighborhoods. Some data may help understand the phenomenon of CDCs in USA. In 2006 there were an estimated 4,600 CDCs operating across all 50 States, some 1,000 more than in 1998 (NECCED, 2005) with an average annual production of 96,000 housing units, 7.4 million sq.ft. of commercial space, 75,000 jobs.

In order to understand the general reasons that back in the 1960s, starting with the federal programme "War on Poverty", led to the creation of these entities, their mission and focus, it is useful to refer to the consolidated literature which highlighted the use of CDCs as "*a strategy designed to solve many of the problems of discrimination, poverty, lack of citizen participation, and the failure of governmental institutions*" (Goodpaster, 1968).

This statement indirectly shows the areas of interventions and objectives typical of CDCs work which mainly relate to community empowerment, organizing, social and economic development, youth programs and job training activities (Schwartz, 2010). After the first experiences of the late 1960s when there was widespread federal funding and support for such initiatives, their focus switched from economic development towards affordable housing provision as a means through which community improvement could be delivered (Peirce & Steinbach, 1990; Vidal, 1992). Subsequently, federal funding was drastically reduced during the Regan's administration in the 1980s. In spite of this, the number of CDCs nearly doubled between 1981 and 1986 (Gittel & Wilder, 1999).

3.1 Participation, community empowerment and flexibility in US. The role of CDSs

The phenomenon of CDCs in US has been explored by a huge literature; despite some criticism about the 'supposed betraying' of the original social mission (Stoecker, 1997), the majority of authors (Hamilton, 1992; Bratt, 1989; Vidal, 1992) advocate CDCs as being able to responsively meet community needs and requirements and to represent community interests better than city-level administrations. Although from time to time some CDCs became more and more 'professional oriented', these entities should not be expected to have a 'high productivity' due to their original social 'dna'. Important comparative studies (Walker, 2002) demonstrated that there were positive results in the neighbourhoods of 23 surveyed cities where CDCs operated both in terms of results and of mitigating or preventing conflicts. Acknowledging the increasing size of the CDC industry, the number of affordable housing units delivered and the general quality of neighbourhoods reflected in the rising residential values.

However, the research on CDC phenomenon left on the background another emerging identity of these PPP tools in the urban redevelopment strategies: a real 'facilitator' of the dialogue among actors, often victims of prejudices and preconceived mistrust. In general CDCs are not an ordinary third-party facilitator, as residents often lead the Board of Directors, although including all other neighborhood stakeholder representatives in a democratically-elected, community accountable process. First of all, following the original mission of these NPOs, they are called to privilege the neighbourhood community interest.

Nevertheless, the increasing professional management skill they achieved in the last years can show their quality by playing different games for redevelopment projects, pursuing 'virtuous' agreements with a flexible panel of actors (first of all, investors and developers), treating advantageous scenarios for the community on a social, economic, financial and environmental point of view. The outstanding experience of Dudley Street Neighborhood Initiative (DSNI) in Roxbury neighbourhood of Boston (MA) is almost a unique case in this direction.

3.2 The experience of 'Dudley Street Neighborhood Initiative' (Boston, MA)

DSNI, one of the most renowned best practice of its kind in the United States, is a Non-Profit community-based Organization (NPO) created in 1984 through the passion and determination of Dudley residents, in the distressed area of Roxbury, Boston (MA), whose goal was (and still is) the revitalization of a neighborhood that in time had been ravaged by disinvestment, arson fires, criminality and dumping.

So, DSNI's mission is to empower the Dudley residents, workers and city users to organize, plan for, create and control a vibrant, diverse and high quality neighborhood in cooperation with community partners. Ever since, it has been operating in the neighbourhood, with a social and economic purpose.

In the late 1980's, through a comprehensive organizing and planning initiative, Dudley residents were able to establish community control over a critical mass of the 1,300 parcels of abandoned land that had come to characterize the neighborhood. As part of this effort, the City of Boston adopted the community's comprehensive development plan and granted the power of eminent domain over much of the privately-owned vacant land in the 62 acre area known as the "Dudley Triangle." Dudley Neighbors Incorporated (DNI) - a Community Land Trust - was an important tool for implementing the new local vision. It was created to develop Dudley's comprehensive master plan, take ownership of that land and realize a vision of redevelopment without gentrification.

Twenty five years later, more than 30 acres of formerly vacant, blighted land in the Dudley Triangle are now under neighborhood control through DNI. This land has been transformed into 225 new affordable homes, a 10,000 square foot community greenhouse, urban farm, a playground, gardens, and other amenities of a thriving urban village. Dudley Neighbors Inc. is recognized as one of the nation's most successful urban community land trusts and serves as a model for other communities organizing to promote development without displacement and long-term control of the land.

At the basis of the actions and initiatives undertaken by DSNI is a close partnership with different actors and subjects that range from NPOs to governmental agencies and other private actors.

The rationale behind the collaboration between the various partners is that DSNI does not follow the ordinary protocol of a Community Development Corporation, pursuing a changing geometry strategy for the conception, implementation and management of different projects. Due to policy lines, fundraising actions, cooperation patterns, stakeholder scenarios, DSNI looks for support creating agreements with different subjects. DSNI therefore creates appropriate partnerships with different actors, decided on the basis of the initiatives undertaken and promoted, and does not set up privileged cooperation. Therefore, it may be claimed that its role is mainly to propose, put forward and support new projects and initiatives, which are then carried out by other agencies.

Dudley Street Neighbourhood Initiative represents a unique case, from several different points of view. Although it is a community-based organization and even though it has all the characteristics common to a CDC, it is not a usual one. The great management flexibility allows DSNI to 'facilitate' the relationships between involved citizens and other stakeholders

and select the best partner on the basis of different criteria, different goals to be achieved, and different human resources to be engaged.

Evidently, it can be claimed that DSNi as a 'special community-based facilitator' plays a crucial role in urban planning and regeneration initiatives within the Roxbury area. Its special status as an *eminent domain authority organization* represents a unique case for which it is difficult to make a comparison to any other cases where a private (or public-private or non-profit) organization has been granted such a fundamental power for the planning activity. Its role within the community is proactive and its involvement in almost all of the planning and urban regeneration projects undertaken within the neighbourhood ensures that the community interest is always taken into consideration, revitalizing vibrant *urban atmosphere* and tackling any temptation of gentrification.

Through the Board structure, residents manage successfully the 'changing geometry' game of the implementation of different projects and increase the inclusionary level of all stakeholders in a democratically elected, community accountable process. Thanks to its role, DSNi was able to save and enhance the community identity, pursuing greater civic participation, economic opportunity, community connections, and opportunities for youth, beyond any diversity of language, age, race and ethnicity.

3.3 Public negotiation framework in France: the emerging role of new mediators

Since the ancient roots of the French Revolution and, mostly, the Napoleonic Code, France has been representing the most significant enduring example of the 'Civil law' culture, with a privileged, originally centralised role in the public action. From then on, the increasing prestige of the French juridical and administrative culture - with its logical arrangements in its internal structure and the 'architecture' of power distribution and management among the central and local administrations - have been influencing many European countries which chose to follow the French model and its evolution.

The general principles of the French negotiation are underlined in the *Charte de la concertation* (1996), conceived by the Territorial Planning and Environment Ministry. Mandatory for urban planning projects and for environmental policies since 2005, negotiating initiatives are adopted by the central government and the territorial communities in order to create direct relationships with affected populations. In French negotiation model many tools are available and in the last years, besides the leader role of the public administrations, private professional organisms are more and more involved and directly delivered as main responsible of the mediation and/or facilitation issues of the participatory inclusionary process.

The French negotiation consultants resume the typical coordination and mediation functions within the 'Civil law' cultural context. The public negotiation path should: product proposals, opinions and contributions replying to a specific question – 'ex ante' clearly defined – and improving the quality of decisions; enrich the project framework for the decision makers, adding new knowledge and hidden issues in order to optimize its implementation and appropriation thanks to the involved actors.

In France these professionals work sometimes in the public administration context or mostly in private firms; in the last years the French professional practice in public negotiation increased its importance right through the emerging contribution of such private consulting structures, specialized in building and animating inclusive processes with a collaborative driven approach. In about ten years these private bodies passed from the pioneering phase to the common acknowledgement by the public authorities and administrations. These consulting offices are negotiation providers, resulting from public tenders of a wide panel of public and partnership institutions. Public negotiation process is accompanied by other forms of participation: information, necessary to establish public dialogue, and consultation, which

allows querying stakeholders without constituting a direct dialogue among them (surveys, questionnaires, etc.).

The pursuit of governance network takes an even more prominent role in a legislative context composed by multiple instances leading to public participation. In France the theme of new tools and actors for coordinating the negotiation, both in public-public and in public-private relationships, permeates policy frameworks and regulatory domains of considerable importance and variety, such as, for instance, the '*Politique de la ville*' strategy and the '*Démocratie de proximité*' issue.

The first one was started by the State about thirty years ago with the mission of regenerating the blighted urban areas and reduce inequalities among territories. By the early 1970s, public authorities were aware of the difficulties of the "Grandes ensembles", huge social housing neighborhoods where the '*banlieu*' issue was exploding. After numerous cycles of alternating good and disappointing results, a new season of the '*Politique de la ville*' was recently opened by the national law 2014-173, '*Programmation pour la ville et la cohésion urbaine*' in which, the '*Contrats des villes*', city contracts between State and local collectivities for regenerating specific priority areas, are to be discussed and approved by a local Citizen board ('*Conseils citoyens*') after a diagnostic of participatory practices and initiatives. Inhabitant representatives and other local stakeholders, excluding policy makers, compose the Board that can be enhanced by external professional negotiators and mediators for setting up a virtuous inclusionary process.

The law 2014-173 is particularly cogent because it established the principle of cooperation in the construction of urban policy with the inhabitants: from then on, all regeneration tools ('*Contrats de Ville*' and any other project of urban revitalization) are to be designed and piloted by involving all citizens concerned. '*Conseils citoyens*' - created in the priority areas - have the mission to be places of exchange within the local community, to develop expertise (possibly with the support of external consultants), to ensure in every '*Contrat de ville*' the representation of the 'diverse souls' of the local human capital and create a space allowing initiatives coming from the needs of the community.

In the French context the 'proximity democracy' idea is explicitly related to the citizen's participation in local public services management and it has been deepened by the legislator introducing local democracy measures in municipalities with more than 3,500 inhabitants. The law '*Démocratie de Proximité*', introduced in 27 February 2002, suggested the creation of '*Conseils de quartier*' (neighborhood councils) in municipalities with at least 20,000 residents, making them mandatory over 80,000. Established by the City Council, they include municipal politicians, community representative personalities and residents' associations. They must play an advisory role to the mayor, mainly in the field of urban policy contributing with proposal and associated decisions in the way of public negotiation.

The '*Conseils de quartier*' let establish a genuine negotiation on issues about local public services. The periodical presence of concerned politicians and officials to listen to the request and the views of citizens is essential.

With these and other coordinated policies it is underlined the progressive change of the French negotiating framework that is moving from the original decision centralism of the public authority to the hybridization with models belonging to Common law countries where the local community, with the mediation of experts guiding the negotiation process, is taking on the 'turbine role' of the participatory process. The public administration, differently from the past, like a good referee, is mostly concerned to define the rules of the game and control the effectiveness of the process and the quality of final results. The case of the project 'Gratte-Ciel Centre Ville' in the city of Villeurbanne (Métropole de Lyon), despite choosing relatively traditional planning tools (ZAC), seems quite significant for the innovation of the participatory process and the privileged role of the mediator and facilitator actors.

3.4 The urban project 'Gratte-Ciel Centre Ville' (Villeurbanne, Lyon)

The present hyper centre of the city of Villeurbanne, belonging to the core of Lyon metropolitan area, was born 'ex nihilo' in the early 1930s. Due to the entangled efforts of a visionary mayor, Lazare Goujon, and an architect, unknown until then, Morice Leroux, the Gratte-Ciel centre is one of the most remarkable modern urban episodes of the XX Century in Europe and its skyscrapers are considered extraordinary masterpieces of the period in between the world wars, both on an urban and architectural point of view.

Today this 'historical' hyper centre is no longer suitable for the increased critical mass of Villeurbanne (145,000 inhabitants). After a long preliminary debate at the end of 1990s, some years ago (2008) an urban regeneration project was launched by the Lyon Metropolis (before 'Communauté Urbaine de Lyon' plus 'Conseil général du Rhône') together with the City of Villeurbanne for enhancing the identity of the hyper centre and giving a new dimension to the heart of the "agglomeration" by doubling its size (from 7 to 14 hectares) and delivering new residential and economic activities within a high quality public space and facility fabric. This urban revitalization initiative, in a neighbourhood marked by such peculiar heritage assets of the 1930s, is unique in France. As the original Gratte-Ciel project by Leroux in 1934 had donated a real identity and built the first new centre in Villeurbanne, it is possible to say that the planned extension in progress is one of the most ambitious flagship centralities for the new attractiveness of the entire 'Lyon Métropole'.

The framework of public, private and other partnership actors involved, mirrors the complexity of the project. The general control of the initiative is undoubtedly public, both at territorial and local level (Métropole de Lyon and Ville de Villeurbanne). The ZAC ('*Zone d'Aménagement Concerté*') project coordination and management has been assigned by the Grand Lyon institution to SERL (*Société d'Équipement du Rhône et de Lyon*), typical French public-private partnership organization (*Société d'Économie Mixte*). SERL operates in partnership with public and private actors to develop and implement urban regeneration projects in the region. Founded in 1957 on the initiative of local officials, SERL associates in its capital, the majority of local authorities and economic and financial partners.

In 2008 the first general master plan was entrusted to the famous planner Christian Devillers and its firm (ADA), whose blueprint construction has been the basic shared scheme for developing, in the second phase (from 2014 on), two detailed planning detailed scenarios, conceived by the planning and design firm ANMA.

Looking at the specific issue of the negotiation process, in the beginning of the first phase (2008-2011) the conduction entrusted to the public authorities followed the traditional "bottom up" approach with several opportunities of stakeholder involvement in the usual 'debat public' configuration. Despite the rhetoric of some official documents (mainly by the public actors), it is clear that the usual consultations (conferences, public meetings, confrontation with planning and design specialists, etc.) showed an evident asymmetry condition between privileged and 'weak' actors, a rarefied presence of widespread stakeholders (120 people in the 'ateliers', an average between 150 and 250 attendances at the main meetings) and a concrete contribution of only 26 organised remarks in the final report of public negotiation approved in the beginning of 2011 (period 2007-2010).

After almost three years of reflexion, the main pilot authorities realized that something different should be 'invented' for pursuing an authentic participatory democracy in the long way of the project implementation (2008-2027). The issue is not properly focused on the main planning and design axes that could be considered more or less sufficiently shared. The values and problems are extended to the symbolic identity of the new great centrality of Villeurbanne within the Lyon metropolis. And to the capacity of mediation relating to the very local interest of a huge number of single landowners involved by the urban regeneration plan.

The critical mass of the project area is the image of a strong ambition, expressed in the desire to 'build a great metropolis' and an attractive centrality 'that must be' an opportunity to

build a smart city, taking care of the environment and its inhabitants. Gratte-Ciel Centre-Ville will be a real laboratory for a sustainable city, a place to invent and implement the innovations of the future daily life.

Nevertheless this complexity at the very local scale involves the acquisition of a large number of plots and, presumably, a significant number of expropriations. This involves a significant risk of conflicts (of interest) with landowners for economic, social, practical or emotional reasons (the inhabitants are older than the average as indicated in the preliminary reports). These potential (or sometimes already emerging) conflicts could stop or viciously delay the implementation of the project to be realized in the next 12 years.

Therefore, in order to avoid such risks, in March 2015 the SERL has decided to appoint a private enterprise specialized in negotiation, mediation and facilitation to conceive, drive and implement the complex strategy of negotiation (*'strategie de concertation'*) for the 'Gratte-Ciel Centre Ville' regeneration project.

The strategy underlines that all involved stakeholders - privileged and recessive, public, private and non-profit - should be oriented in pursuing shared negotiation and participation values, following new themes as the 'urbanity of the public space', the 'liveability and greening' of the renewed skyscrapers - taking care in particular of general interest space (both common and private) - the transformation of in progress construction phases in opportunities (temporary space management for inhabitants initiatives, creative activities, artistic interventions, experiments, etc.).

4. Intriguing hybridization scenarios for community empowerment

Of course these reflections do not presume to indicate new absolute models of participation; however, hints of innovation within different cultural domains are clearly supported by the evolution of the roles of cooperation for the negotiation process through the contribution of mediation and facilitation expertise.

Best practices show that the community empowerment goal is possible, by place-based deliberation. A cooperative approach is needed to enable local development, by leveraging on the necessary mediation (when conflicts are already in progress), or facilitation (if it is possible to prevent them) between stakeholders and decision makers. And the traditional gap between privileged and recessive actors can be reduced through the professional action of mediation and facilitation experts.

Decentralized 'changing geometry' participatory models can be embraced, to get close to the authentic needs of local communities. Since the end of 90s, projects and experiences in US and Europe have been fostering these principles and enforcing good practices, in order to progress towards the real sustainability of an inclusive democracy.

Widespread in US as an effective tool for social and economic redevelopment in blighted neighbourhoods, CDCs identify an intriguing model of citizen empowerment, following the place-based approach within a 'changing geometry' philosophy. Nevertheless, there is an emerging dimension: the DSNI experience represents a cogent case-study in a virtuous mix of facilitation activity and civic empowerment mission.

The rationale which supports the CDCs action is embedded in the local scale, as neighbourhoods may be the effective economic development and employment generators thanks to the cohesion and mutual support which can be built in such communities. Thus, the CDCs social and economic redevelopment model strongly relies on bottom-up approach where residents' participation becomes central to the achievement of their mission and vision. As such, the benefits of CDCs, compared to the action of superimposed governmental

institutions, are linked to their ability of responding to, and take advantage of development opportunities in a faster and more flexible way than the public power.

In France, public participation, negotiation, mediation and facilitation are part of the public consultation process called '*concertation publique*'.

In this field, professionals of French consultancy firms (*bureaux d'étude*), are more and more involved in mediating area-based participatory processes for the territorial development with a multi-stakeholder approach, becoming increasingly effective and "mitigating" the original dominating role of the public power in the participatory democracy process.

Despite the enduring central role of the public administration in the participatory models, the general framework is changing in France: subsidiarity policies, new horizons for innovating the increasing pressure of communities and peculiar stakeholders in the public negotiation scene are related to the specific contribution of mediation and facilitation professionals, entrusted by the public authorities to manage the dialogue among the different actors, tackling or mitigating the occurrence of potential conflicts and pursuing inclusionary project scenarios.

It is interesting to stress how the original 'Civil Law' model, historically based on the incumbent, pilot role of the public administration (in France and in Italy too, for instance), has been progressively introducing flexible features, hybridizing somehow 'Common Law' styles within the stakeholders relationships and roles for fostering a consensus scenario. In this respect, Villeurbanne case-study represents a significant example, still in progress, of the increasing importance of the professional negotiation agencies in the public participation inclusionary process.

Moreover, in the involvement of the private and the public spheres, the case studies illustrate different economic implications.

In the *DSNI* the fragile balance between public and private sectors was managed by the 'leading' role of the Community based organization and its capacity of assuming at the same time different identities in the local scene: non-profit organization looking after the community interest, facilitator for the access to public resources, mediator with the developers, facilitator for preventing or mitigating local conflicts. The success of the redevelopment process was related to the 'flexible geometry' approach for the involvement of multiple and heterogeneous stakeholders, with the limited presence of public authorities. In such cases, when social problems are both the critical issues and the major driving force for the regeneration process, the possibility of adopting a flexible partnership model is strategic.

In both the CDC experience and in the French negotiation, run by the professional mediation firms, the hybridization of the 'civil law' with the 'common law' approach can occasionally allow the Public sector to be seen in a mutating role, changing from being a 'resource provider' to a 'resource broker', and a facilitator for the involvement of private investors and other fragmented stakeholders in the redevelopment process. In this sense, the Boston case as well as the Villeurbanne project cannot do without the direct and active involvement and cooperation of the entire local community in a flexible context of regeneration strategies.

The historic, original models are passing through an intriguing process of hybridization: in the US a new generation of NPOs, guided by the CDCs experience, appears to be more effective if the public government becomes a virtuous mix of the traditional 'referee' role and a sort of 'soft driver' when primary and urgent circumstances require a more active role and a direct public initiative; almost the opposite of what has been going in the 'Civil law' context where the centralised power is giving more and more space to the mediation and facilitation private expertise in order to bridge the gap between decision makers and local fragmented communities, starting from France experience as it was stressed before. Within this physiological trend it is crucial to join a 'flexible geometry' approach, interpreting the changing conditions of local culture, economy, society, time, and space.

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Building Equitable Cities and Regions Through Inclusive Practices: Case Studies From the U.S Partnership for Sustainable Communities Initiative (SCI)

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Abstract

Changing city dynamics such as stagnant economic growth and the increased presence of diverse groups have led to increased polarization and exclusion in cities. Managing these dynamics requires that cities reinvent ways of fostering inclusiveness and collaboration in the planning and development process. Both local and federal government can play a significant role in fostering inclusion. This paper highlights several inclusive practices adopted by grantees (regional and local planning agencies) of the U.S Sustainable Communities Initiative (SCI) to bolster cooperation among governments, communities, civil society and businesses towards equitable growth.

1.0 Globalization and Changing City Dynamics

Over half of the World's population now lives in cities. Hence, cities embody the spaces where the fight for social inclusion, cultural diversity and economic growth will be won or lost (Kornberger 2012). Cities are engines of economic growth, social innovation as well as places to experience rich cultural diversity. Cities also host the highest concentrations of poverty, exclusion, ethnic polarization and segregation (Wacquant 1999, Atkinson 2000, Cassiers and Kesteloot 2012). Globalization and its associated processes, such as immigration and capital flows, continue to compound these challenges. For instance, the movement of capital from certain regions to others and the economic restructuring ongoing in many cities has rendered many city residents jobless, increasing poverty as well as social polarization (Wacquant 1999, Atkinson 2000, Defilippis 2004, Musterd and Ostendorf 2013). Increased social division and inequalities have heightened social exclusion for some, which in turn limits their ability to fully participate in the society (Musterd and Ostendorf 2013).

2.0 The Why, How and Costs of Social Exclusion

Groups are excluded or included on the basis of their identities that are defined by race, gender, ethnicity, religion, social status and disabilities (Beall 2002, WorldBank 2014). In all countries, whether developed or developing, various groups - such as immigrants, ethnic minorities and indigenous groups - face barriers that exclude them from participating in the social, political and economic processes of their countries (WorldBank 2014). Exclusion manifests through various forms like outright denial of basic services (housing, water, education, etc.) to limited opportunities in accessing social protection and economic opportunities. For instance, a study by Aalbers (2011) shows that lower income groups and racial minorities in the USA, Italy and Netherlands are more likely to be excluded from the mortgage markets through redlining or predatory lending in form of costly subprime loans (Aalbers 2011). According to the 2011 Uganda Demographic and Health Survey, people from the majority Baganda ethnicity were ten times more likely to have electricity as compared to the ethnic minority Lugbara and Ngakaramajong (WorldBank 2014)

Exclusion is costly both to the individuals being excluded and the governments of those Nations where such groups reside. A 2014 World Bank study found that Romania incurred about €887 million loss in productivity as a result of excluding the Roma people, an ethnic minority (WorldBank 2014). Similarly, the same report estimates that ethnic exclusion reduced agricultural productivity by up to 36 percent in Bolivia. Therefore, inclusion matters not only in itself but also as an economic imperative.

While the path towards inclusion may be uncertain and lengthy, there is evidence that inclusion can be planned and achieved (WorldBank 2014). Studies (Boonyabanha 2004, Brakarz and Aduan 2004, Cid and Paul 2004, Boonyabanha 2009) suggest that government actions and policies in markets, social services and spatial development can be powerful tools of fostering inclusion. For example, promoting access to services such as health and education may enhance human capital (Butala, VanRooyen et al. 2010). Improving transportation may boost mobility, hence connecting individuals to social and economic opportunities. Well-planned physical spaces that encourage integration can be useful in bridging social differences and attitudes (WorldBank 2014).

Through targeted interventions, the current exclusion in cities can be addressed. Nevertheless, effectively dealing with exclusion will require transformations in the ways planning decisions are made and how development takes place. For example, the recent economic recession has led to reduced city revenues, compromising the ability of governments to single handedly provide for their citizens (OLIFF, MAI et al. 2012, Pianin

2014). Consequently, addressing the current social inequalities and exclusion in cities will require concerted efforts among a wide range of actors including national and local governments, private actors as well as local communities.

The section below documents practices adopted by grantees of the USA partnership for Sustainable Communities Initiative (SCI) to include traditionally marginalized communities in metropolitan planning and decision-making processes. Information used for this paper is mainly drawn from a study carried out by PolicyLink on inclusive governance practices among several SCI grantees. PolicyLink is a national organization that deals with economic and social inclusion in the USA. The study was part of a capacity-building process that PolicyLink carried out for SCI. Additional information was obtained from agencies websites and project documents.

3.0 The Partnership for Sustainable Communities Initiative (SCI), USA: Working Together To Foster Regional Growth Through Inclusion

The Sustainable Communities Initiative (SCI) is a partnership of the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA). The partnership established in 2009 and still ongoing seeks to coordinate federal investments in economic development and affordable housing with transportation and related infrastructure improvements. The program funds local and regional partnerships to plan and implement integrated projects that connect communities to opportunities by linking affordable housing, transit and job opportunities. The projects range from transit infrastructure, walking and cycling infrastructure, urban renewal programs and brownfields planning research. By 2012 the program had funded over 700 communities across the USA at a cost of over \$3.5 billion. Figure 1 below shows the distribution of SCI funded projects between 2009 and 2012.

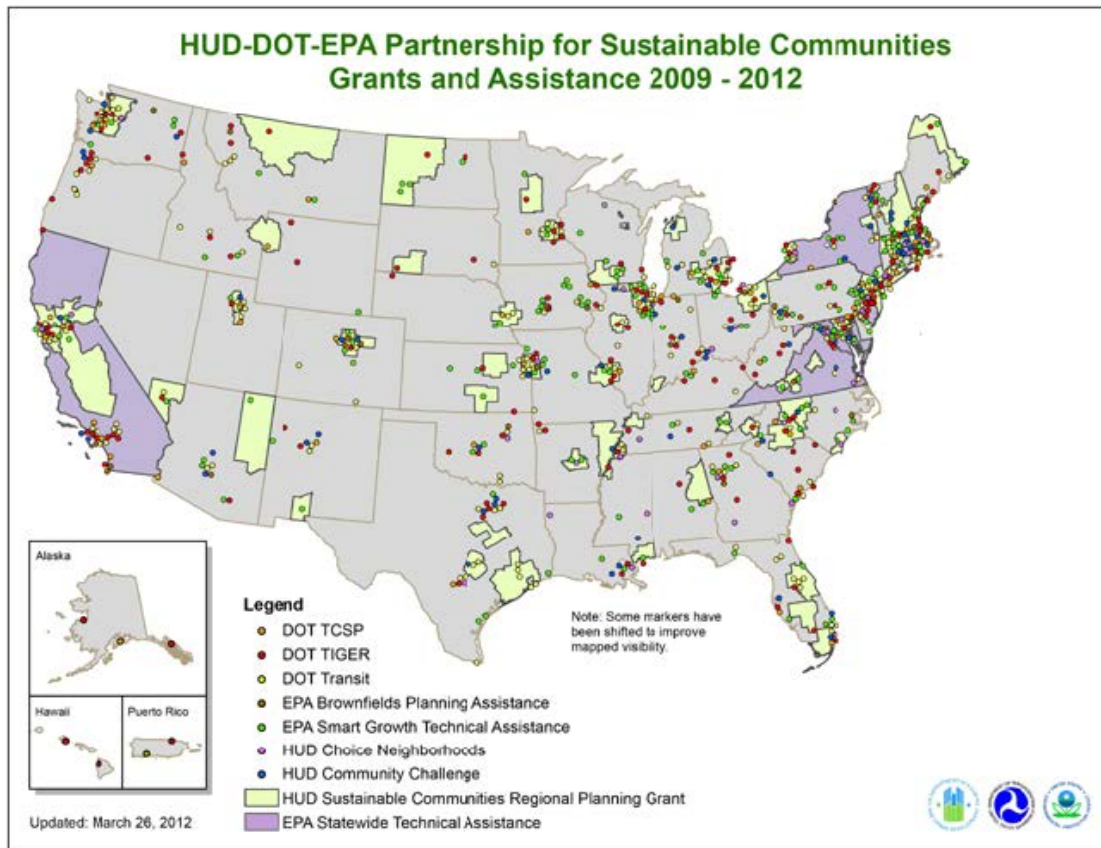


Figure 1: SCI funded Projects Between 2009-2012

Source: *Partnership for Sustainable Communities Accomplishments Report 2009-2013*

One of the SCI partnership's key objectives is to foster inclusive economic growth. Such growth should create a strong foundation for shared long-term prosperity and provide decent jobs to those that need them the most, particularly communities of color and low-income groups. To ensure inclusiveness in the regional planning and development processes, the SCI program requires regional grantees to partner with a wide array of stakeholders before they can qualify for grants. Particular emphasis is placed on working with equity leaders, communities of color and other leaders from communities that have traditionally been excluded from government planning processes.

This push by the federal government for local agencies to be responsive to inclusion has resulted in planning organizations applying various inclusive practices to eliminate barriers to community engagement as well as coalition formation with civil society and businesses. This paper documents practices adopted by Puget Sound Regional Council; the Metropolitan Council, Twin Cities, Minnesota; and the Boston Metropolitan Area Planning Council (MAPC) funded under the SCI model to create inclusive working partnerships in planning and development processes.

3.1 Puget Sound Regional Council: The Growing Transit Communities

The Puget Sound Regional Council (PSRC) is a planning organization for the Central Puget Sound region of Washington State. The region covers four counties (King, Pierce, Snohomish and Kitsap) with an estimated population of 3,898,720 as of 2015 (PSRC 2015). The council was funded in 2010 through the SCI to develop the Growing Transit Communities (GTC) Strategy- a transit network for the Puget Sound region. Built around the Transit Oriented Development (TOD) concept, the strategy seeks to create transit-served neighbourhoods by providing affordable housing, transportation options, employment investments and essential amenities around high capacity transit stations. The GTC strategy was completed and approved in 2013.

Several inclusive practices were observed in the Puget Sound region planning process. First, a broader stakeholder inclusion and robust community engagement regime demonstrated through the Growing Transit Communities Partnership. Second, an equity-oriented policy processes achieved through the establishment of a regional equity network. Lastly, a commitment to continued collaboration through the establishment of a Growing Transit Communities (GTC) compact as well as the institutionalization of equity measures in the Councils overall policy making process. The section below gives a detailed account of the above practices.

I) Establishment of the Growing Transit Communities Partnership (GTCP)

The Growing Transit Communities Partnership (GTCP) is a diverse coalition of partners established in 2010 prior to the application of the grant as was required of SCI grantees. The consortium consists of Puget Sound Regional Council (the lead agency), local governments, non-profits, businesses, developers and transit agencies. This partnership developed the Growing Transit Communities Strategy mentioned above, which coordinates investments in housing and jobs around high capacity transit. The consortium spurred several changes in the council's decision-making and planning processes such as the creation of the Regional Equity Network consisting of GTCP members and a robust community engagement process.

II) The Regional Equity Network (REN) and Community Engagement

Realizing the resourcefulness of non-profits and equity leaders in the region, the Council together with the GTCP established the Puget Sound Regional Equity Network (REN). The Puget Sound REN is a team of equity-oriented individuals and organizations working within the Puget Sound Region. The Network was initially tasked with assisting the commission to

weave equity into the GTC Strategy by providing 'expertise on equitable development principles and strategies'. The Equity Network liaised with communities to identify community-pressing needs to be included in the strategy. PSRC together with leaders of the Community Development Corporations (CDC's) provided funding to the Equity Network to facilitate its work with local communities regarding the plan.

The Equity Network was instrumental in ensuring that low-income communities and immigrants actively participated in shaping the plan outcomes. For example, with the help of REN, PSRC reached out to over 40 local groups representing immigrant communities and different religious and socio-economic groups to participate in the plan-making process. These community groups were provided with community grants to foster 'engagement, organizing and research'. Additionally, the Equity Network also carried out Opportunity Mapping to identify communities that needed investments the most. Lastly, the Equity Network also organized a joint regional Equity convening drawing over 400 participants from the public sector, private sector, non-profits and local communities to contribute to the GTC strategy formulation.

After the end of the grant period, the Equity Network continues to exist, fully supported by the council through the provision of administrative facilities such as meeting spaces and support staff. A member of the Network liaises with Council staff from time to time to ensure continued representation of community issues.

III) The Growing Transit Communities Regional (GTC) Compact

To facilitate the participation of partners post the grant period and in the plan implementation process, an agreement popularly referred to as the GTC compact was established. The compact is a commitment signed by partners that were part of the plan-making process to continue in the plan implementation. Though the compact is not legally binding, it provides opportunities for collaborative plan implementation as well as continued cooperation among partners. Members are allowed to pursue and implement strategies in line with local conditions and their organizational goals and budgets. As of March 2015, 40 organizations had signed the compact and committed resources in actualizing the GTC strategy. This buy-in by the partners and resource leverage was as a result of their inclusion in the design process.

Additionally the council formed a new regional TOD advisory committee that draws members from the compact and requires that one of the co-chairs of the committee represent non-profits or equity interests.

3.2 The Metropolitan Council, Twin Cities, Minnesota

The Metropolitan Council of Twin Cities in Minnesota covers a 7-county region with a population of about 3 million people. The council benefited from a \$5million HUD SCI grant in 2010 to engage in the planning and implementation of a regional transit initiative referred to as the “Corridors of Opportunity” (COO). COO’s main goal is to enhance access to opportunities near existing and planned transit ways in the region, especially for those with greatest need, through investing in transit enhancing strategies, affordable housing, and minority owned businesses near transit.

As required by SCI, the Metropolitan Council established a consortium structure consisting of a wide of range of stakeholders that included representatives from the state and local governments, the non-profit sector, philanthropists and the business community. The inclusion of diverse stakeholders in the planning process and especially the non-profit sector led to transformative steps within the Council decision-making structure as well the Council’s ability to leverage private equity. Below is a detailed account of the key steps taken by the council to enhance inclusion.

1) Establishment of a Community Engagement Team

Recognizing the importance of community engagement in the planning and implementation processes, the council together with the partners established the Community Engagement Team (CET). The CET drew members from three equity-focused community groups (Alliance for Metropolitan Stability, the Minnesota Center for Neighborhood Organizing and Nexus Community Partners) and worked to identify community assets and effective strategies of ensuring community inclusion in the COO planning and implementation processes (MetCouncil 2015).

To demonstrate the Council’s commitment to community engagement, a total of \$750,000 from the SCI grant was set aside to facilitate community engagement processes. CET was charged with overseeing the \$750,000 community re-granting process in addition to leading all other community engagement activities within the planning of Corridors of Opportunity. Through the re-granting, CET targeted community groups that work with underrepresented groups (communities of color, immigrants, low-income communities) to enhance their participation in decision-making and leadership activities related to COO planning and implementation processes. In addition to working to bring all relevant participants on the table, CET was instrumental in promoting systems change within the COO policy board. For instance, the initial policy board lacked equity leaders and people of color representation.

After CET raised the issue, the council was receptive and approved the expansion of the board to include equity leaders and community of color representatives with equal voting rights to all other members.

II) Staff Training on Equity and the Designation of a Full-time Equity Staff

The effectiveness of any public institution in delivering its mandate is highly dependent on the staff. Hence, during the grant period, all council staff were required to go through an equity training program to appropriately equip them to deal with the new dynamics and expectations to deliver on equity. This initiative was highly supported by the council and mayor. Additionally, the Met Council designated a full-time staff member to work specifically on equity issues by partnering with the Community Engagement Team on an ongoing basis even beyond the grant period.

III) Passing of Equity Resolution:

In 2013, the council passed an equity resolution to allow the establishment of a temporary equity workforce with the main task of assessing how the Council's internal and external policies and practices met or contributed to equity. Specifically the team was expected to make recommendations to the council on specific measures to bolster equity in its policy and decision making processes and particularly how to include communities of color and historically underrepresented communities in the council advisory committee. This commitment to equity culminated in the development of the ***“Choice, Place and Opportunity”*** report (MetCouncil 2015). This Met-Council report aimed to raise awareness on the interconnectedness of income, race, place and opportunity and to challenge actors in the region to ‘think regionally and act equitably’.

IV) Continuation of Corridors of Opportunity through Partnership for Regional Opportunity

Realizing the benefits of collaboration, the council vowed to maintain the COO beyond the grant period by establishing “The Partnership for Regional Opportunity (PRO)” (MetCouncil 2015). The Council sees PRO as a move from partnership within a single project to long-term commitment in the delivery of equity-oriented development. The partnership composed of former COO members is organized around 4 themes which include Regional Equity and Community Engagement, and Shared prosperity: Transit-Oriented Development and Transportation funding. It is important to note the maintenance of the Regional Equity and Community Engagement team. The new taskforce entirely focuses on promoting equity

through identifying and recommending policies and investments that reduce regional disparities and ensure continued engagement of historically underrepresented groups in the region's planning processes.

3.3 Boston Metropolitan Area Planning Council (MAPC)

MAPC is a regional planning agency within Boston that serves 101 cities and towns in the region. MAPC's commitment to inclusion materialized in 2008 when they launched the State of Equity Initiative to monitor key indicators of equity in the region (MAPC 2015). This commitment to equity and inclusion was bolstered by a 2010 grant from the SCI. The grant was awarded to implement Metro Future, which is MAPC's long-range development plan for the Metro Boston Region. The plan seeks to advance smart growth and partnerships in the region through 'investing in efficient transport systems; environmental preservation; equitable economic growth and enhancing access to education and health opportunities to residents' (MAPC 2015)

Following SCI's requirement of collaborative planning, MAPC established 'The Metro Boston Sustainable Communities Consortium'. The consortium consisted of a wide range of partners including: non-profits, trade associations, medical and educational institutions, and public and municipal representatives. Led by a 27-member steering committee, the partnership required that at least one member of the committee should come from an organization whose core mission include "reducing inequities among populations in the region, and building power in minority groups and low-income communities"(MAPC 2011). Key indicators of inclusion within the MAPC's decision-making systems include the following:

1) Establishment of Equity at MAPC Plan

Equity at MAPC is an initiative of the council established in 2010 and led by the Equity at MAPC team whose main task is to guide the agency in implementing equitable and inclusive practices and policies. The MAPC equity team, which consists of staff members drawn from diverse departments, works to:

- **Transform the organizational culture** towards equity by creating awareness among staff on equity and cultural diversity. Staff and project evaluation are mainly based on their contribution to equity;
- **Ensuring that the agencies policies, standards** and decision making processes reflect equity;

- **Transforming the administration and governance** within the agency by increasing diversity in staff hiring, committee representation and ensuring departmental collaboration towards equity;
- **Establishing equity standards** in the region's service delivery and;
- **Increasing access to information and transparency** within the organization by creating feedback channels and improved communication and relations with partners. This includes translating working documents to all languages spoken by the area residents.

II) Deep Community Engagement

Although community engagement was an important part of the MAPC MetroFuture planning process, it was during the SCI grant and implementation process that community engagement reached a critical high. As noted by one of the staff working at MAPC, "*... it was in the SCI that we reached the tipping point for people to understand that robust community engagement is an essential part of any planning process and that it is not enough to consult with the planning board or the council but that the community needs to be involved in a meaningful way...*" (Amy Cotter 2014). This realization was capped with a substantial amount of resources committed to community engagement during the plan implementation process and SCI grant period. For instance, part of the SCI grant was appropriated to enhance community participation, especially in the selection of projects to be implemented.

In addition several other provisions, such as providing childcare in meeting venues, translation and interpretation of documents in several languages, were made to enhance community engagement in the process. The MetroFuture plan was translated into 7 languages to allow easy dissemination to communities living in the region - especially immigrants. Furthermore, the 'Community Leaders Breakfast Series at MAPC' was established to create opportunities for diverse leaders in the region to exchange knowledge and ideas on an ongoing basis.

4.0 Conclusion

As a result of the world's population residing majorly in urban areas, how cities are managed will largely determine the success or failure of the quest for social inclusion. Cities that thrive will be those that seek to harness the wealth of resources presented by diverse populations and multiple actors. The cases from the Sustainable Communities Initiative projects demonstrate the great role that federal and local agencies can play to foster inclusion and collaboration in city building. Particularly the cases demonstrate the enabling

role that national or federal governments can assume to direct resources and drive local governments and agencies towards inclusion.

The requirement for the formation of inclusive partnership before grantees could qualify for SCI funding was instrumental in pushing local agencies to collaborate with a wide array of actors including traditionally marginalized communities. Inclusion proved not only to be beneficial for hitherto marginalized communities but also for cities and regions. For instance the move to collaborate with other actors was instrumental in leveraging private equity. The \$240 million in grants disbursed by HUD between 2010 and 2012 attracted \$253 million in private investment and commitments from local partners(EPA 2012).

The involvement of a wide range of actors in the Puget Sound Regional Council not only led to identifying the needs of local communities but also led to financial commitment by majority of the partners to implement the plan. Likewise, in Twin Cities, it wasn't until they had fully involved the equity leaders in the region that they realized how critical it was to also have appropriate racial composition in decision-making organs within the council. The inclusion of partners in Twin cities also translated to a continued pledge to work together and implement the plan through the Partnership for Regional Opportunity (PRO). In Boston, partnership with equity leaders and communities completely transformed how business is carried out through organizational culture change and embedding equity in all processes.

Overall, the cases clearly demonstrate that achieving social inclusion is an interplay between state and non-state actors. For example, though it is very clear that the federal government played a critical role in mobilizing planning agencies towards inclusion by tying funding to collaboration, it was the concerted efforts of all those involved that translated to inclusive practices. It is therefore critical that all actors involved in city building hold each other accountable, particularly in ensuring representation of local and underrepresented communities in decision-making processes.

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Governing the Urban Infrastructure in Indonesian Cities: The Role of Institutional Structure and Policy Instruments in Collaborative Policymaking and Resource Exchange

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1. Introduction

Cities and metropolitan regions are the source of urban opportunities and challenges. In the developing economy such as Indonesia, the fast development growth put heavy pressures for city managers not only to provide basic urban services but also seamless ones. With the increasing urbanization rate, the demand for urban service mounts, particularly on infrastructure and energy, fresh water, sanitation, education and health service (UN DESA, 2013). Regardless the configuration of the governing system, the way urban infrastructure is governed continuously undergoes tremendous changes. Besides the opportunities and challenges presented by urbanisation, the alteration cities made in governing infrastructure are largely due to globalisation, which produces more tension on the local governing system. In particular, these challenges force cities to surpass local administrative and political boundaries as people expect seamless urban service.

This paper focuses on Indonesian collaborative metropolitan governance. It deals specifically with the governing of urban infrastructure in the border areas, in particular water and sanitation. This paper extracts findings focusing on the linkage between local institutional structures, policy instruments and collaborative activities. It aims to fill the gaps as research on collaborative governance in Indonesia has yet developed a real traction and the causal effect of local policies to the working of collaboration associated with policymaking and resource sharing remains under researched. Since the collaborative activity has become a consequential factor of city's infrastructure provision efforts as it relates to how cities manage their resources, research on the interlinkages between these issues help explaining the local governments' outlook on collaboration. Understanding the institutions and its linkage to the local policy outcomes and activities will also supply local governments with strategical information to advance their collaboration.

Applying to three metropolitan regions in Indonesia, namely Surabaya, Yogyakarta, and Denpasar, this paper explores the differing actor interaction and collaborative processes. Understanding the linkage between institutional structure and policy approaches allow us to explain the complexities of the governing of urban infrastructure in the city and between cities. It helps explain which policies would encourage or limit certain type of collaboration; intergovernmental or cross-sectoral, giving idea on practical issues needed to be addressed for governance reform. This paper argues that establishing a multistakeholder collaborative process of policymaking and resource sharing, regardless actors' motivation, varies according to the types of policy instruments and institutions adopted in the local jurisdiction.

1.1 Policy Approach on Collaborative Governance

Collaboration is strategic and embedded (Agranoff and McGuire, 2003b). The embeddedness and strategic nature of collaboration create interconnectedness between collaborative forms and actors involved and, in many cases, are driven from specific policy problems. In this sense, types of policy instruments characterising a collaborative activity directly influence the form and content of collaborative structure (McGuire, 2002). Thus, policy approach is undoubtedly difficult to be separated from any discussion considering collaboration and governance at large.

Policy streams, policy domain, actors, network and governance processes are one big interconnected system. In a similar hypothetical vein with the way collaboration formed, policy is the result of the interaction between actors in a certain situation which actors use perceptions to interpret their reality and to choose their strategies (Klijn and Teisman, 1997). The situation where the actors reside is conditioned by the rules and resource divisions of the network in which they take place. These rules and resource are part of the institutional setting of the governance system. Moreover, governing policy process in the network means managing the interactions in the situation and the setting of the said situation. Hence, managing governance also consists of managing policy process in governance network.

In the process of public policy making, for multitude of reasons, complex variables used as considerations complicated the process. There are various frameworks on policy process that is consistent and possess a fair amount of empirical testing. Among them, from the institutional perspective, are institutional rational choice (Ostrom, 1990), social construction (Ingram et al, 2007) and policy advocacy coalitions (Sabatier and Jenkins-Smith, 1988; 1993; Sabatier, 2007). Rational choice theory analyse within political institutions and society. It emphasises on examining policy change and its variety and measuring the stability through strategies taken by actors (John, 2003). Policy as an outcome are seen as the effects of the collective choices which makes it possible to examine the ways which collaboration emerge from analysing the policy process. On the other hand, policy advocacy coalition and social construction focus on understanding the shared value system and its influence toward actor relations (Ostrom, 2007). In particular, social construction sees that policy design shapes institutions and, thus, affects their broader society system (Ingram et al, 2007).

The core concept of policy instrument that refers to the political sociology conception (Linder and Peters, 1989; 1990) put efforts to bridge the gap between institutional structure and policy process. Their proponents see policy process as a part of instrumentation and can be examined in order to understand the motive leading to decision of selecting instruments and its implication (Kassim and Le Galès, 2010). In the similar manner, policy instruments and policy tools structure the interaction of actors within a governance network (Salamon, 2002).

There are many different typologies of policy tools and policy instruments that have been introduced. Salamon (2002) generally provided the most extensive overview of policy tool definitions and characteristics, particularly concerning regulatory and fiscal. Linder and Peters' synthetic policy design approach (Linder and Peters, 1990) presented a more general approach, a sample list that is more ensuring a representative field rather than imposing an artificial structure on people's perceptions compared to Hood's the tools of government (Hood, 1986). They also do not confine their list into a typological segregation like Hood's.

1.2 Governing Urban Infrastructure in Indonesian Cities

Governing urban infrastructure in Indonesia has been a constant struggle and even more so after the decentralization. While much attention has been on the administrative and fiscal decentralization of infrastructure provision to the local level, in practice, delivering urban infrastructure has been scaled up as a regional challenge, largely fuelled by lack of local infrastructure investment, disconnected infrastructure and regional disparities between cities. Pressures associated with resource scarcity and limited capacity often require that local governments act as catalysts for orchestrating other actors in the pursuit of providing urban infrastructure.

In order to accelerate the infrastructure development through the promotion of sectoral and intergovernmental collaboration, since mid of 2000s the central government has gradually enacted responsive policy instruments. The advocacy from the central government and the continuous remnant of decentralization have been inducing a repeat of institutional change at the local level. Against this background, local governments continue to struggle with the fragmented decision making and conflicting policies, largely in isolation between cities, sectors and different levels of governance.

1.3 Case studies: Surabaya, Yogyakarta, and Denpasar

As a vast archipelago country with large population consists of different ethnic, social, economy and cultural background, governance in Indonesia is built upon a fragmented system which varies according to cities and regions. Although the local governing system across the country follows the same framework given by the central government, the way local governments manage cities differs according to the underlying political and socio-cultural system embedded in the cities. The differences include how local governments behave with their neighbouring cities and with the higher levels of government. The political situation that often differs between jurisdiction and between actors managing the cities play an important role in shaping the local governing system. While during the centralised regime, these differences were abolished or largely ignored, decentralization nurtures them.

Decentralization brought changes on how local fiscal situation affects local decision making and relations. Under the fiscal decentralization law (Law 25/1999 amended 33/2004), the central government designates the equalization grants and sharing revenue to the local government which range between 50-80 percent of total local revenue (calculated from budget reports 1999-2013). In cities rich with natural resources, shares are usually higher. Yet for cities in the metropolitan regions the differences between cities are not high as most cities share similar characters; lack of natural resources and better capability to generate own revenue. Bigger cities, more often than not, receive smaller shares of fiscal transfer from the higher levels of government. As a result, cities with higher revenue but less central fiscal transfer have a higher command to govern their area which leads them towards a less control from the provincial and central governments. They also have more fiscal room to set local fiscal instruments than cities with higher shares of central fiscal transfer.

This paper examined 3 metropolitan regions distinct in economy, socio-cultural, and political characteristics to grasp a comprehensive overview of how collaborative metropolitan governance is managed in fragmented Indonesia. Economically, Surabaya region has the largest economic size according to its share of National GDP; 6.0 percent compared to Yogyakarta (0.7 percent) and Denpasar (0.8 percent). The regional disparity also differs among observed regions; Surabaya (0.987), Yogyakarta (0.401), and Denpasar (0.324) (Williamson Index on regional disparity, calculated using 2012 data). It is important to note that while Surabaya and Denpasar regions are predominantly urban, Yogyakarta has a higher percentage of rural area. Socio-culturally, the paternalistic culture is observed stronger in Yogyakarta compared to other regions due to the sultanate system of the region. This influences strongly the political situation of the region, which mostly homogenous over the years. Denpasar region also has a homogenous political environment with cities having a similar political majority and less political differences between the head of the cities and the local assembly. Surabaya region, on the other hand, is politically heterogeneous.

The observed regions vary on their historical establishment of collaborative metropolitan governance. The framework of collaborative metropolitan governance in Surabaya region was first set by the provincial government prior to the decentralization (commonly known as *Gerbangkertasusila*) while the collaborative arrangements in Yogyakarta and Denpasar were initiated by local governments after the decentralization, in 2001 and 2002 respectively. Collaborative governance was restructured to adjust to the change of governmental system and Surabaya observed the vacuuming of provincial power in managing its collaboration, while Yogyakarta managed to retain it. The collaboration in the Surabaya region is at present highly run in sectoral basis (e.g. infrastructure, transportation, planning) instead of comprehensive, unlike the collaboration observed in Yogyakarta and Denpasar. However, despite sharing similarity in the framework, collaborative governance in the latter cities differs from each other in term of partners. Yogyakarta is highly intergovernmental while Denpasar exercises both cross-sectoral and intergovernmental collaboration almost in an equal manner. With the decentralization giving the reign to local governments in planning, managing and financing their cities, assessing these regions in their institutional and policy approach is a step towards understanding Indonesian collaborative metropolitan governance.

2. Methodology, Data and Limitation

As this paper aimed to extract findings focusing on the linkage between local institutional structures, policy instruments and collaborative activities. The analyses were divided into 3 parts; to measure the institutional structure in collaborative activities, to assess the local policy instruments, and finally to examine the linkage between the first two analysis.

2.1 Measuring the Institutional Structure in Collaborative Activities

The measurement of local actors' interaction to assess the institutional structure of collaborative metropolitan governance is built on the basis of the operationalisation of regionalism. It assumes, horizontally, higher interaction between local governments and neighbouring cities and other local actors will result on higher probability of local governments becoming more proactive towards collaboration. The interaction can be sought through either formal or informal relations. Moreover, the measuring of institutional structure through local actors' interaction reflects the local capacity in handling certain functions on a multijurisdictional basis in developing collective platform, bargaining, and determining certain activities within their allowed capacities. In collaborative policymaking activities, the institutional structure is measured by identifying whether local governments include other local actors in the planning, goal development, and decision-making tasks of policy making. Similarly, collaborative resource exchange activities involve seeking and acquiring resources from multiple actors, as well as combining and leveraging resources among actors.

Unlike collaborative policymaking that is largely expected and practiced among policy makers, resource exchange is more challenging for local governments to pursue due to the complicated political and administrative nature it entails. Nonetheless, resource exchange is a necessary component to measure the institutional collaborative structure of a city. It frames the resource dependency across actors since it exhibits the interaction formed between actors that need the resources and how they work their willingness with actors that are accommodating to contribute resources. Local governments rationally will try and seek additional resources from their local partners in order to secure resources to achieve local objectives and pool them for the purpose of seeing their goals go through. Beside collaborative policymaking and resource exchange, this paper also measures the collaboration on project related activities.

This paper utilizes the measuring instruments originally developed by Agranoff and McGuire (2003) to analyse the institutional structure of collaborative governance. The parameters introduced by Agranoff and McGuire offer a thorough accounting of activity that parallels the bureaucratic management closely related in explaining the structure of institutions. For this paper, weight is added to the activities which are potential to promote collaboration in order to gauge the individual intention of local governments. Weight is given to collaborative policymaking activities as they are considered the initial activities leading to an established and comprehensive collaborative governance. Weighting method used in the analysis is done by multiplying the result of weighted activities twice.

Table 1: Measurement for the analysis on the institutional structure of collaborative activities.

Collaboration	Activity	Weighted
Joint policymaking	Consolidate policy effort	✓
	Engage/agree in formal partnerships	✓
	Engage in the joint policymaking	✓
	Engage in joint policy implementation	✓
Resources exchange	Financial resources sharing	
	Personnel sharing	
	Exchange information/share ideas	
Project based works	Partnership for project planning	
	Partnership for project implementation	
	Asset specificity and monitoring	

Source: extracted from Agranoff and McGuire (2003).

2.2 Data Collection

A structured survey was conducted during two periods, from October to November 2012 and from May to June 2013. The survey targeted chief officers from local governments (municipality/regency level) working with the Local Development Planning Agency and City Planning/Public Works Agency/Collaboration bureau. These officers are responsible for the planning and implementation of collaborative activities in their respective cities. The respondents were interviewed about decision process underlying collaborative activities. They were asked to identify each activity their cities currently engage or have in the past collaboration with other local actors. Activities asked in the questionnaire are an elaborated version of the measurement presented in Table 1. Table 2 lists the organizations and agencies of potential collaborative institutions asked to the respondent.

Table 2: Lists of institutions/agencies at the local level.

Neighbouring local government institutions	Nongovernmental institutions at local jurisdiction
1. Local Development Planning Agency	1. State owned company
2. City Planning Agency/Department of Public Works	2. Chamber of commerce/Real estate consortia/Private sector association
3. District office	3. Private sector and developers
	4. University
	5. Non-Governmental Organization

Source: Author (2014).

This study describes the intergovernmental collaboration as a cooperative interaction among governmental actors between cities in the metropolitan region. Cross-sectoral collaboration in this study is identified as cooperative relations between local governments/local governmental agencies and nongovernmental sectors, including non-profit (civic) and private sector taking place in the local jurisdiction. Cross-sectoral collaboration often referred by the government as a public-private collaboration.

The primary variable in the institutional structure is the total number of interactions, measured as the sum of all linkages as reported by respondents. The maximum score is the total possible interaction between local governments and their counterparts on collaborative activities, e.g. intergovernmental interaction was calculated by multiplying 10 collaborative activities by 3 neighbouring governmental agencies. In total there are 8 possible agencies (governmental and nongovernmental) in local level as part of the selection, making the maximum interaction up to 80 interactions (10 activities, 8 actors). This study measured 3 types of interaction in the region; the overall interaction to represent collaborative governance, the intergovernmental interaction to represent the intergovernmental collaboration and the cross-sectoral interaction to represent the public-private collaboration.

2.3 Analysing the Local Policy Instruments

The analysis of the local policy instruments is based on the hypothesis that the local structure of collaborative governance shapes and is shaped by the policy selection of local government. The collaborative architecture is set through local and regional political process and influenced by social, and cultural characteristics. In return, institutions and policies create a local platform for local governments to conduct their activities. This assumption is built upon understanding that policy design –statutes, guidelines, programmes– directly and indirectly affect society while poses as a reflection of the culture and values of society itself (Schneider and Ingram, 1990).

The primary data used to analyse the local policy instruments in this paper is the variety of policy instruments adopted. This study used 20 policy instruments, identified after cataloguing policies issued by local governments in their websites, annual reports and development plans from 1999 to 2014. All of the policy instruments selected were enacted by local governments to encourage collaborative arrangements in their jurisdictions, directly and indirectly related to the collaborative activities at the local level.

This paper utilizes the sample of the instruments of public policy by Linder and Peters (1989; 1990) to classify the local policy instruments of observed cities. The instruments from Linder and Peters were chosen due to its wide variation in instrument appraisal that gives space to understand the role of institutional factors which is partial to to grasp clear perspective on collaborative metropolitan governance. Only six out of seven classes provided by Linder and Peters are adopted for this study by annexing subsidy and tax into one fiscal related class in which this study refers as fiscal/subsidy/tax (see Table 3). The underlying reason is that after looking at the list of collaborative-supportive policy in Indonesian cities, there was not enough fiscal instruments available.

Table 3: Instruments of collaboration-supportive policies in Indonesian cities.

Exhortation	Direct provision	Fiscal/Subsidy/Tax
1. Advocated in Master Plan	1. Shared local funding to state enterprise	1. Grants
2. Advocated in the midterm Development Plan	2. Shared local funding to third parties (private sector/ other local government)	2. Incentive
3. Advocated in the long-term Development Plan	3. Local budgeting authority	3. In-kind transfer
4. Advocated in the Program	4. Infrastructure transfer	
	5. Management of local asset	
Contract	Regulation (for Collaboration)	Authority
1. Consolidated contract issuance	1. Regulation covering all sectors	1. Procedural guideline in collaboration
2. Evaluation scheme	2. Regulating nongovernmental sector only	2. Sub-district and village collaboration guidelines
3. Conflict solving	3. Regulating local enterprise only	

Source: Author (2014).

3. The Institutional Structure of Indonesian Collaborative Governance

How common are collaborative activities among the observed cities? The vast majority of the cities report a high number of joint policymaking (Table 4) with Denpasar and Yogyakarta report almost 100 percent. This means every city at least conducted one collaborative policymaking in their jurisdiction. The report on resource exchange activities is slightly less, about 10 percent less than joint policymaking activities. More than 90 percent of the cities appear to consolidate their policy and collaborate in a policymaking and strategy making with their neighbours and/or with other local actors. Around the same number of cities has a formal partnership with at least one counterpart in the local level. However, while cities conduct a collaborative policymaking, it does not automatically mean that they decide to engage in a collaborative policy implementation scheme.

Table 4: The region-based percentage of respondents using collaborative activities.

Activity	Surabaya	Yogyakarta	Denpasar
Joint policymaking	78	96	100
Resources exchange	67	94	93
Project-based works	83	89	100

Source: Author (2014).

3.1 The Structure of Collaborative Governance

This paper expects that meaningful differences between regions of their collaboration level are present due to the fragmented nature of Indonesian system. These variations are necessary in observing the impact of the institutional structure towards the collaborative tendency at the local level as well as the propensity to collaborate with certain actors. For the analysis, three variables were designated according to the possible relations pursued in the questionnaire; overall, intergovernmental and cross-sectoral interaction.

Table 5: Mean of the institutional structure of collaborative metropolitan governance.

	Max Score	Surabaya	Yogyakarta	Denpasar
Overall interaction	80.00 (112.00)	22.90 (28.80)	24.67 (31.17)	31.60 (39.80)
Intergovernmental interaction	30.00 (42.00)	8.90 (11.40)	18.17 (23.50)	15.40 (20.40)
Cross-sectoral interaction	50.00 (70.00)	14.00 (17.40)	6.50 (7.67)	16.20 (19.40)

Note: Weighted score is bracketed.

Source: Author (2014).

The horizontal dimension produces the most complex results of all indices in both intergovernmental and cross-sectoral interaction, with Surabaya and Yogyakarta are located at the extreme ends of the spectrum. Among three regions observed, Denpasar displays the highest overall interaction level –both intergovernmental and cross-sectoral interaction–. On the intergovernmental interaction, Yogyakarta is twice higher than Surabaya, showing that the extent of interaction and collaboration between local governments is significantly higher in Yogyakarta. It means the local governments in the Yogyakarta region are more likely to interact, exchange information and collaborate with each other than cities in Surabaya.

The exact opposite result of intergovernmental interaction is observed in the cross-sectoral interaction. Cities in the Yogyakarta region are the least frequent users of the cross-sectoral interaction. This lead to assume that the Yogyakarta region employs a limited cross-sectoral collaboration and put more focus to develop their intergovernmental structural institutions. On the other hand, cities in Denpasar regions pursue about twice and half as many cross-sectoral interaction than cities in the Yogyakarta region.

When the extent of change from weighted to unweighted measures is compared, a closely similar value increase in the intergovernmental interaction shows that all three regions have a corresponding view on their priority in developing its intergovernmental collaborative environment. The change on the cross-sectoral interaction is more diverse with Surabaya puts the most changes, followed by Denpasar and Yogyakarta. Surabaya is less likely to have interest to collaborate with its neighbouring municipalities than with the public or private sector and Yogyakarta employs the exact opposite preferences. This result implies that local governments in Surabaya are more open in accommodating non-governmental sectors in their planning and infrastructure provision than its counterparts in Yogyakarta.

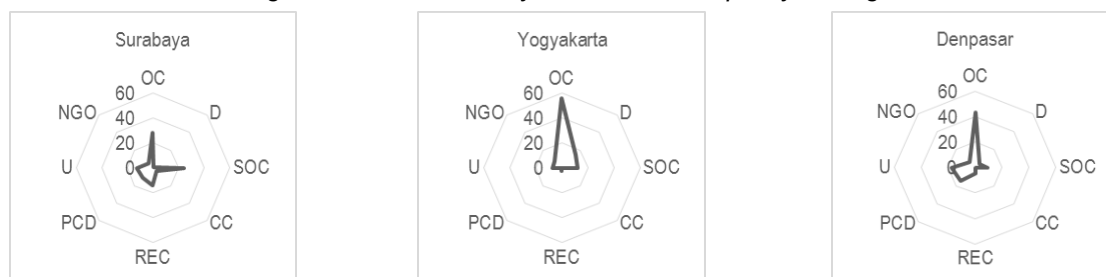
3.2 Actor Centrality

The analysis of activity centrality captures the relative importance of actors in a specific group of collaborative activities. While in a complex network analysis centrality is specified as being based on degree, closeness, betweenness, and information (Wasserman and Faust, 1994), in this paper it is measured by the extent of the involvement of an actor. In this paper, actor centrality explains the aggregate of preferred actors chosen by local governments in a particular activity. To determine actor centrality, the total number of linkages for each player is converted into a percentage to measure the aggregate relative involvement of each actor within a specific activity. Actor centrality is measured according to the following formula:

$$\text{Actor centrality} = \frac{\sum \text{number of linkages conducted with Actor A in Activity X}}{\sum \text{number of linkages in All Actors in Activity X}}$$

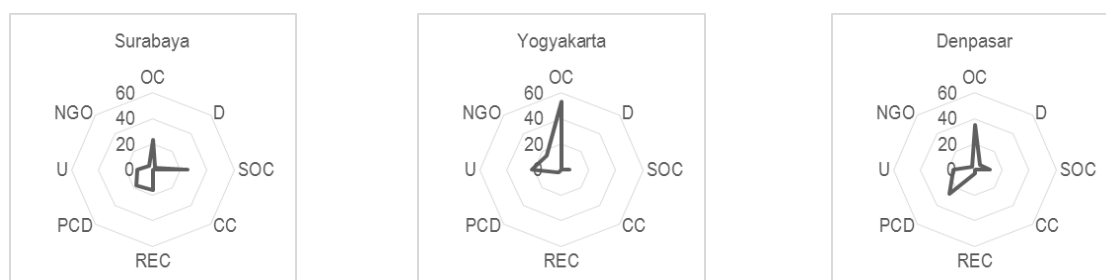
The nature of the actor interaction of each region for collaborative policymaking is predominantly similar to each other, while interaction for resource exchanges varied especially on their lead partners. Cities in all observed regions depend on their neighbouring cities in dealing with inter-jurisdictional policy issues, citing neighbouring local government agencies as their most important collaborative partner. In resource exchange activities, local governments in Surabaya are likely to be dependent to the private sector more than with their neighbours while cities in Yogyakarta with their government-led activities work with civic sector as their back-up plan. Cities in Denpasar, in contrary, choose public-private-civic network as their partners for resource exchanges, although they also collaborate with the private sectors in various activities.

Figure 1: Actor centrality in collaborative policymaking.



Source: Author (2014).

Figure 2: Actor centrality in collaborative resource exchange.



Legend:

OC: Other Cities

D: District

CC: Chamber of Commerce

Source: Author (2014).

SOC: State Owned Company

REC: Real Estate Consortia/
Private Sector Association

PCD: Private Sector and Developers

NGO: Non-Governmental Organization

U: University

4. The Differing Patterns of Policy Instruments

What explains why certain instruments are chosen? What to say about a region with a certain selection of policy instruments? Cities in the Yogyakarta and Denpasar region, in particular, share a great deal of similarity in selecting and deciding the policy instruments. Surabaya, on the other hand, have lack of coherence in all policy instruments. The tendency that we found is that the more coherent local policy instruments observed, the more cities actively advocate collaborative activities in their plans. From the perspective of power relations and policy instruments, in a realm that power relations tied to how local governments conduct their intergovernmental and cross-sectoral relations as well as internal political relations hypothetically cities with strong coherence will have a higher probability of stronger intergovernmental relations and closer local political interaction and vice versa.

Table 6: Classification of adopted collaboration-supportive policy instruments.

Instruments	Mean	Surabaya (n=7)	Yogyakarta (n=3)	Denpasar (n=4)
Exhortation				
Advocated in Master Plan	65.5	71.4	100.0	25.0
Advocated in the midterm Development Plan	62.7	71.4	66.7	50.0
Advocated in the long-term Development Plan	59.5	28.6	100.0	50.0
Advocated in the Program	80.9	42.8	100.0	100.0
Direct provision				
Shared local budget to state enterprise	80.6	100.0	66.7	75.0
Shared local budget to third parties (private sector/other local government)	57.9	57.2	66.7	50.0
Budget allocation for managing regional collab.	85.7	57.2	100.0	100.0
Infrastructure transfer	14.3	42.8	0.0	0.0
Management of local assets	75.8	85.7	66.7	75.0

Table 6: Classification of adopted collaboration-supportive policy instruments (cont'd).

Instruments	Mean	Surabaya	Yogyakarta	Denpasar
Fiscal/Subsidy/Tax				
Grants	62.7	71.4	66.7	50.0
Incentives	47.6	42.8	100.0	0.0
In-kind transfer	84.2	85.7	66.7	100.0
Contract				
Consolidated contract issuance	80.9	42.8	100.0	100.0
Evaluation scheme	80.9	42.8	100.0	100.0
Conflict solving	20.6	28.6	33.3	0.0
Regulation (for collaboration)				
Regulation covering all sectors	27.0	14.3	66.7	0.0
Regulating nongovernmental sector only	15.8	14.3	33.3	0.0
Adopted from higher level (no local regulation)	68.3	71.4	33.3	100.0
Authority				
Procedural guideline in collaboration	33.3	0.0	100.0	0.0
Sub-district and village collaboration	30.2	57.2	33.3	0.0

Note: *n* is number of cities in the region.

Source: Author (2014).

As observed in the classification of adopted policy instruments (Table 6), three sample regions appear to exercise different policy approaches to collaboration. Cities in Yogyakarta are very keen on having incentives put in place to encourage collaborative governance while Denpasar and Surabaya choose in-kind transfer as their most preferred fiscal instruments, followed by grants. Observed regions also seem to have different perspectives on regulation and contract instruments, with Yogyakarta posts as the biggest proponent of these types of instruments. The majority of cities in Denpasar and Surabaya prefers to adopt regulation administering collaboration from the higher levels of government, mostly from the provincial government, than to enact their own regulation. However, cities in Denpasar assent with Yogyakarta in term of the importance of having consolidated contract issuance and evaluation scheme while cities in Surabaya have mixed preferences.

Cities also have differing perspectives on regionalism and ways to manage their resource sharing scheme. Surabaya, the biggest metropolitan region among the observed regions, exhibits the least coherence among its member cities in administering budget allocation for managing regional collaboration. Only four out of seven cities allocates budget for implementing regional collaboration programmes. However, they are more eager to share fiscal means to the state enterprise as part of resource sharing activities. Cities in Surabaya region also favour more to provide instruments for third parties to develop and manage their infrastructure than Denpasar and Yogyakarta as shown in the infrastructure transfer and management of local assets instruments. These two instruments are quite recent to be introduced in Indonesian cities to encourage public private partnership in governing urban infrastructure. Infrastructure transfer instrument provides local governments with a scheme and regulation to transfer privately built urban infrastructure to cities as public assets with exchange of compensation such as tax relief and permit for developers.

As most of direct provision instruments is intended for encouraging nongovernmental actors to participate in the collaborative activities, our results show that cities in Surabaya region lean toward the cross-sectoral collaboration more than intergovernmental ones. These cities also have reluctant tendencies to govern their collaborative perspective to be more regional oriented as they opt to not provide budget on activities related to regional collaboration. On the other hand, cities with regional approach tend to collaborate more with their neighbours as observed in Yogyakarta. All of three cities in the Yogyakarta region allocate yearly budget for managing regional collaboration programmes and provide fiscal instruments that allow them to transfer financial means to other local governments for implementing urban infrastructure projects.

Further grouping of sample cities were conducted according to the reliance level to instruments and the presence of procedural guidelines and regulation of a collaborative arrangement in order to identify further policy characterisation. Cities with high reliance (enacting more than 2/3 of instruments in a group) are sorted into one and the remaining city in another group. The means of total interactions –in total and according to major collaborative activities– were measured to grasp the interaction level of cities according to their reliance to a specific policy instrument.

The results show that the higher instrument reliance on exhortation prompt cities to collaborate more with an average of 40 percent. These cities also produce higher interaction of all collaborative activities. While it is considerably higher in all collaborative activities, it is especially higher on the joint policymaking activities. Cities with a higher reliance on fiscal/subsidy/tax and contract instruments also pursue more interaction than cities with lower reliance. The exception comes with the presence of regulation in collaboration with nongovernmental actors. Cities which adopted regulation of the higher levels of government have higher interaction than cities which enact their own regulation on both joint policymaking and resource exchange activities. Cities without procedural guidelines also perform better in developing activities with nongovernmental actors. This finding implies that regulation at some extent hampers local government to conduct collaborative arrangement with nongovernmental actors.

Table 7: Means of the local policy design.

	With other local government actors		With nongovernmental actors	
	Joint policy making	Resources exchange	Joint policy making	Resources exchange
Max score	12.00	9.00	32.00	24.00
Exhortation				
Cities with high exhortation usage*	6.85	4.15	5.07	4.62
Rest of cities	4.25	2.50	3.50	2.25
Direct provision				
Cities with high direct provision usage*	6.32	3.56	5.00	4.13
Rest of cities	4.40	3.40	2.80	2.40
Fiscal/Subsidy/Tax				
Cities with high fiscal/subsidy/tax usage*	6.07	3.69	5.23	4.62
Rest of cities	5.50	3.25	3.25	2.25
Contract				
Cities with high contract usage*	7.20	4.20	4.80	4.20
Rest of cities	2.50	1.83	3.67	2.50
Procedural guidelines				
Cities with procedural guidelines	7.00	5.00	2.00	2.67
Rest of cities	5.40	2.93	5.47	4.13
Regulation				
Cities with regulation covering all sectors	6.00	4.00	2.33	2.33
Cities without regulation (adopted only)	5.80	3.33	5.33	4.27

Note: *more than 2/3.

Source: Author (2014).

5. The Role of the Institutional Structure and Policy Instruments

Our findings indicate that establishing a multistakeholder process of policymaking and resource exchange for delivering the urban infrastructure varies according to the types of policy instruments and institutions adopted in the local jurisdiction. Although in general the presence of policy instruments encourage collaborative activities, at some extent it shapes local government's preference of collaborative partners. The adoption of certain policies could also encourage or limit intergovernmental and cross-sectoral policymaking and

resource exchange. Cities with stronger preferences toward nongovernmental actors tend to nurture local environment that support cross-sectoral collaboration through the enactment of nongovernmental-friendly policy instruments. Cities preferred to collaborate with their neighbours, however, enact policies to support their intergovernmental collaboration.

Our results demonstrate that policy instruments concerning exhortation and contract positively affect collaborative joint policymaking and resource exchange regardless local government's choice of collaborative partners. To a certain extent, this means the greater the use of these policies, the greater the extent of intergovernmental and cross-sectoral collaboration of a city. Moreover, direct provision and fiscal instruments are partial to the local government's preference of collaborative partners as well as its outlook toward regionalism. From the financial perspective, this can be explained that seeking, acquiring, combining, or leveraging resources, particularly with nongovernmental sector, demands a great deal of government financial support.

Local government's inclination in choosing the flagship regulation that specifically enacted to address collaboration procedures plays an important factor on their governing of collaborative policymaking and resource exchange. The use of regulations negatively influence the collaborative policymaking and resource exchange with nongovernmental actors while positively boosting intergovernmental collaboration. Cities which preferred to adopt regulation from higher levels of government exercise more collaborative activities with nongovernmental actors compared to cities which enact their own regulation. The corollary is that in Indonesia the process of enacting local regulation requires approval from the local assembly which in most cases through a lengthy and costly process. In cities which the majoring political party differs from the mayor or regent, the transaction cost of enacting regulation is even higher. To avoid a high transaction cost, local governments often opt to adopt similar regulations from the central and/or provincial government. Those regulations usually less detailed and broader in essence as well as more open in term of interpretation.

6. Conclusion

In general, from the perspective of the institutionalisation of policy instruments through policy process and institutional structure, the instruments selection and policy choice affect the state of the intergovernmental and cross-sectoral collaboration in a city. The variation between sampling cities in the cross-sectoral collaboration is wider than the intergovernmental collaboration. Policy instruments in Indonesian collaborative governance, thus, offer a means of structuring a space of selective cooperation and a space for exchange through negotiations and agreements.

Policy instruments also set an expansive platform with multiple actors, thereby allow for a sectoral and case by case cooperation rather than ambiguous and metropolitan-wide consensus. Policy instrumentation for cross-sectoral collaboration is built upon a short-term exchanges and the state of power relation between government and nongovernmental actors through the use of authority and regulative instruments. The extent of intergovernmental collaboration, however, is influenced through the selection of available policy instruments.

The findings presented here are indigenous to Indonesian cities. Even under similar governing system, one city is clearly different from the other. The administrative, political and fiscal decentralizations greatly influence the way local governments manage cities as demonstrated through their selection of policy instruments. However, although policy selection shapes the collaborative approach of local governments in policymaking and resource exchange, the effectiveness of collaboration is a critical question remained unanswered in this paper. Enactment of a certain type of policy instrument may result on wider coverage of collaboration through region-based collaboration, yet whether it results in better policymaking and resource exchange activities cannot be answered. Future research should develop on these findings by building more comprehensive measures.

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Devolution as a way out of planning legitimacy crisis - why sharing planning power matters for the CEE countries

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Abstract

The paper focuses on experiences of sharing planning power as a way of reinventing planning in transition countries in Central and Eastern Europe. The planning in CEE countries shares many similar challenges, including the hollowing-out of the welfare State in a wake of rapid privatization, weakening of the institutional capacity of planning apparatus and the rise of the planning 'chaos' due to strengthening of private interests over collectivist planning. In such context the role of typical command and control planning is often weak and reduced to the development of limited public projects. Devolution of planning through delegating decisions to the resident groups may not solve all problems of planners. Nonetheless, in the wake of legitimacy crisis of planning it may provide a necessary impulse to reignite the debates on the necessity of changes to the system. It also may provide a much needed room for experimentation with new, rejuvenating planning concepts. Still, the current formulas and methodologies of planning need to be substantially updated, to accommodate greater degree of sharing the decision making process. This requires going across the embedded real estate interests. Also, the institutional and political skepticism towards sharing powers is the other potentially a limiting factor in that case. The paper reviews the latest experiences with both new tools, including experiments with citizen panels and extended public consultation, with more fundamental change, brought about by recent societal and political changes. Above all, the important one was the steady transition of members of so-called 'urban movements', former activists, towards mainstream local politics and growing interest amongst general population towards urban planning issues.

Introduction

Rapid political change in the Central and Eastern European (CEE) countries a quarter century ago resulted in reinstating strongly market-friendly, representative democracies in place of failing, Communist governments. The change started a long term process of transition for many aspects of life, including town planning. The timing of the changes varied vastly. In planning the political change, such as establishing the local governments and new legislation frameworks outpaced the ability to create the effective planning system that complemented these fundamental, power-shifting transitions. Even though the city planning started to work in the new realities of the weakening State and growing role of the private sector, the creation of a planning system, that responds to this highly decentralized, negotiatory context today is still largely an incomplete and on-going project for many countries in the CEE.

The next step in evolution of the system may become increasingly possible now, with the maturing of the civil society, particularly the rediscovery of the urban issues by the residents. For planners, embracing of such change may be vital as a way out of the legitimacy crisis that the profession is struggling with now, due to impotency of current regulatory planning in a face of rapid privatization and weakening of the State intervention. The opportunity to modernize planning may be triggered also by the rise of urban challenges that cannot be met by standard practice and will undoubtedly need significant urban policy

prototyping, such as urban regeneration. In the text, I argue that enabling more decentralized, innovation-focused approach may bring the delayed and much needed further evolution of policy making and planning system itself.

Methodological note

The comprehensive overview of changes on planning systems is by nature a broad topic. In the text I focus primarily on the Polish experience with references to other countries in the region. The issues addressed in the text refer mostly to the regulations on the local level. After the governmental reforms of 1999 in Poland and majority of other CEE countries in the region the territorial self-governments became key actors as the planning was delegated largely to this level of governance (Simpson, Chapman 1999). In the text I review the challenges to the system from the perspective of the planner. Even though I make a strong case for delegation of the power to the residents and resident groups, such change does not necessarily mean the removal of the planning profession from the broader discussion.

The “local” nature of the difficulties witnessed by planners in the CEE countries, offers also useful insights into broader, world-wide discussion on the future direction of planning. The crisis of the CEE countries reflects the broader challenges faced by planners in the countries in transition. The paper also addresses the issue of changes facing the regulatory, formalized planning in the wake of market-friendly deregulation in the representative democracies.

Evolution of planning in CEE post-1989 as a slow adjustment to Western deliberative model.

Central and Eastern European countries have gone through a major change, caused by dismantling of the Communist State and reinstating the free market and representative democracy almost a quarter of a century ago. The political change was rapid but other changes, such as establishing the comprehensive planning system, took much longer to adjust or was not particularly successful in modernizing itself. For example, Poland witnessed at least two major changes in planning legislation (in 1995 and 2003) with numerous minor changes. Even though the need for planning, understood broadly as ensuring the rational land-use, protection of the natural environment, balancing the private and public interests amongst many other objectives of spatial planning (UnHabitat 1972) did not diminish. The practical nature of the planning activity has changed substantially towards market-oriented, regulation-based and negotiatory.

Two effects of the change in particular significantly weakened the powers of the planners. Firstly, creation of the private property market, property titling and privatization had severely limited the freedom of arbitrary decision making. The rights and protection of property rights were established as a foundation of the new systems which granted constitutional protection in the early nineties. Other legal protections quickly followed, such as the limitations in the use of compulsory purchase orders for the public needs and, more importantly, rules of compensating for the loss of property value as a result of planning decisions. At the same time, the local planning, through land use designation has become an important tool in securing the land value and providing the development capacity for the private sector. In that sense planning from activity closely related to implementation, as it was in “command and control”, top down modernist planning, became a largely regulatory tool. The abilities to *masterplan* by planners became severely diminished. This happened as a result of privatization of actual city development as well as the built-in limitations in permitted actions of the local governments. As in Western countries, such tasks were transferred mostly to private sector architectural companies, who represented particular clients. Important changes were put into legislative acts made further changes, strengthening

the role of property rights. Here proposals such as “as of right” development of suburban single family housing or exceptional, fast-track planning permissions for infrastructure, independent of formal zoning were prime examples of erosion of planning controls.

Equally important factor was the shifting role of the local governments from the position of active providers of urban development, especially in the field of public housing, to the one of regulators. This position changed due to access to the EU funding, directed towards new member States since 2000 pre-accession funds, which dramatically expanded the ability to provide large infrastructural development in all aspects of built environment. The EU funding did modernize the regional and spatial dimension of planning, as the regional governments were necessary in managing the redistribution of EU structural programmes. On the local level the investment planning became separated from the reality of urban development as many “plans” remained in the domain of regulation of land use. In practical terms, many products of such planning became code based zoning documents with little powers to intervene in urban matters other than rudimentary planning regulations.

These two changes, amongst many others, pushed planning towards the operational and normative context shared by Western counterparts, namely shifting towards negotiatory and deliberative models, introduced and discussed in the West since seventies (Healey 1997, Forrester 1999). The very nature of change in the CEE, facilitated through unprecedented, massive privatization of former State assets and corresponding changes in regulatory landscape, constituted a major difference between the West and the transition countries. This situation also left planning in fairly precarious situation, as the reforms had weakened its practical capacity to ‘plan’. As a result, in general social and political legitimacy of planning was severely hampered. Planners’ actions were often unfairly hailed as obstructionist and non- efficient. Growing marginalization was reflected by recent changes in legal status of the planning profession. In 2015 in Poland planners were officially deregulated en bloc with other regulated professions, raising little or no political and public opposition. The official register of planners at the time of deregulation counted 1200 no. members of the planning institute for a country of 38 million inhabitants, according to the Polish CSO data in 2012. In that sense, the true discussion on the social or deliberative turn in planning in CEE still did not fully materialize.

Market-oriented and statutory planning as a challenge in the CEE

The issues mentioned above put validity of planning, shaped by the combination of privatization and regulatory land use, into question. The resulting abandonment of planning as integrative action had significant effect on urban space. The geography of the cities became reshaped to the larger extend by fragmented privatized development, leading to growing perception of the urban chaos as a visible, spatial effect of the property development of many cities in CEE region (Kowalewski et al. 2013, Kusiak 2013). Probably one of the biggest and ongoing failures as a result of such dramatic changes is real inefficiency and inability of such system to meet its basic obligations such as provision of a balanced land use and sustainable development (Planning and Development Act, 2003). In Poland, the pressure of the private market and weakness of planning led to severe oversupply of zoned land, vastly outstretching the demand and realistic capacity to absorb the land for material development. The structure plans of all local governments established the reserves of new development land for the equivalent of 167-229 million inhabitants, based on 2012 statistics, the financial costs resulting from legal obligations vastly outstretch the ability to cover them by the local government’s budgets (Kowalewski et al. 2013). Such process can be attributed to process of land speculation land with attempts to secure and capture the assumed land value by prospective owners as well as individualistic market-driven logic of recent city development. As a result, the inefficiency of planning has become an economic issue.

Previous attempts to fix the system focused on comprehensive, top-down legislative action were unsuccessful as they resulted in further reduction of the effectiveness of the system. Reform of the Planning and Development Act in 2003ⁱ discontinued the pre-1989 plans, as non-compliant with current legislative context, and introduced fast-track planning procedures, for the areas without zoning plans. The current planning coverage in 2013 was still at the level of 28%. Many zoning plans are situated in the suburban areas of urbanization pressure. The most recent attempt to create the comprehensive planning code, akin of German *Baugesetzbuch*, that started in 2012, produced a project of the regulation in 2015 (MIR, 2015), but it is still unclear how such project will be implemented. The stop-gap solution, the so-called “small improvement” of the 2003 Planning and Development Act, based on the new Code has been prepared and awaits implementation.

As a result planners became isolated with the problems at hand. With legislative actions put the primacy of the individual property laws over the common good, the local governments often became focused on facilitating private developments. The authorities considered planning through the lenses of administrative procedures of pursuing the broader public aims. Planners, who had little to offer in terms of short term material gains and benefits to the local communities besides creating regulations, have been put in difficult situation. On one hand, they failed in fulfilling their obligations to plan efficiently on behalf of the public good on the other hand their actions could be seen as unnecessary burden or limitation on fulfilling the economic potential of the individuals. Such precarious condition led to marginalization and irrelevance of planning professions in broader discourse on the necessary changes in managing the cities.

Giving the room for the new discussion on planning – role of the urban movements

As a result formal planning in countries such as Poland acts is in impasse. What changed however in the post-1989 landscape, was the rise of the general discussion on the condition of the cities. The academic and professional discourse maintained through the post-1989 era, yet many of such debates had limited audience outside its constituent circles. Such debates in the public sphere intensified again in post-2009 Poland, with the mobilization of so-called urban movements. In Poland the process occurred as a result increasing activity of non-governmental organizations and groups of activists that focused their actions around issues such as participation in planning, environment protection, transportation (Mergler et al. 2013). Their steady formalization allowed for forming of the more organized forms of cooperation, such as ‘*We, the inhabitants of Poznan*’ in 2011, which made successful forays into local elections. Such change was in a way mirrored by other CEE countries where emerging urban movements engaged in actions on issues relating to housing, such as tenant protection initiatives in Budapest – “City is for all” or coalitions of activists .

One of the major successes of such initiatives was forming of the Urban Movements Congress in 2011 which gathered approximately fifty activists from all country and resulted in first set of independent urban policy proposals, the so-called ‘Urban Theses’ (pol. “Tezy Miejskie”)ⁱⁱ, devised as a way of bringing together organizations that had represented a broad spectrum of various ideological positions but in their activities they all focused on the urban issues. The movements quickly formed a non-formalized alliance that started to hold regular meetings in various cities of Poland. The connections between organizations were often based on interpersonal relationships and ad-hoc initiatives rather than formalized structures. The fluid nature of the alliance allowed for many different organizations to blend in under the umbrella of the Congress. The joint position taken by the allied movements were the results of the collaborative, horizontal cooperation. Also the high public visibility of the movements was often based on initiatives of the most prominent members and leaders of the particular organizations. Lack of stronger structures and open-ended, non-ideological nature of the

alliance was a deliberate position. It allowed for creation of multiple, parallel sources of the discussion on cities in a context of the stagnant debate on cities. Also, the movement intended to support the growth of local civic capacity to discuss change in cities without falling into particular position already held by established political parties (Poblocki 2014). Such open-ended position was debated within the Congress, in a wake of local political elections. The lack of strong ideology was seen as potentially diffusing the potential to facilitate necessary change and risking falling into populist centre-right conservatism that prevailed in local politics during recent years (Erbel 2014).

The important step in development of the civic movements was the 2014 local elections. The independent joint election committee "Urban Movements Alliance" (pol. Porozumienie Ruchów Miejskich) was formed to provide a media and campaigning support for the candidates to local governments in eleven cities in Poland. The growing presence of the movements led to limited success in gaining a foothold in a few cities. This included Poznan, one of the major Polish cities, whose residents voted for competing candidate - a former member of urban movements who joined the ranks of the leading mainstream party - Civic Platform. New mayor appointed a prominent member of a local urban movement, My-Poznaniacy as a vice-Mayor. The greatest political victory of urban movement backed candidates were elections in Gorzow – a mid-sized municipality in the Western Poland where independent city Mayor took its office after a landslide election. Even though the electoral effect was limited the movements left a lasting impact on the national political debate on the urban issues. This was facilitated by a strong media presence and localized, direct action of the members of the urban movements. The resulting social and political mobilization put growing pressure on the government to act. This facilitated a much delayed grass-root response to the pressing urban issues that was stymied by the early stages of market-friendly transition in the late nineties and rampant privatism of that time.

The interplay between NGOs, urban movements and the State in the context of urban policy forming illustrates the works of processes of collective urban policy prototyping and informal, symbiotic relationship on the pragmatic level. It is the key to understand the potential opportunities that may comprise potential way-out of the current planning stalemate.

Shaping National Urban Policy as opportunity to test new system-based planning as a new opportunity for planners

In 2012 Polish government undertook first steps towards the creation of the coherent National Urban Policy (NUP), since the 1989 transition, to address several urban issues, including the difficulties mentioned above. It became (Trojak 2014) the main driver of modernization of the initial change was the intention to improve the modernizing leverage provided by the UE structural funding in the 2014 - 2020 (MIR 2012a). The work on the policy corresponded with other, parallel debates on the state modernization such as the National Framework of Urban Development (KPZK 2030) – a high-level, large-scale national masterplan for the spatial and functional structure of the State.

The draft document has been published in May 2012 and contained progressive set of actions addressing several issues. This document, heavily inspired by the Leipzig Charter, included the recommendations on the issues such as urban regeneration, sustainable transportation, planning for ageing, planning for climate change (MIR 2012a). Even though it failed to become a fully adopted official State document, at the time of the writing, it has become a form of guidance. Ideas elaborated in the MUP started to take shape as a "road map" to a series of potential changes in a system of managing Polish cities. Even if the long term political viability of the actual MUP document will be tested by the upcoming elections in October 2015, the core concepts expressed in this document most likely will transpire into practice of the cities. As the grounding ideas of the document are addressing vital planning challenges of the cities. In the preparation the document was inspired by expert input

including the OECD team (OECD 2011) which worked on the basis of Polish guidance documents (Węclawowicz 2010) and expert-led workshops. The document became influenced by the discussions expressed by the NGOs including the members of the Urban Movements Alliance, who discussed the Policy during II Urban Movement Congress, via Res Publica Nova and Magazyn Miasta, one of the leading, independent urban related magazines in Poland. The ideas expressed in the Policy in a way included many postulates of the activist groups.

The overlap between expert-led State policy making and informal deliberation may be growing stronger in the upcoming perspective as the government started to implement changes on foot of the Draft NUP. One of the most substantial results of this initiative entails the creation of the comprehensive system of urban regeneration (MIR 2012b). Here the actions of the State comprised preparation of the new legal proposals coupled with pilot projects. The major change, proposed by the Draft NUP brings to the fore the social aspect of regeneration, stipulated by the EU Strategy Europe 2020. For the Polish context, where these policies were focusing on infrastructural, urban development based on integrative systems approach (i.e. taking into account social, economic and spatial issues) and operational planning (i.e. with focused timeframe, detailed aims and budgeting) is a major change in current practice. Making such leap forward will required substantial amount of new thinking and testing of the solutions. This opens up the window for traditional planners to fit in as one of the expert groups involved in implementation of the new proposal.

Summary – devolution of planning as moving forward

The way out of the planning impasse may lead through “prototyping” of the new planning policies where planning expertise meets the social capacity to act and negotiate. Such field has been slowly building up as a result of resurgent of civic society in Poland and growing focus on broadly defined urban issues. Here lies potential to rejuvenate planning as the interaction between “bottom-up” activism and State-led modernization often lies in exchange of new ideas and directing the possible actions of the State. For the planning it meaning giving up the position of an expert and moving more into the deliberative model, familiar with mature Western democracies. In that sense the “devolution” of planning power, means abandoning the old ways of regulatory, reactive planning and switching towards fluid, system-based policy prototyping and enacting. It will most likely mean the necessity to take more negotiatory and partner based relationship with other actors that are already present in the space of urban policy making.

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Enhancing Urban Socioeconomics, Looking beyond Conventional Mixed-use Development Model

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1. Abstract

One of Urban planning foci is redevelopment of existing cities to improve their quality and efficiency. Many redevelopment programs has been applied through over 60 years ago in Illinois State, since the Housing Act of 1949 to New Urbanism, Smart Growth, which targeting transformation of the built environment on land already containing structures and has occurred under both national and local guidance. These programs perpetrate injustice even while their supporters claimed that they were intending to benefit the poor and people of color who increasingly were the occupants of inner-city neighborhoods.

This research investigates how planners can implement successful mixed-use development, given Social justice fundamentally shaping urban development; social justice in terms of the distribution of wealth, opportunities, and privileges within a society. Current housing policy favors high-density, mixed-use development on previously developed urban land. It is frequently cited as a development type that can address a variety of social problems and has enjoyed a recent surge in popularity in redeveloping cities by providing more affordable housing opportunities and choices, reducing auto dependency, and a longing for the sense of place and community. However, its physical design and affordability outcomes are highly variable. This paper outlines the development of a theory of social equity in relation to urban form and presents empirical research based on this to test the case of mixed-use urban form. We are particularly interested in whether and how the distribution of mixed used impact on the social and economic configuration of the built environment. Using multi-level data from 1382 zip code to 102 counties representing all Illinois State with contrasting implementation methods of mixed-use development and different cultural and historical backgrounds, this research proposes a novel graph-analysis framework in which mixed used patterns can be represented under realistic constraints of urban geometry, and land use distribution.

The findings suggest that, in certain respects and with certain qualifications, the mixed use development has the potential to promote social equity. Likely benefits include reduced car dependency and lower levels of social segregation, while the main problem is likely to be a lack of affordable, decent-sized homes. Positive effects are emerging in response to cities which most support equity appear to be those that have a large proportion of medium-density housing and a large quantity of locally provided services and facilities.

2. Introduction

Aristotle was the first to develop a theory of justice, which he identified in two basic kinds of justice: *justitia directiva* and *justitia distributiva*. The first kind of justice refers to the fulfillment of contractual obligations, while the second kind manifested in the "distributions of honor or money or the other things that fall to be divided among those who have a share in the constitution".

This research focuses on the latter - distributive justice - that is, the just allocation of goods and responsibilities through communities. This is often referred to as the issue of "social justice". A subject has increasingly become a hot common issue. *Urban justitia distributive* lacks a stable set of criteria. Identifying these criteria is the subject matter of theories of urban justice, which assume various concepts, implement various applications and apply various justifications, which produce different principles.

Jane Jacobs advocates a mix of architectural and functional diversity in the city. A variety of types of buildings that are created at different times is true, authentic diversity. She also says

that having a mix of commercial and residential buildings together that grows organically adds to the city's variety and beauty. One last point she makes about the diversity of the city being beautiful and economically sound is the fact that in New York, the landmarks are mixed in with the rest of the buildings. This richness of life and culture mixing is a feature that Jacobs advocates as the standard for urban planning. Not only does it make the urban space special, but it also brings business and tourism into the neighborhood.

The main hypothesis of this paper is that the distribution of facilities can enhance social justice through communities. It leads more positive socio-economic effects: poverty prevention, equitable education, and labor market access. The reasons of involving social indicators, first in practical terms, it is describing the state of society, analyzing social change, forecasting the future, evaluating social programs, setting goals and priorities, and developing a system of social accounts. Second, the philosophical and normative reasons are emphasizing the reduction of inequalities and the furthering of the principles of equity and social justice to create a good or well society. Social well-being is thus seen as a condition in which the needs and wants of the population are satisfied.

land use, is important component of urban planning, can contribute significantly in addressing the major urban challenges if led by well-informed policies based on sustainable development principles, social justice procedures and supported by well thought out and managed follow up actions and investments.

3. History and background

Illinois is a state in the Midwestern United States. It is the 5th most populous state and 25th largest state in terms of land area. With Chicago in the northeast, small industrial cities and great agricultural productivity in central and northern Illinois, and natural resources like coal, timber, and petroleum in the south, Illinois has a diverse economic base and is a major transportation hub. By 1900, the growth of industrial jobs in the northern cities and coal mining in the central and southern areas attracted immigrants from Eastern and Southern Europe. Illinois was an important manufacturing center during both world wars.

The Census Bureau estimates Illinois population is 12,880,580 on July 1, 2014, a 0.39% increase since 2010. Illinois is the most populous state in the Midwest region. It has three major geographical divisions. Northern Illinois is dominated by Chicagoland, which is the city of Chicago and its suburbs, and the adjoining exurban area into which the metropolis is expanding. Chicago metro area includes several counties in Illinois, Indiana, and Wisconsin, and has a population of over 9.8 million people. It is a cosmopolitan city, densely populated, industrialized, and the transportation hub of the nation, and settled by a wide variety of ethnic groups. Chicago is the third most populous city in the United States. Chicagoland, as known locally, comprises only 8% of the land area of the state, but contains 65% of the state's residents. The city of Rockford is Illinois' third largest city and center of the state's fourth largest metropolitan area. The Quad Cities region, located along the Mississippi River in northern Illinois, had a population of 381,342 in 2011. By the early 2000s, Illinois' economy had moved toward a dependence on high-value-added services, such as financial trading, higher education, law, logistics, and medicine. In some cases, these services clustered around institutions that hearkened back to Illinois' earlier economies.

Illinois state pass through different urban development stages starting from seventies, city governments continued to confront lean budgets and tax resistance that inhibited them from using their own capital budgets to finance development projects. In that time, there were two movements; first, the Uniform Relocation Assistance Act finally ensured that displaced residents would receive adequate relocation payments. Large-scale urban renewal projects aimed at downtown regeneration continued, through land use, transportation, and environmental systems that would provide the template for urban improvement. Overall the balance between justice and injustice changed, with more equitable outcomes occurring even while demolition of communities and subsidies to developers continued (Fainstein,

2011). Second, by middle 1970s business departure to suburban office parks and shopping malls accelerated, while housing abandonment turned central areas into vacant lots. Tracts that had been bulldozed by urban renewal still awaited private investment. Chicago (Squires, 1987) was able to achieve redevelopment success by employing TIF financing to enlarge its CBD and nurture the new service economy, enabling it to boast of new and lively downtown. Until the 1980s redevelopment efforts in Illinois had largely targeted central cities. Suburbia, however, has increasingly become the site of poverty, deteriorated housing, and abandoned commercial buildings. Uneven development has transformed the earlier condition of impoverished inner cities and wealthy outlying areas into Chicago metropolitan area, wherein some suburbs became ghettoized, older shopping malls were vacated, and low-income people of all races moved into outlying areas while metropolitan center witnessed gentrification. In the ninetens till now, the centerpiece of urban policy provided federal tax forgiveness and deregulation to entice private investment and also injected federal funds into social services. It was limited to a handful of cities; evaluation indicated that “zone initiatives had little impact” (Oakley, 2006). Even parks, long assumed to be a public responsibility, were expected to be self-financing as a consequence of revenues produced by adjacent real-estate development.

From this brief historical overview of the use of urban development, determining the justice of urban policy requires scrutinizing its consequences by examining the resulting distribution of benefits not only evaluating the circumstances under which it was made. Social justice indicators do not set goals and establish priorities. They measure progress towards goals set in the public arena. In this research we will be focusing on such problems, where urban spatial configuration contributes to social diversity by constraining access to socioeconomic opportunities:

1. Scarce in integration of activities networks with social networks and neighborhoods, which create a lack of urban opportunities to enhance local and city-wide cohesion.
2. The decision rules for planning in Illinois become hazier as there is less focus on the appropriate groups of concern. The majority discusses the problems of limited or low income, but rarely does it specify “minorities,” communities of discrimination because of race, color, religion, national origin, familial status and disability.
3. Urban Policies by state focuses on problems and activities for those who already choose—for example, housing for a high-tech workforce, not for low-income families, or transit as an alternative to driving, rather than for those who cannot afford a personal vehicle.
4. As a result of the decentralization of development and the decline in transit service, an increasing number of activities, especially employment opportunities, are totally inaccessible to the transit-dependent population. Obviously such restraints upon mobility lead to, or support, the narrowing of choices in employment, housing, recreation and health care.

4. Social Justice and urban Form:

For a city to be deemed fair or unfair, it should deliver a range of costs and benefits to its inhabitants, where are distributed that governs whether or not it promotes equity. Distributional justice may be viewed in terms of both the fairness of the outcome of distribution (the end result) and the fairness of the actions and procedures that bring this about. Our focus in this research on the fairness of the intended end result of urban form policy and practice. An appropriate theory for judging the ‘fairness’ of the distribution and satisfaction of the needs which impact of different land uses was selected by identifying the most common understanding of social equity within urban development literature. Distributive justice concerns the nature of a socially just allocation of goods in a society. A society in which incidental inequalities in outcome do not arise would be considered a society guided by the principles of distributive justice. The concept includes the available quantities of goods, the process by which goods are to be distributed, and the resulting allocation of the goods to the members of the society.



Figure 1 the conceptual framework of the relation between justice related and urban form.

This idea of social equity is linked to the concept of equality of needs, facilities, and activities, and may be considered to encourage a ‘fair’ distribution of costs and benefits if they are associated with benefits for the conditions or life chances of the disadvantaged, so reducing the gap between the advantaged and the disadvantaged. This definition is similar to Rawls’ difference principle, according to which: “All social primary goods—liberty and opportunity, income and wealth, and the bases of self-respect—are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favoured” (Rawls, 1972). ‘The disadvantaged’ are defined, for the purposes of this research, as those on low incomes, that is, those worst off in terms of the possession of one of the social goods identified by Rawls. Improving the life chances of low-income groups will therefore involve an increase in their share of social goods.

According to Merkel and Giebler, the three dimensions of poverty prevention, equitable education, labor market access and Social cohesion and non- discrimination carry the most conceptual value (Merkel, 2009). Under conditions of poverty, social participation and a self-determined life are possible only with great difficulty. The prevention of poverty is in a certain sense a condition sine qua non for social justice, and thereby takes precedence to the other dimensions from the perspective of justice theory. Equal access to good-quality education is another essential factor in providing equitable capabilities and opportunities for advancement (vertical mobility). Social or cultural background must not be allowed to adversely affect educational success. The labor market’s degree of inclusiveness is likewise of considerable importance to social justice, as an individual’s status is defined in large part by his or her participation in the workforce. Exclusion from the labor market substantially limits individual opportunities for self-realization, contributes to an increase in the risk of poverty, and can even lead to serious health stresses: “So long as gainful employment remains the primary means by which not only income, but also status, self-respect and social inclusion are distributed in developed societies, inclusion in the labor market must be a high priority for a just society” (Merkel, 2009). Community-level social capital is dependent on the demographic makeup of the community (e.g., race, poverty, adult educational level). All three fields can play a role in the creation, facilitation, and maintenance of social capital.

5. Interaction between Mixed used development and Social Injustice

Architects and Planners think mixed use development is more about the dynamic activities occurring within the public realm that it is about the built quality of the space (buildings, physical amenities, etc.). Mixed use development concerns more with the concept of “Inevitably,” writes Jan Gehl, “life between buildings is richer, more stimulating, and more rewarding than any combination of architectural ideas.” (Gehl, 1980). Mixed use development target is to ensure that urban space retains the capacity for quality urbanism, and encourage designers take steps to avoid precluding it.

This research will adopt the Douglas Wheeler Associates (2009) mixed use definition which are clearly influenced by the ULI definition when they say: “Mixed use’ is generally loosely defined but can encompass single developments with two or more revenue-producing uses

('vertical' mixed-use development) and mixed use neighborhoods with physical and functional integration including real physical connections between uses within a five minute walk ('horizontal' mixed-use development)". Although all these kind of wide range of different concepts of mixed-use different communities choose mixed use for different according to expected consequences. Different communities choose mixed use for different reasons. Some see it as an excellent way to incorporate a mix of housing types on a small scale while enhancing traditional town character. Others see it primarily as a vehicle for revitalizing struggling areas and spurring economic development. Still others use it to create or enhance village centers. Listed below are some of the many benefits of mixed use development:

- Preserves and enhances traditional village centers
- Promotes a village-style mix of retail, restaurants, offices, civic uses, and multi-family housing
- Provides more affordable housing opportunities and choices
- Promotes pedestrian & bicycle travel
- Reduces auto dependency, roadway congestion, and air pollution by co-locating multiple destinations
- Promotes a sense of community and place
- Encourages economic investment
- Promotes efficient use of land and infrastructure

6. Research hypothesis

First, U.S. Department of Housing and Urban Development suggested that exogenous location factors like (income, education, age, and race) influence facilities types and location choices. We expect the influence of exogenous factors to be especially pronounced in urban contexts, since facilities in a city are embedded amidst other land uses and an omnipresent influence of urban form. This leads us to the following hypotheses addressing the impacts of social context on land use pattern. We therefore specify as below:

- 1) *Mixed use is positively related to income equality, and preventing poverty.*

We examine each possibility, operationalizing Critical Mass both as (1) the number of people of all ages in poverty 2013, as well as (2) unemployment rate

Second according to (Niemira, 2007) suggests that an establishment's location decision can be strongly influenced by the location choices of education. We therefore specify our third hypothesis as follow:

- 2) *Mixed use is positively related to offering more education opportunities.*

We examine each possibility, (1) the number of educational organizations within an area, as well as (2) the number of adults with education.

Third, economic theory suggests that land-use location preferences depend on the type of goods sold. Facility size is not the sole factor; the frequency of patronage that the Facility attracts also plays a role. Grocery stores, for example, offer goods that are demanded frequently by their customers, but hardware store, in contrast, are visited rarely. Typical urban Mixed-use project have no legal mechanisms in place to keep unwanted facilities away from anchors. At the same time a large agglomeration of Mixed-use Buildings with relatively low patronage frequencies can collectively also start producing demand externalities that benefit Mixed-use Centers. Unlike a mall, we expect a Mixed-use Centers can be composed of facilities who value the presence of other facilities in the cluster and stores who do not. Rather than collaboratively optimizing the facilities mix to attract the largest possible demand to the cluster as a whole, we expect the uncoordinated urban facilities to exhibit a stronger preference towards locations with advantageous exogenous conditions. This leads to our first and second hypothesis:

- 3) *Uncoordinated facilities locations exhibit a stronger preference towards customers rather than collaboratively optimizing facilities mix.*

4) *Mixed-use diversity is positively related to job opportunities*

For the purposes of this paper, we test two mixed use the vertical and horizontal models which included in the definition of mixed use. Also include (1) average unemployment rate, (2) the Civilian labor force 2013.

7. Methodology

With just a few cases, we cannot build a theory. But with a large N (1382 cases), US Census provides us with sufficient data including 1382 Illinois zip codes, every zip code can consider such a social and economic case to study and to know where is the level of such kind of facility in such zip code regarding to nation records.

Table 1: Descriptive Statistics for Core dependent & Independent Variables

Variable	Definition	Mean	Standard Deviation
Dependent variables			
LAND_MIX index	distribution of several land-use types within the region		
Retail Trade	Num. of Retail Trade facilities	24.84	47.46
finance	Num. of finance facilities	12.76	36.41
Education	Num. of Educational Services facilities	4.83	17.68
health care	Num. of health care facilities	21.16	43.77
art, entertainment	Num. of art, entertainment facilities	2.90	6.02
food	Num. of food facilities	17.78	34.84
Housing Units	Num. of Housing Units facilities	3825.21	6171.24
Independent variables			
Poverty Prevention			
POVALL_2013	Estimated percent of people of all ages in poverty 2013	1356.44	2440.59
Income inequality	household income	6197.57	22755.46
Equitable Education			
LHD 09-13	adults with less than a high school diploma	790.81	1476.48
HD 09-13	adults with a high school diploma only	1680.92	2581.77
CA 09-13	adults completing college or associate's degree	1986.62	3721.32
B.Sc 09-13	adults with a bachelor's degree or higher	1787.11	2808.05
Labor-market access			
CLF	Percent of Civilian labor force 2013	1102449	3445269
UNEMP	Percent of Unemployment rate 2013	184.64	10298.53

From 1994 to 2012, the Census collects comprehensive information about the total number of establishments in every zip code. It called "Zip Code Business Patterns," it presents for example the number of restaurants and religious organizations per zip code. It offers also more data using Number of Establishments by Employment-size class which provided which describe the employment level as well as employment dynamics stratified by firm size which can be used as value for each type of facility. Zip code demographics are effective, because they generally create a clear image of how a city is broken up. Zip code demographics make it very easy to compare trends in the city to trends in the suburbs. Zip code data are designed to make connections between the past, present, and future as easy as possible. It also can provide us with social characteristics like income, education.

7.1 Measuring mixed-use development

Amenities may capture abstract qualities of the neighborhood, such as the ability to meet one's day-to-day needs and the sense of a complete neighborhood (Douglas, 2008). As this

research adopted the definition of mixed use using Farr Douglas definition, he also adopted concept of diversity to describe mixed use in quantitative method. Following Frank et al (2004) (L. A. Frank 2004), this is an entropy measure reflecting the evenness of distribution of several land-use types within the region. The LAND_MIX index is calculated as follows using the n categories of land in each region:

$$(LUM = - \sum_{i=1}^n p_i \ln p_i / \ln n)$$

Where n is the number of different land use type classes in the region and Pi is the proportion of land in type i in the region. This index is calculated separately for each zip code. The resulting variable LAND_MIX is the land use mix entropy index, which varies from 0 (homogeneous land use, such as in rural areas or suburban subdivisions) to 1 (most mixed, such as diverse city centers) land use. The land uses is using the proportion of estimated square footage obtained from zip code Data (proportional to the size of the network buffer), controls for land uses within the network buffer that were not considered to have walkable destinations within them included industrial, for example.

This method of measurement prevents an area that is evenly distributed with respect to the four land uses, but has a relatively small area occupying this mixed use to have the same value as an area that is also evenly distributed with respect to the four land uses, but has mixed land use over a relatively larger portion of the network buffer. All measurements were made within a 1-kilometer roadway network distance of each participant's place of residence. Land use mix ranges from zero to one, with zero representing a single land use environment, such as a purely residential neighborhood, and one representing a perfectly even distribution of square footage across all four land uses with several destinations within walking distance. Mixed land use has been found to be a good predictor of pedestrian travel.

7.2 Two mixed use models:

First (Model A): the conventional mixed use model which includes retail store, entertainment, food, and housing. This model is what usually developers offer in their project and this model is more convenient with the 'vertical' mixed-use development'.

Second (Model B): mixed use development model includes retail store, finance, education, health entertainment, food, and housing. This model is what usually mixed use neighborhoods with physical and functional integration including real physical connections between uses within a five minute walk 'horizontal' mixed-use development".

7.3 Research variables:

Tracking different land uses over time and space provides a history of their development, the dynamics of which, once understood, can be useful for future urban planning. There are a number of factors that are important in determining land use patterns:

8. Discussion:

This research adopts John Rawls work with the work of Amartya Sen, the 1998 Nobel Prize for Economics winner who emphasizes the distribution of those goods that play a special role in the developed societies of the 21st century. Sen focuses on the just distribution of individual capabilities rather than on a society's institutional order, which is Rawls' prime focus. For Rawls, the point is to provide all individuals with an equal set of primary goods that correct the inequality of life chances. In a just society, an individual's rich or poor parents, intelligence or dullness, sheltered or neglected family background, are not the determining factors in his or her life plans or opportunities for achievement. Institutions must distribute such primary goods that are relevant for creating equal chances in life. Most important

among these primary goods are rights, freedoms and opportunities, income and wealth, and the social conditions for self-respect.

The most recent urban programs recognize the equally important role of local authorities and civil society in improving the lives of the urban poor. They simultaneously address issues of decentralization and social equity and promote partnership between municipalities and communities. Decentralization devolves wide responsibilities to local facilities in districts, cities, and villages. They are responsible for providing health, education, public works, communications, and the management of land and other environmental resources, as well as support of agricultural, manufacturing, and commercial activities. The laws do not specify which functions are mandatory for each category of local authority and which are optional or shared with other authorities. This lack of clarity notwithstanding, local governments have to take the lead role in addressing the needs of lower income communities.

Regression analyses make a strong claim: it attempts to demonstrate the degree to which one or more variables potentially promote positive or negative change in another variable. Regression analysis allows to model, examine, and explore spatial relationships and can help explain the factors behind observed spatial patterns. By modeling spatial relationships, however, regression analysis can also be used for prediction. Building a regression model is an iterative process that involves finding effective independent variables to explain the dependent variable trying to model or understand, running the regression tool to determine which variables are effective predictors.

At this level we are able to test our hypotheses within the same model, allowing us to measure each hypothesis's individual effects and their relative strength in predicting mixed use development. Hierarchical modelling allows us to nest mixed use model within its larger census. More information on our model is provided below.

Table 2: Regression analysis

Independent variable	Model	R ²	Sig. F	P-value	Coefficients	
					Inter.	
Poverty prevention						
People in Poverty	A	0.48	0.0	0.0	23.54	0.04
	B	0.89	0.0	0.0	602.18	2.44
Income Inequality	A	0.22	0.0	0.0	64.14	0.003
	B	0.47	0.0	0.0	2729.3	0.19
Equitable education						
adults with less than a high school diploma	A	0.47	0.0	0.0	26.27	0.07
	B	0.90	0.0	0.0	708.57	4.05
adults with a high school diploma	A	0.54	0.0	0.0	8.38	0.05
	B	0.94	0.0	0.0	-79.69	2.37
adults with college or associate's degree	A	0.54	0.0	0.0	10.25	0.04
	B	0.95	0.0	0.0	1.63	2.19
adults with a bachelor's degree or higher	A	0.49	0.0	0.0	25.40	0.03
	B	0.91	0.0	0.0	709.87	1.61
Labor market access						
Civilian labor force	A	0.29	0.0	0.0	57.17	0.0
	B	0.62	0.0	0.0	2319.96	1.44
Unemployment rate	A	0.50	0.0	0.0	16.81	0.0
	B	0.94	0.0	0.0	236.11	0.04

9. Results:

Table 2 summarizes the stepwise results for the independent variable LAND_MIX percentage of two mixed use models, for about 1382 cases with complete data; a model with reasonably good predictive powers was obtained.

9.1 Poverty prevention

The indicator “People in Poverty” corresponds to the sum of persons who are “at risk of poverty or severely materially deprived or living in households with very low work intensity” and income below the risk-of-poverty threshold, which is set at 60 percent of the national median equivalized disposable income (after social transfers). The concept of this indicator extends far beyond a simple measure of relative income poverty. It refers to the deprivation of basic human needs, which commonly includes food, water, sanitation, clothing, shelter and health care in the neighborhood which provide educational and healthcare facilities. According to the regression analysis, around 48 percent of “Model A” are at risk of poverty or social exclusion otherwise “Model B” exist in 89% of these area. “Model A” is presenting the conventional real state model of mixed use development which targeting high income people. This may interpret the following results because “Model A”, 22 percent are in area with income inequality which refers to the extent to which income is distributed in an uneven manner among a population on the other hand “model B” present 47%, which means that the gap between the rich and everyone else, has been growing markedly.

9.2 Equitable education

Equal access to good-quality education is another essential factor in providing equitable capabilities and opportunities for advancement (vertical mobility). Social, political and economic participation depends in large part on this public good. To this end, the state must take care that genuinely equal educational opportunities are available to every child. Social or cultural background must not be allowed to adversely affect educational success. This dimension considers efforts to provide early-childhood education, the role of socioeconomic background in students’ educational success, and, finally, a qualitative expert assessment of educational policies, focusing particularly on the provision of high-quality education and equitable access opportunities. Assuring equity in education opportunities is primarily an ethical imperative, since weak access to education and social poverty generate a vicious circle in which those lacking education access are denied opportunities for social betterment, and the socially disadvantaged are denied access to education. Breaking this vicious circle is a matter of solidarity and key to maintaining the social fabric of society. At the same time, it makes good economic sense to nourish and apply the talents and abilities of everyone in society, as much as is possible. With the limitation of applying “Model A” because it targeting city centers and density areas on the other hand “Model B” is more exist in suburban areas which attract more population and higher educated people with more facilities and prosperity

9.3 Labor market access

The labor market’s degree of inclusiveness is likewise of considerable importance to social justice, as an individual’s status is defined in large part by his or her participation in the workforce. Exclusion from the labor market substantially limits individual opportunities for self-realization, contributes to an increase in the risk of poverty, and can even lead to serious health stresses: “So long as gainful employment remains the primary means by which not only income, but also status, self-respect and social inclusion are distributed in developed societies, inclusion in the labor market must be a high priority for a just society” (Merkel 2009) . Alongside the overall employment rate, the specific rates for 55- to 64-year-old workers, for foreign-born workers as compared to natives, and for women as compared to men are considered. In addition, the labor market inclusion dimension examines the overall unemployment rate, and is supplemented by the long-term unemployment rate and the degree of labor market exclusion experienced both by young and by low-skilled workers. According to U.S. Bureau of Labor Statistics (BLS) Civilian labor force definition is describing the subset of Americans who have jobs or are seeking a job, are at least 16 years old, are not serving in the military and are not institutionalized. “Model A” doesn’t attract population

comparing to “Model B”, so “Model B” has more Civilian labor force especially with more education levels. The problem is although “Model B” has verities of facilities, it doesn’t offer more jobs opportunity.

Conclusions

The research reported in this paper suggests strongly that the development of mixed use that supports the idea of an urban renaissance has impacts on social equity. Financing, tenure and management are not the only aspects of mixed use that influence the life chances, opportunities and well-being of the least well off in Illinois towns and cities. For designers and mixed use developers seeking to promote social equity, the implications of the research are that higher-density facilities such as retail, education, health, art, apartments and terraces are the best forms of mixed use, especially if they are developed on derelict land in areas where there are plenty of locally-provided services and facilities. Encouraging people to move back into towns and cities seems to improve social equity generally, leading to increased public transport use, better mental health and reduced segregation of low-income groups. For urban policy makers, although the potential benefits of mixed use development, including increased walkability, job opportunities and good access to facilities, it may have negative impacts, such as small dwellings, lack of affordability, shortage of green space, risks to respiratory health and increased crime, need to be addressed.

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How to rework the productive city?



Investigating the Effects of Industrial Cluster Development Policy on the Performance of Urban and Regional Old Industries

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Abstract

Cities and regions represent the most powerful economic engines in the world. A major portion of economic dynamism of cities is basically attributed to its industries. Numerous transformations in various fields of global industries has brought some issues for some cities and regions' old industries that have industrial background and are suffering from inadequacy of capital, technology and labor and brought these industries on the wane. Development of these old industries is often neglected in urban and region development plans. Industrial clusters development model is one of the major recent models which has enjoyed lots of attention for industrial development in cities and regions. The model seeks to help renovate urban and regional economic endeavors, development of new industries and encouragement of economic collaboration among regional networks and firms, government, academia, research and development centers, local expert workforce and entrepreneurs and ultimately provide a new organization of industrial and economic development. Against this background, the purpose of this paper is to discuss the effects of policies based on the development of industrial clusters on transformation of old industries of the cities.

Keywords: industrial clusters, old industries, urban and regional development, Policy

1. Introduction

Cities and regions represent the most powerful economic engines in the world(Shanghai Manual, 2010:2).since throughout the process of globalization, cities and their local authorities have become almost independent units, and their goals have been reformulated in ways that are consistent with the global economy (Guzey, 2009, 27). Meanwhile, major portion of economic dynamism of cities is basically attributed to its industries. Therefore, each city will need an industrial development strategy. On one hand Numerous transformations in various fields in global industries has brought some issues for some cities and regions' old industries that have industrial background and are suffering from inadequacy of capital, technology and labor and

brought these industries on the wane. Development of these old industries is often neglected in urban and region development plans. The overall policy objective for these urban and region has been to find ways to re-position them away from the traditional sectors in decline and to install new drivers for economic growth (Skokan, 2009:772). In recent decades, Industrial clusters have been introduced into urban and regional policy as a strategy for creating and strengthening local development, competitiveness and performance in the globalized economy and also are one of the major models which have enjoyed lots of attention for industrial development in cities and regions.

The geographical concentration of related manufacturing and service firms that is referred to as clusters, is as dated as economic development, but it has drawn renewed attention in the last third decades in the wake of the spectacular growth of regional economies such as Silicon Valley (South San Francisco Bay), Route 128 (greater Boston area) and the “discovery” of numerous other manufacturing districts from Denmark and Italy to Thailand and Japan (Desrochers, 244:233) .A cluster is define as a geographically proximate group of interconnected companies and associated institutions in a particular field, including product producers, service providers, suppliers, universities, and trade associations. They are increasingly recognized as an effective means of industrial development and promotion of small and medium- sized enterprise. The model seeks to help renovate urban and regional economic endeavors, development of new industries and encouragement of economic collaboration among regional networks and firms, government, academia, research and development centers, local expert workforce and entrepreneurs to ultimately provide a new organization of industrial and economic development. Much like with clusters, it provides a better lens to understand economic dynamics and can be a useful level for policy action. Against this background, the purpose of the paper is to introduce industrial clusters model in a theoretical context as an appropriate alternative for reconstructing, rework and developing new industries in old industrial cities and regions.

2. Industrial Clusters Approach

In recent years, clusters have become an object of interest for academics and policy makers alike (uyarra& Ramlogan, 2012:5). Michael Porter, the Harvard Professor of strategy who developed the cluster concept, defined cluster as (1990) “industrial clusters are formed by firms and industries linked through vertical (buyer/ supplier) or horizontal (common customers, technology etc.) relationships and with the main players located in a single nation/state. Geographic concentration of rivals, customers and suppliers in a region will promote innovation and competitiveness in a

cluster” (Porter, 1990). Their two key characteristics are thus the proximity of individual activities in terms of (1) geography and (2) value creation. Porter, through extensive research, came to the conclusion that economic success does not occur in single industrial branches, but in clusters (Porter 1990, 1998, 2000). These clusters are made up of actors from related branches and sub-sectors. Once a cluster has evolved, intensive exchange within the cluster starts. This interaction leads to the diffusion of new technologies, increased availability of trained specialists, rapid dissemination of innovations through the channels of subcontractors and clients, to the discovery of new possibilities for competitiveness and new market opportunities, and more(Beaker& others, 2014).

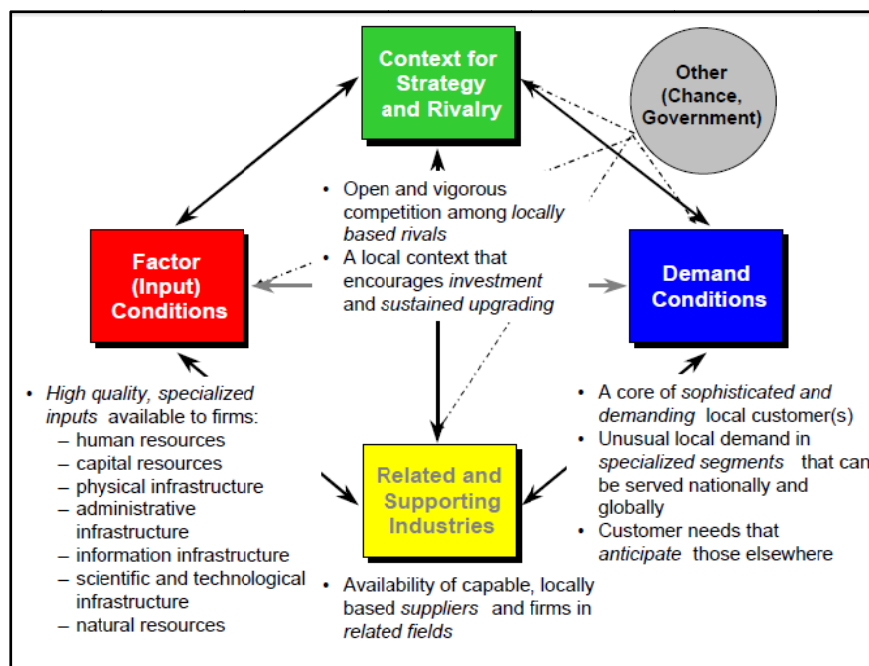


Figure 1 : Determinants of cluster competitiveness(Linde, 2003:143)

Clusters can be characterized as networks of production made of strongly interdependent firms (including specialized suppliers), knowledge producing agents (universities, research institutes, engineering companies), bridging institutions (brokers, consultants) and customers, linked to each other in a value generating production chain. The cluster approach focuses on the linkages and interdependences between actors in the network of production that are producing products and services and creating innovations (Roelandt and Hetrog, 1998:5). As the space industry organization forms to create a competitive advantage, it enables information and technology acquisition more convenient, relatively lower relatively; transaction costs savings, and encourages new enterprises to join to form a competing and cooperative relationship. Hundreds of cluster initiatives have launched involving virtually all regions of the world and the number is

growing (Skokan, 2009:772). Cluster initiatives, the organized efforts to increase the growth and competitiveness of cluster, in many countries are becoming an important way to structure economic policy and strengthen ties between industry, government and academia (Skokan, 2009). Cluster development initiatives are an important new path in economic policy, building on earlier efforts in macroeconomic stabilization, privatization, the opening of markets, and reducing the costs of doing business (Setz·2004). Clusters arise because they increase the productivity with which companies can compete. This approach to economic development generates significant benefits by enabling cities and regions to gain comparative advantage from the increased economies of scale of businesses that co-locate and collaborate in knowledge transfer, investment opportunities, and industry development. Generally, industry clusters are recognized by their significant role both in urban and regional economic development and in improvements in quality of life.

Porter witnessed that cities and regions could attract a significant focus from competitors, customers and suppliers that not only leads to efficiency and specialization but also information centralization and visibility of competitors. Therefore, in his latest formulation, Porter concludes that most of the successful international businesses are located in a city or specific region within a country (Dadashpor, H, 2011). He refers to steel industry around Dortmund, Essen and Düsseldorf, machine tools industry in Stuttgart and kitchen equipment industry in Solingen as examples of locational agglomerations. Porter states that “regions compete to create the most productive space. Industries do not matter, but it’s the method of competing and the way that they benefit from environment that matters” (UNIDO, 2009: 55). Porter stresses that space adjacencies among firms in what he refers to as industrial cluster building, plays an important role in improving productivity and encouragement of continuous innovation. Therefore, development of clusters reveals the role of location in competitive advantage. Porter (2000) states that competition among clusters in regions is influenced in various ways or in other words, clusters influence competition in three general ways that reflects and consolidates different parts of the diamond model: 1. increasing current (static) productivity of companies or member industries; 2. Increasing the capacity of cluster members for growth of innovation and productivity; 3. Stimulating formation of new businesses that support innovation and increase the domain of cluster (Porter, 2000: 11).

Given the varied theoretical perspectives regarding industry clusters, it is important to delineate the characteristics of clusters that are agreed upon in the literature. Steiner (1998) asserts that there are key features common to all theories of industry clusters. First, clusters are based on

specialization that results from a high division of labor within the economy. This naturally leads to a high degree of interdependence among economic actors, which leads to increased cooperation. This cooperation can take the form of inter- industry transactions between firms, knowledge exchanges between individuals and institutions, or linkages between public and semi-public institutions. These linkages can be based on either formal contracts or social, cultural and political ties. Second, specialization and interdependence is partly based on proximity in both economic and social space. Proximity in economic space entails firms producing similar goods or services. Proximity in social space entails firms sharing similar cultural, political and normative traits. This combination of specialization and proximity results in synergies that increase the competitiveness of the urban and region, which results in higher productivity, stabilization and wealth creation for both the firm and region (Peters, 2004:2-3).

2.1 Six key elements form the economic foundation that supports the development of industry clusters.

- a. Networks and alliances are formal and informal associations and mechanisms that facilitate the exchange of knowledge, information, ideas, and trade between companies and businesses involved in specific types of economic activity within an area. (These networks and alliances may expand between areas and sub regions, and some are global.)
- b. Skilled and adaptable human resources, for example, multi skilled, multilingual, and contract labor, must be available.
- c. Technology availability is important in improving production efficiency. The wide use of CAD, CAM, and GIS systems to assist manufacturing and analytical processes is important in improving the efficiency of production and the delivery of value-added producer services.
- d. Advanced physical and information infrastructure, for example, fiber-optic cable systems, data processing centers, efficient transportation systems, waste management services, and education, training, and community facilities have a significant impact on equipment and human performance in supporting the development of industry clusters and attracting new industries to regions.
- e. Access to financial capital, such as equity, venture capital, or debt financing, is an important economic foundation supporting investment in industry clusters.
- f. Taxation and regulatory environment has a significant impact on the cost of business and economic performance. Regions that offer taxation incentives for R&D, flexible building codes,

sound policies on environmental performance, and support for cleaner production provide the kind of economic foundation that foster industry cluster development.

3. Why cities and regions are important for development of industrial clusters?

Industrial clusters are a topical issue in urban and regional development and have become the main form and method of urban competition in the world (Shuqin& Hong, 2008). Many countries and cities take the industrial clusters as an important source of urban competitiveness under globalization (Shuqin& Hong, 2008) since cities and regions are well positioned to benefit from future industrial market opportunities. Much of both past and recent literature on urban growth begins with the premise that cities succeed because they promote agglomerations that raise the productivity of firms locating within the city's boundaries. There is a couple of reasons for this fact. Firstly, more than 50% of the global population now resides in cities and cities are gaining more economic importance and provide a specific context for the broader economic development challenges. Secondly, cities seem to be attracting a growing share of economic value, not just of population. With value creation increasingly driven by innovation and knowledge, cities' relevant advantages play out: density, absolute size that allows a portfolio of related activities to be present, proximity to benefit from local knowledge spillovers, a deep labor pool, amenities that attract a wide variety of human skill, and the traditional role of cities as homes to core educational and research institutions. Thirdly, cities – metropolitan centers in particular – play an increasingly critical role in a policy approach that aims to upgrade microeconomic competitiveness from the ground up. Hence, clusters are designed to restructure economic activity in a city or region, develop new industries and foster models of economic coordination involving localized networks of entrepreneurial activity and alliances between local governments, universities, skilled labor and firms. This model has drawn much interest from governments, multinational corporations, and local businesses in many countries as a means of strengthening and diversifying the urban and regional economic base. Generally, cities are able to provide the framework and physical infrastructure needed by industrial clusters if they are to thrive. Urban regeneration undertaken by city administrations and their partners provide businesses with a suitable environment whilst improvements in quality of life can lead to talent attraction and retention. In addition to leading physical urban development, cities can also bring together multi- sectoral partners by developing "technology". These provide clusters with structures to support the creation and development of incubators, startup centers and business centers (Euro, 2009:11).



Figure 2: Conceptual Approach and Goals of Cluster- Based City Economic Development

Ultimately, urban and industrial agglomerations have several advantages. Economies of scale (i) make it more efficient and effective to share market information, knowledge, new technology, product design and service innovations, and common research and development (R&D) facilities or centers; and (ii) lower the costs of doing business. This is the key phenomenon behind the concept of *cluster-based city* economic development. City clusters can offer shared access to common infrastructure, geospatial proximity for supply chains and networks, and concentrations of human resources and skills, and thus help to lower production and transaction costs. Industry clusters are significant drivers of local economic development (Choe & Roberts, 2011:3).

4. How Industrial Cluster policy can best contribute to the economic development of older industrial cities?

The study of the role and importance of clusters in supporting local economic development has undergone considerable research and development since Porter (1985, 1990) first wrote about them. According to Marques et al. (2005), the importance and impact of clusters in the processes of urban transformation, due to their potential as a possible economic and urban development tool, has been widely observed. Most developed countries, and an increasing number of developing countries, have embraced the concept of clusters as a matter of new economic policy.

The policy emphasis on clusters appears to be replacing the traditional supply-driven sector plans of governments, as these have failed to achieve sustainable economic outcomes for cities and regions. Clusters can become centers that generate urban redevelopment in processes of productive restructuring, due to the strong impact they have in their surroundings (Marques et al., 2004). Clusters evolved from productive agglomerations as districts or development poles, and are nuclei of small/medium interrelated entities in complementary productive sectors, which cooperate with research institutes, trade associations, local governments, etc., establishing synergies and linking agents in the same geographical location (Igliori, 2001). (3 Without any doubt, the Technology Center, the Technology Park, and universities key elements of successful restructuring and recovery in economic terms after the collapse of traditional industries in recent decades. In general, firms located in industrial clusters are more productive than those not located in clusters. The higher productivity of firms in clusters has long been explained through agglomeration effects, which refer to positive localized externalities: Knowledge transfer and innovating ideas among densely agglomerated workers, alleviating matching through thick labor markets, or reducing transaction costs by transacting with proximate firms. The authors stress out that this happens especially in areas that have undergone a restructuring process, where Clusters have been transformation agents of the urban fabric, acting as regeneration producers, not only from a morphological, but also from a socioeconomic point of view. This new type organization is an alternative to the development of contemporary cities, which have had part of their territories disqualified, in the restructuring, re-industrialization and deindustrialization processes, over the last 30 years (Marques Nunes and other, 2010:4).

5. Conclusion

The cluster-based economic development approach is a relatively new approach with the goal of creation of business clusters and development of competitive urban economy. There is an assumption that since no city (or country) does not have advantage in all sectors of industries, there would not be industrial clusters in every field. Hence, when there is an advantage for a city in specific field or industry and there are exist clusters relevant to that industry; policies could focus on development of these clusters. In fact, in such conditions it is expected that development of these clusters lead to development of the urban economy. There are numerous advantages for agglomeration of industrial clusters: economies of scale, sharing of new information, knowledge and technology, product designs, innovation in providing service and facilities and joint centers for research and development become more effective and more efficient and decrease in transaction costs and business operations costs. This is the major

phenomenon that lies within the concept of cluster-based economic development for cities. Since urban and regional economy is the result of the performance of relevant industrial firms on regional scale, business clusters are key units for understanding and developing regional economic performance as co-location of industrial units and related governmental institutions and bodies in a specific geographical location contributes to more dynamism and efficiency for production chain.

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Creating Industrial Estates of the Future: Case Studies from Singapore

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1. Introduction

Industrial estates are typically perceived as hard, concrete landscapes devoid of aesthetic or 'human' factors. One would not expect the 'ballet sidewalk' espoused in Jacob (1961) to play out in such a place – often large, sprawling estates ploughed by heavy vehicles and segregated from the rest of the city. Traditional conceptualization of city development such as Burgess's or Hoyt's models also advocate that industrial activities should be segregated from residential and other uses, to avoid pollution or nuisances from causing disamenities to city dwellers.

The nature of today's industrial or manufacturing activities is, however, undergoing change, with the advent of the "Knowledge Economy", the "Digital Economy", or the "Creative Economy". Increasingly, the boundary between manufacturing and service are being blurred, giving rise to a wide array of economic activities and needs. In order to capitalize on these new relationships between economic activities and actors in the city, this paper seeks to argue that industrial estates of the future should be planned as workplaces with strong connections to the rest of the city (be it economically, physically, aesthetically, etc.), rather than merely places for machinery; industrial estates should as far as possible be guided by 3 key principles of city-planning: 1) Compactness, 2) Mixed-uses, and 3) Connectivity.

The paper will be divided into the above sections, using case studies and examples from Singapore. The first, on Compactness, explores how the city should make full use of available industrial land, in the context of land scarcity and competing uses. The second principle, on Mixed-Uses, explores how the city can plan for a fine-grained urban fabric even in the context of manufacturing spaces. The third principle, on Connectivity, is what ties these compact, mixed-use manufacturing spaces or districts with the rest of the city.

2. Case Context: Singapore

As a city-state with a small land mass of only 718 km², equivalent to almost half of London, Singapore presents itself as a apt case study of the dynamics between urban land and economic growth, magnified by the acute limitation in land resource. Early Singapore started out as a colonial port in the 1800's. Upon independence in 1965, the country moved into labour-intensive industries such as textile and wood products, and in the 1970-80's, into higher-value added industries like wafer fabrication and electronics. Today, Singapore's economy has diversified into various sectors, from banking and finance, tourism, biotechnology, petrochemicals, shipping etc. Unlike many other post-industrial cities, production remains a significant role in Singapore's economy, with manufacturing contributing to 28% of GDP. At the same time, there is a need to also address needs of a growing population - currently 5.4 million and projected to grow to 6.5 million by 2030 – with pressures for more land for residential, commercial, amenity and other uses.

Using Singapore as a starting point, the subsequent sections explores how a productive city of the future can be planned for.

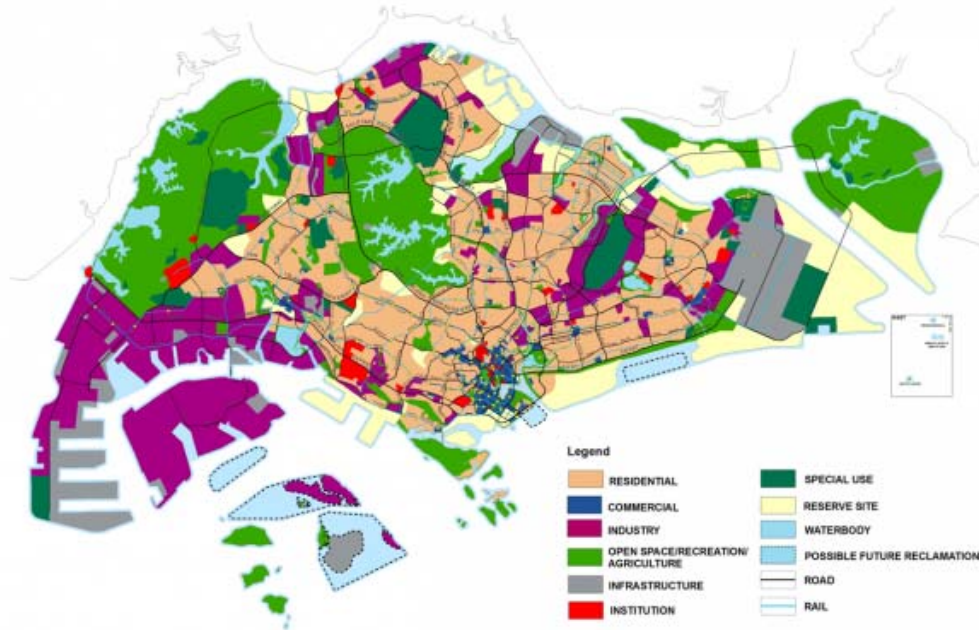


Figure 1: Profile of projected land uses in Singapore beyond 2030
(Source: Ministry of National Development)

3. Principle 1: Compactness

Today's post-industrial cities are hard-pressed to justify and safeguard industrial land, given the low value as compared to residential, retail or other uses. London, a major manufacturing centre in the 19th - 20th century, saw most of its manufacturing activities phased out and replaced with office, retail and residential developments, with almost 604 hectares of industrial land lost from 2006 to 2013 (Jones, 2015). Some of London's business districts today such as Canary Wharf, Battersea, and Croydon, have seen multifold increases in land values as a result of this replacement of industries with more 'valuable' uses. The hard truth is that urban land is scarce, and the city's land market is extremely competitive. In the face of strong pressures address housing and other needs in the city, industrial estates, often sprawling and low-rise, are often first to be foregone.

For cities to be able to accommodate and justify for industries to be located in the city, new forms of compact industrial developments needs to be embraced. Land issues aside, there are also strong reasons why industrial developments should be compact. Cities are engines for economic growth as they sit at the confluence of knowledge exchange and innovation. These interactions thrive on proximity and clustering, which is a key reason why writers such as Glaeser (2011) and Swinney and Thomas (2015) advocate for high-density forms of development. The concept of economic clustering or agglomeration is not new (for instance, as put forth by Marshall in 1920) - but there needs to be a paradigm shift that manufacturing activities can too be housed in compact urban forms.

3.1 Industrial Clustering in Specialized Industrial Parks

In Singapore, clustering is a key strategy to leverage on synergies from proximity and the sharing of utilities and facilities. The congregation of many big and small actors located within the same estate brings about locational advantages. On Jurong Island, a curated group of companies is carefully planned to be co-located such that one's outputs can be quickly and easily transported to another as an input. Through sharing of common facilities and

eliminating duplication of infrastructure, clustering is used as a tool for planners to minimize land take of industrial activities. Simultaneously, companies benefit from the provision of these shared infrastructure and amenities, for instance pipes for the transfer of chemical goods, security and safety services, training centres and R&D centres.



Figure 2: Jurong Island, a dedicated offshore island for the petrochemical industry in Singapore (Source: JTC Corporation)

At the same time, clustering helps to manage constraints posed by industries, for instance, height constraints from aerospace companies, health and safety buffers imposed by chemical companies, hygiene and cleanliness requirements from food and biomedical companies, and non-vibration environment required by wafer fabrication companies. In the 1980's, the need to manage these constraints gave rise to a new form of industrial development – specialized parks. These are now located at various parts of the island such as the Seletar Aerospace Park, Jurong Island, Tuas Biomedical Park, and Woodlands Wafer Fab Park. By clustering companies from the same industry together, land use constraints imposed by these industrial activities are limited only within these designated areas.

3.2 Intensification in High-rise and Multi-tenanted Facilities

Clustering takes place not only on an estate level, but on a building level. For a small, land-scarce city like Singapore, the move towards denser, more intensified forms of industrial development is a perennial quest – closely related to achieving higher land productivity to rationalize industrial land in Singapore. Policy-wise, the state requires industrial developments to meet minimum Gross Plot Ratio guidelines, depending on the needs and operations of the various industrial sectors. Industrialists are also encouraged to consolidate their developments, alter manufacturing operations or adopt new technologies to achieve higher land productivity through a Land Intensification Grant.

The state also leads in the development of high-rise, multi-user buildings catered to specific industry sectors, to encourage industrialists to move from land to space. The first multi-storeyed “stack-up” factory built achieved a Gross Plot Ratio of 2.05, as compared to 0.8 for older low-rise factories. Today, multi-storey industrial developments have since become the norm in centrally located or newer industrial areas in Singapore, with some of them being able reach as high as 10-storeys (even for heavier production activities that require ramps to access upper floors, for instance warehousing). Moving forward, developments are doing away with the traditional ramp-up typology and adopting alternative ways to transport goods and achieve even more land savings. For instance, JTC Space@Tanjong Kling, dubbed the ‘Small Footprint Factory’, facilitates vertical goods movement via lift, hoist and crane system. The Cluster Industrial Complex with Mega-hoist (CICM) was conceptualized to make use of a megahoist system within the building to facilitate transportation of goods from lower to upper floors. Others that house clean and light production activities, for instance R&D, can go even higher. These different types of multi-storey industrial developments are crucial in providing choice and supporting diversity of economic activities in the city.



Figure 3: Illustration of the CICM megahost system (Source: Government of Singapore)

Moving forward, the state is continuing to develop such high-rise, multi-user buildings for industry sectors that traditionally operate on ground floor. Instances include the JTC Surface Engineering Hub @ Tanjong Kling, a 4-storey development with a shared wastewater treatment plant for surface engineering companies, JTC Food Hub @ Senoko, a 7-storey development with a centralized coldroom for food manufacturing companies, JTC Furniture Hub @ Sungei Kadut, a 10-storey development for furniture manufacturing companies, and JTC Medtech One @ MedTech Hub with a shared sterilization plant and warehouse for medical technology companies. What is apparent from this is that it is possible to ‘densify’ a wide array of industrial activities through innovative development design, and at the same time reap benefits from this fine-grained clustering, where companies are similarly able to benefit from shared facilities and synergistic collaborations or tie-ups between each other, made possible by their close proximity to each other.



Figure 4: JTC Surface Engineering Hub, JTC Food Hub @ Senoko, JTC MedTech One @ MedTech Hub, JTC Furniture Hub @ Sungei Kadut (above left, clockwise) (Source: JTC Corporation)

3.3 Creating Space in Underground and Air Rights Development; Co-locating Uses

Besides the above, there are other ways to densify industrial developments.

With limited land resource, one strategy to create space is to go underground. For instance, what is being explored now is to use underground space as a ‘science city’ or for logistics and warehousing. Another strategy is to create space in air, through air rights development over major transport expressways, particularly in research and science parks. An outcome of this is the provision of linkages between separate developments.



Figure 5: Underground Science City (left), Air-rights development (right)
(Source: JTC Corporation)

Additionally, industrial developments are increasingly co-located with other types of uses to optimize site potentials. For instance, the Multi-Utility Hub located in one of Singapore’s knowledge cluster, one-north, houses a variety of uses and infrastructure within one complex – carpark, district cooling system, and park space. Another plot in one-north sees a 66kV substation integrated with park space. These typologies give flesh to the fact that industrial developments can be compact and dense developments that ‘fit in’ well and even enhance the city’s urban fabric.



Figure 6: Multi-Utility Hub at one-north
(Source: CPG Consultants)

4. Principle 2: Mixed Uses

A compact, dense city is able to capitalize on the social and economic synergies brought about from a large number of diverse activities congregated in close proximity to each other. For Jacobs (1961:155), the interweaving and interaction between different activities, is what generates vitality and vibrancy of city districts, what she terms the “essential phenomena”. Due to the low population density and the nature of industrial activities, one does not tend to

associate industrial estates with mixed uses. In fact, the traditional planning approach would be to segregate industrial uses from other uses as far as possible to avoid conflicts or disamenities caused.

In Singapore, the need to manage and plan for sustainable development within the city-state has warranted deviation from traditional planning. The city is adopting a decentralization strategy to establish 'regional centres' across the city, rather than isolating or congregating jobs in areas. This is to avoid congestion and provide businesses with alternative and more affordable spaces, and to bring jobs closer to homes and amenities (Tan, 2008). In that vein, production activities are increasingly situated closer to residential, commercial, and other uses.

The ability to support such activities near to neighbourhoods is complemented by the shift towards the knowledge economy, geared towards activities highly involved in innovation and research. Some of the identified industries for Singapore were healthcare, biomedical sciences, ICT, education services, photonics and nanotechnology (Wong and Millar, 2013:4). A more recent trend is servisation, or the "service encapsulation" of manufacturing products to include design, consultancy, diagnosing, repair, financing and product delivery activities within the value chain (OECD, 2001:63). With technologies such as additive manufacturing and robotics allowing more customized production, servisation is expected to "gather pace" in Singapore (MTI, 2014). The nature of production is transforming, in tandem with the types of spaces required.

Additionally, expectations for one's working environment are also altering. Spurred by Florida (2002)'s arguments on the "rise of the creative class", several cities have adopted place marketing strategies to attract a larger talent pool to work in the city or in a particular district. This goal to provide quality and vibrant working environment where people will be attracted to work in applies not just for commercial areas in the CBD, but also for production and manufacturing-related business districts. There is thus a need to provide a quality working environment, with sufficient amenities, open spaces, and other uses industrial estates, as illustrated in the following case study.

4.1 Case Study: one-north, Singapore

one-north, named after Singapore's geographical location one-degree north of the equator, is located in central west region of Singapore. The estate houses R&D and hi-tech clusters like biomedical sciences, physical sciences, engineering, infocommunications, media, as well as financial and business services. The planning of one-north was primarily conceived with a work-live-play-learn concept, to create an environment where a diverse mix of institutions and professionals are able to exchange knowledge and spur innovation. This knowledge and institutional networks within one-north and its vicinity comprise of a mix of economic and research-related players, from MNCs like Shell, Novartis, and Procter and Gamble (P&G), local companies like Infinite Studios and Lucasfilm, start-ups housed in a multi-tenanted incubator, academic institutions like INSEAD and ESSEC Business Schools, Singapore University of Design and Technology (SUTD), and National University of Singapore (NUS), as well as research institutions like the Agency for Science, Technology and Resesarch (ASTAR). This mix of economic activities situated in close proximity provides opportunities for synergistic collaborations. P&G for instance has signed a 3-year agreement with ASTA on biomedical research (ASTAR, 2013).



Figure 7: one-north, a 200-ha business park development (Source: JTC Corporation)

To create a vibrant work-live-play-learn environment and meet the needs and lifestyle preferences of the creative community, a fine-grained, mixed-use strategy was adopted in the masterplanning and programming of uses and activities in the estate. Both horizontal and vertical mixed use is encouraged. ‘Work’ spaces are distributed near key transport nodes of the MRT or potential People Mover System stations to enhance business accessibility within and beyond one-north. ‘Live’ spaces are typically located adjacent to green spaces such as the linear one-north Park or low-density heritage estates. ‘Play’ and ‘Learn’ elements are carefully distributed between the ‘Work’ and ‘Live’ components to act as bridging elements. These include recreational and retail programs (sport centres, media theatres, museums, clubs, cafes and restaurants) and educational institutions and libraries.

The Vista area for instance serves as the “heart” of one-north, acting as the gateway into the estate. The area includes housing, lifestyle, and business-related uses including residential developments and commercial developments housing event halls, retail, hotel, etc. In particular, Rochester Park, consisting of colonial bungalows refurbished into gastronomic venues, has come to be a popular destination for Singaporeans. Detailed attention has also been paid to the design and use programming to create a vibrant urban environment. Ground floor spaces of most developments are activated with retail uses, ranging from cafes, restaurants, childcare centres to shops. There is also generous provision of public and green spaces and street furniture particularly along key pedestrian pathways. To promote permeability throughout one-north, urban design guidelines are put in place to ensure developments are fenceless and make provisions for public spaces and linkways both on ground and upper levels to connect to adjacent developments. Echoing Jacobs’ principles for “exuberant diversity” in urban districts (1961:155), the provision of such a fine-grain mix of uses imbued with a highly open and porous open space fabric is designed to encourage social and economic interaction.



Figure 8: Diverse land uses in one-north (Source: Urban Redevelopment Authority)



Figure 9: Public Space in Star Vista development (Source: CapitaLand)

5. Principle 3: Connectivity

The third principle, on Connectivity, is what integrates these compact, mixed-use manufacturing spaces or districts with the rest of the city. Movement of people and goods is a key driver for economic synergies. Today, urban agglomerations like Europe and China are pumping billions of investment into high-speed rail networks, airport and port infrastructure, highways etc. With this comes the ability to plug into global, regional and local circuits of capital, what Sassen calls the 'global city'. Manufacturing spaces today thus has to be well-connected by land, air or sea to other economic zones.

In Singapore, extensive study is being embarked on the movement of goods across the city. One idea is for an automated underground goods mover system, connecting the future mega-container port on the Western end of the island, to other industrial estates in the city. This is expected to reduce the need for heavy vehicles and therefore road congestion, and at the same time cut short time needed for goods to reach its destination. These ideas seek to reconfigure the way goods and freight is distributed, making it easier, faster and more sustainable to support production in the city.

On a less macro-scale, connectivity is also crucial for accessibility and integration with surrounding areas. An industrial estate that is disconnected or fragmented from its surroundings cannot be a liveable one. Industrial estates need to be accessible by various modes of public transportation to homes and facilities to bring the working population to their workplaces. Often, this aspect may be neglected in industrial areas due to the low density of working population that is unable to financially justify investments in transportation infrastructure to serve the area. Even then, there are other affordable transport options that can be provided to serve industrial estates.

This section uses the same case-study of one-north to understand how these considerations were factored in in the planning and implementation of one-north.

5.1 Case Study: one-north, Singapore

When one-north was conceived, the flow of people and accessibility into the business park was an integral factor to ensure the estate was an attractive location for investors and companies. The first phase of the development centred around an existing rail station served by the East-West Line, Buona Vista Station, where the Vista area is located. At the same time, the estate capitalized on the upcoming Circle Line creating a circular route around the central fringe area of Singapore. Today, the estate is served by another dedicated station, one-north station, in addition to Buona Vista Station. These stations are crucial in ensuring that the prospective working population and visitors are able to access the estate, offering a direct route to the city centre, the airport, and residential areas in Singapore. At the same time, the estate is well served by road connections, with direct expressways linking to the western industrial region, city centre, and the airport.

Within the estate, strategies are also explored to facilitate workers to get to their destination in comfort and with speed. For instance, the Land Transport Authority (LTA) in conjunction with JTC Corporation (JTC) will be test-bedding driverless Autonomous Vehicle in one-north (LTA, 2015). Pedestrian networks and covered linkways are also planned in to provide users with a convenient and comfortable walking route to destinations.

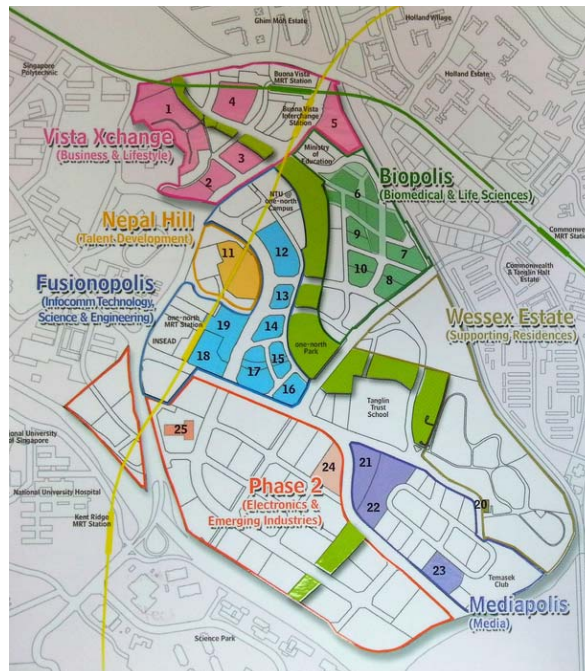


Figure 10: Map of one-north indicating road and rail networks (Source: Economic Development Board)

6. Conclusion

Industrial development needs to be re-conceptualized and recast in a new light, to take into account changing trends in the economic landscape and diversity of economic activities, and be thought of as part and parcel of the city's urban fabric, rather than an unvalued, invisible and isolated fragment of the city.

As Glaeser (2011:6) writes, "cities are the absence of physical space between people and companies. They are proximity, density and closeness". These traits are an economic and social resource, which a compact, mixed-use, and well connected district can capitalize on, as illustrated using the one-north and other industrial developments in Singapore. By understanding how the city works best and how might it be possible to apply these mechanisms or principles even for industrial developments, planners can create industrial estates of the future – one that holds a strong narrative in the city's pursuit for social and economic sustainability.

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Urban Circular Economy

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1. Abstract

Citizens are not concerned about circular economy. Because research on this particular form of economy mainly focuses on the larger streams that are running through the city like energy, waste, water and cycles between larger companies.

However, an urban variant of circular economy currently arises out of local entrepreneurship. Young entrepreneurs come up with new goods or services that push forward a recycle or a lease or share economy. For this purpose they are focusing on the small-scale personal needs of citizens (food, fashion or products). This process will change citizens, even beyond the status of consumers of solitary consumers of goods and services. They will become users. How will this process of moving towards an urban circular economy affect the daily life in the city and what will be the spatial impact on the structure of the city? What if these young entrepreneurs grow from niches towards a mainstream market? What will be the influence on (public and private) urban development? And how will citizens, as users, get more involved in an urban circular economy?

The designers (Lieve Custers for Buro Boris and David Dooghe) from the project Urban Circular Economy had interviews with several circular entrepreneurs from Antwerp and Rotterdam. These entrepreneurs focus on the profit that can be acquired from their consumers through sharing or leasing products instead of selling and/or valorizing the latent value of domestic waste. In addition to the interviews an interactive workshop was organized with a group of early adopter users.

This process resulted in three spatial future models that will be explored. Whereas in "business almost as usual" the focus will be on making existing production more green with no or minor effort of the user, "sustainability as pocket money" will be about valorizing the latent value of domestic waste (ex. upcycling, repairing...) and in "sustainability as Lifestyle" the community aspect, leasing and sharing will be the main facets. These three models will be described in this paper and the first conclusions will be drawn. What are positive or negative effects of an Urban Circular Economy on the city and urban development in the ¹future?

2. Introduction

In 1968 the Club of Rome warned about it already, but now it is becoming truly tangible: there is a limit to the growth and raw materials are becoming scarcer ^{1,2}. In addition, due to the current interest rates, it (almost) does not pay off to save money and therefore the family budget stabilizes. The scarcity of raw materials and the average family budget force consumers to take more informed choices and emphasize that our current linear economic system is under pressure. This is not a threat; on the contrary, by questioning the system itself, space for a system change is created.

One such system change is the emergence of circular economy. Companies are seeking to keep their raw materials in balance by optimizing material flows, water, energy, waste heat ... Today this optimisation of different flows is mainly used by and happening between large companies because they are benefited by their large concentrated masses. Thereby, the circular economy is still a long way off the daily life of the average consumer and the profit that can be found by the consumer is not gained yet ³. This applies both for economic profit as the gain in resources.

But recently some circular entrepreneurs have been focusing on the profit that can be acquired from the consumers. They aim to share and lease rather than to buy products or valorise the hidden value of household waste. In addition, these businesses are especially interesting for the impact they have on their customers. Whereas the industrialization made consumers of their customers with waste as a byproduct⁴, the Urban Circular Economy turns customers into users with more social contact as a byproduct. For users, it is no longer the possession, but the use that is important⁵. The cost of the use is lower than the cost of the purchase and maintenance of the products. This allows the user to maintain his lifestyle without increasing the share out of the family budget invested in these products. And once the products are used, they go back to the chain; ready to use again.

This system change offers a great challenge for the design team and the central question of the research is: what would the city look like when the Urban Circular Economy is mainstream, starting from the current circular users and entrepreneurs in the city? However, before the design team can define the spatial impact, is it necessary to specify the economic and social structures of a user driven society.

3. Principles

The project Urban Circular Economy centralizes the design of the new relationship between user and entrepreneur. Hence, the design team decided to investigate the development of an Urban Circular Economy from three products which contribute to fulfilling the daily needs of consumers: food, clothing and utensils. Neither consumer nor user, can get through the day without these products. In addition, these products have a different “run trough time” and therefore a different spatial impact (highly dynamic or rather static).

To change the system from a niche to a mainstream user market a sufficient concentration of users is needed for the economic model to be successful. Cities as hotspots of creativity and innovation offer this concentration. And because the relationship between the entrepreneur and the user will become more important, many entrepreneurs want to be close to their users. However, the attractiveness of cities has an influence on the land prices (they will increase) and space is a scarce commodity in the development of a new economy. As a result the tension between space and economy will be the highest in the city and therefore it is interesting to study the circular economy in an urban area.

The project examines the Urban Circular Economy in two cities: Antwerp and Rotterdam. These metropolises are very similar on the one hand: number of inhabitants, presence of a port, in full transformation due to high population growth and hotspots of creativity. On the other hand, their creative sectors are very different, the ownership structure is different and the policy on waste is organized differently. This offers the opportunity to examine which aspects of a transition to an Urban Circular Economy are location specific and which are generic.

4. Methodology

This research particularly focuses on the spatial impacts in a city where it is mainstream to lease or share instead of buying but where waste is seen as raw materials as well.

4.1 Prelude (July to December 2014)

First the design team collected data through interviews with experts, urban circular entrepreneurs and a through workshop with early adopter users. These data were used to work out the methodology.

Discussions with experts have led to the conclusion that scarcity of raw materials and resources will disrupt the current system and that it is important to build a circular economy within a network so that one is not dependent on one link to close the chain ⁶. Also, concluding agreements between companies is actually opposed to free market operation which makes companies reluctant to participate. Finally it was indicated that current technology does not yet make it possible to close the circle completely, but we can try to get as close as possible.

The interviews with fourteen entrepreneurs ⁷ gave insight into their company, the space they use and their relationship with their customers, both now and in the future when a user society will be mainstream. We learned about the background of their current and future planning decisions. Why is their business centrally or decentrally organized? What is the purpose of the present collective space? Do they desire visibility at the public space? How close to their suppliers or customers do they want to be located? How do they organize storage, transport, work and office space?

Finally, needs of the users were examined by organizing a workshop with early adopter users. In this workshop we asked the users how they can validate the value of waste more efficiently, what the underlying motives are when they buy, lease or share a product and which products or services can enhance the development of a circular economy in their neighbourhood.

The data collected in this initial phase is the hardware from which the spatial indicators are distilled which are important for the development of the methodology.

4.2 Approach (January to December 2015)

The design team is aware of the fact that an urban circular model, applicable in all cities, simply does not exist. Depending on the spatial and economic profile of the city, the ideal opportunities for the development of the city should be sought including both growth and decrease.

From the analysis of the data gathered two distinct questions have emerged. Will the ownership or use of products become mainstream? And will the increase of sustainability of the economic system be driven by producers or by customers? When these questions are plotted in a coordinate system, four quadrants are created. In each of these quadrants, the customer has a different role: a passive or active role in the closing of the chain and the owner or user of the products. The role of products, suppliers or governments on the other hand may be similar in some quadrants. If we expand the companies from the interviews in the coordinate system, three squares are filled. The fourth, could not be filled because this quadrant focuses on business to business and therefore falls outside the scope of the research. The three filled in quadrants are developed further into three perspectives.

These three resulting perspectives are implemented through research by design into the urban fabric of Rotterdam and Antwerp. As a result, the opportunities for users, businesses and governments will be set clear, but also the spatial impact of a user society. It provides a vision for both cities in which Urban Circular Economy is mainstream.

From these images of the future we will look back at the situation of today. This retrospective makes it possible to define strategies for the development of an Urban Circular Economy. These development strategies include steps that clearly indicate: who? what? where? when? and wow? both for the user, the entrepreneur and the policy. What is the low hanging fruit and what are the long-term investments? Thus, the development strategies provide an insight into the future and this gives the entrepreneur and the policy the flexibility to respond to changes that occur on the path to a user society. By comparing the development strategies for Antwerp and Rotterdam it will become clear which of these strategies are generic and which are specific to the unique economic and spatial situation of the city.

5. Three perspectives

5.1 Influential trends

The design team acts on two important questions: will the ownership or use of products become mainstream? And will the increase of sustainability of the economic system be driven by producers or customers? These questions are not the only aspect playing a part in a shift from consumer society to user society. There are trends, developments and processes that have an impact on an Urban Circular Economy. The design team is aware of this and will, for each perspective, consider how these influences contribute to both making the perspective mainstream and how they affect it.

So will there still be products contributing to the self-development and/or the expression of identity ⁸ of the buyer or user? Online shopping, apps, social media, ... remain a part of our purchase or usage. However, to this day, a growing group is already opposed to excessive online use or uses it in a more conscious way : "If I share everything, what remains of my uniqueness?" ⁹. The "offline world" will not disappear and interaction in the public space remains necessary ¹⁰. The migration to the city is continuing provided that the city remains a concentration of employment and meets the requirements of a good living quality (facilities, green and self-development).

Producers will continue to operate according to the formula of supply and demand. From this, they want to ensure economic freedom by minimizing interdependencies in a chain and they will pursue profit maximization ¹¹. Clarity in legislation and policies will be a key requirement for producers to develop new business models ¹². Creating room for experimentation within legislation and policies is essential to test the grassroots perspectives ¹³. With new products and/or services, producers will focus on the sustainability of the economy. However, depending on the perspective, the use of the product can also be sustainable.

5.2 Three perspectives

The three perspectives are all an extreme effect of a specific relationship between customer and producer. Each of the perspectives starts from a shortage of materials and the average family budget. However, each perspective leads to a different ratio of urban dwellers compared to the products a person uses or consumes on a daily, weekly or yearly basis.

In the perspective "Business (almost) as Usual" the customer is a consumer and owner of the products he/she buys and afterwards disposes. The sustainability of the supply chain (and goods) depends on the producer (Unilever, Colruyt). This perspective is closely linked to the strengthening of a circular economy between companies. In the perspective "Sustainability as Pocket Money", the customer will still buy the product, but as the owner of the product he/she will rent out its temporary use (Airbnb) or lend it (Peerby). When the product is at end of its life the owner shall return it (Marktplaats) or sell the materials (Afval Loont). As more products are in circulation and being reused, the user will play an active role in the sustainability of the product and the supply chain. These two perspectives focus as much as possible on resolving the waste problem afterwards. The third perspective "Sustainability as Lifestyle" goes a step beyond in trying to avoid waste at the source. Here, the customer no longer buys the product but will, through for instance the establishment of cooperatives, regulate the use of the product from a supplier (Greenwheels, Cambio). Besides cooperatives, other forms of cooperation are possible. Again products circulate longer and at the end of their lives the materials are still reused as a result of which the user also plays an active role in increase of the sustainability of the product and thus chain. In this perspective, different principles of the Sharing Economy can be found.

To illustrate the prospects more clearly a brief sketch will now be explained presuming the self driving car would be mainstream. In the perspective "Business (almost) as Usual" cars are bought for private use and besides the owner, no one else uses the self driving car. In the perspective "Sustainability as pocket money" cars are still bought but the owner lends the car to others if he/she does not use it him/herself. In the perspective of "Sustainability and Lifestyle" a supplier (whether or not the producer) owns the car and the users will share its use. This example also demonstrates that the different perspectives are robust enough as such to apply on new technological developments.

For every perspective both the role of the various parties (who) as the economic model and the possible spatial and policy implications (what) will be outlined briefly. Only after applying the perspectives on actual locations in Rotterdam and Antwerp the how question can be dealt with.

5.3 Business (almost) as Usual

In this perspective, the customer is the consumer and the owner of the product. He/she buys the product and throws it away at the end of its life. The sustainability of the chain (and thus also the city) is the responsibility of the producer. "Locally what is possible, globally what must be" will become the credo of more and more companies.

Producers have known for a while that sustainability has economic benefits: in addition to the positive image to the consumer, there are lower energy costs, lower CO₂ emissions (and thus less tax)... To have more control over and to get greater profits from the supply chain, companies will try to oversee the whole chain and, where possible, incorporate it in the activities of the company. This can be done by acquiring suppliers or by making clear mutual agreements¹⁴. Recycling companies will be important players to overcome the shortage of raw materials. They will collect the garbage from the city and other industries (and thereby take over tasks of the government), process raw materials and reduce the chain. These recycling companies are not location dependent and can settle in the proximity of the producers in order to get direct and on demand delivery. In addition, more recycling businesses are mainly located in less politically sensitive areas than many mining companies. Recycling companies can organize themselves locally (at a pre-separation of waste) or centrally (in post-separation of waste). In a centrally organization it is possible that a monopoly is created.

If the consumer does not value his/her waste, recycling companies can easily obtain raw materials and process them. A specific recycling will only be economically viable when there is a sufficient mass of waste and therefore these companies will settle in urban regions. Due to the proximity of consumers and producers, transport costs are lower and together with a more sustainable supply chain these sustainable products will be able to compete in price with the less sustainable products. This allows the customer to consume more products with an equal budget.

The spatial translation of this perspective strongly depends on the organization of recycling companies. When these companies are decentrally organized special waste collection systems may be set up at district level. Local businesses can use specific waste to power their business. This already happens but these entrepreneurs often run into some problems (such as logistics, destination...) which makes it difficult to make this system profitable.

When the recycling companies are centrally organized these companies will settle in strategically infrastructural places in the urban regions. The spatial requirements are good accessibility, far away from dwellings to avoid nuisance and enough storage space (for various raw materials so that they can be stored safely after recycling) and the ability to deliver them to other companies on demand, regardless of a centrally or decentrally organization.

Example

The Antwerp fashion designer Katrien van Hecke ¹⁵ has incorporated the entire production process in her business in a way that waste practically does not exist. She buys raw uncoloured fabrics and colours them herself with natural pigments according to the clothing designs for that season. Because of this, she only produces the material she needs. The remains of the fabric are carefully collected to be used in later collections as a patchwork.

She also cuts the fabric herself. Only the effective production of the garments is outsourced, be it nearby. She shares her knowledge with the trainees who help her. She hopes to inspire them to increase the sustainability of their own collections as well.

Katrien Van Hecke is more durable than many other fashion designers without compromising on her creativity. Moreover, by having control over the whole process she broadens her possibilities. As a consequence, the end result remains as exclusive as for other designers, because clothes are mostly bought because they are beautiful and not so much because they are produced sustainably.

Conditions

- The urban dweller is still a consumer, has his/her waste collected and continues to pay for waste disposal. In order to collect as much waste as possible the effort required from the consumer should be as limited as possible or should have a certain fun factor.
- Producers increase the sustainability of their supply chain.
- Recycling companies become a stronger player. For a successful economic model recycling companies must optimize and refine their process to meet the specific requirements of materials demanded from the producers and the price of their recycled material must remain lower than mining.
- Governments reduce their waste tasks and allow more space for recycling companies.
- The local waste flows must be known to set up a decentralized recycling system.

Advantages

- This perspective is easy to implement and is already applied by young entrepreneurs and established firms ¹⁶. The manufacturer increases the sustainability of the chain without radical investments on the short term or without deviating from its current main activity.
- By adding recycling companies in the product cycle a new economy with new jobs is created together with a new need for innovation.
- The retrieval of specific waste or post-separation of waste will require the presence of (cheap) labour. It is therefore easy to create a link between social initiatives and entrepreneurs ¹⁷.
- Companies can specify them by responding to local residual flows.

Disadvantages

- A lot of energy is lost in the conversion of waste to high-quality raw materials.
- Producers and recycling companies become more powerful in their relationship with each other (at a central organization they may grow into a monopoly), and their consumer.
- The consumer has a passive role and is not actively connected to the process. This can result in the loss of a lot of material.

5.4 Sustainability as pocket money.

In this perspective, the customer will still buy the product, but as the owner of the product he / she will temporarily lease the use (Airbnb) or lend it (Peerby). When the product is at the end of its life, the owner will return the product (Marktplaats) or sell the materials (Afval Loont). The buyer will have different expectations from the products (durable and robust), but can also choose to purchase a product based on the rental of the use ¹⁸. In addition, it can also have an impact on the purchasing behaviour of consumers when more expensive and more robust products are bought or, from an economic perspective, responding to the needs of the neighbourhood or its clients. This perspective goes beyond what the current

mainstream consumer does. There is a shift from consumer to user and in this perspective the market is not only lead by large producers but also by many small suppliers (individual users) who are offering the use of their products as an extra income.

The owner of the product sells the use of his/her products to other users (Snappcar), with or without additional services (Uber). As a result the owner of the product acquires extra income to supplement the unchanged family budget and retains his/her purchasing power. The user is both consumer (when he purchases a product) and producer (when he lends the use of the product to users). Once the product is at the end of its life, he/she will return the product for reparation (Iphone Doctor, Repair Café), sell it to others as a whole (Marktplaats, Kapaza) or sell the residual value of the product (Afval Loont).

In this perspective products are used longer. This results in fewer products in total, but it also takes longer for a product to return to the chain for recycling. Due to this, the producer will change his business model. The producer will not exclude selling products but will also provide services (repair e.d.).

When the used product is sold, there will be a quality inspection in order to determine the value of the materials. Different services, specializing in the collection and, if possible also the reuse or fast recycling of materials, will also emerge. This collection of specific products makes recycling easier. For example, mobile phones can be recycled perfectly, but it takes a lot of effort to collect them. Large-scale recycling companies will mainly be used for the difficult and labour-intensive recycling processes.

Given the economy that forms itself around the use and residual value of the product, the spatial interpretation of this perspective will focus on both the long-term use of the product (warehouses and workshops for repairs or adjustments to the product) and the residual value (second hand stores, strategically located collection points). To show the potential to the multitude of suppliers (use) and buyers (residual value) the initiatives be bundled in a “neighbourhoodapp” so one does not need to consult any other app for each product. But also physically, bundling can strengthen the initiatives: together on one location where many people pass by, offers great potential. This perspective leans towards multiple use of space and densification ¹⁹.

Also, in this perspective a smart mobility is essential to keep the cost of the use and transport of the residual product as low as possible. As sales and collection points are the same or lie in close proximity to each other, transport for the collection and delivery can achieved in one ride back and forth.

Example

Buurman ²⁰ is a DIY store for used building materials, located in the Rotterdam Vierhaven area and located next to a traditional DIY store. The building materials Buurman sells, come from industrial areas, demolition of buildings, exhibitions etc. At the moment, the materials are brought to the shed, but the goal is to organize the sale online so that the materials are immediately picked up on the construction site. This allows to save on transport which is the biggest cost.

Besides the (online) store Buurman will also become a public workshop where workbenches and equipment can be rented. The products can be made with free advice from a professional. The goal is to use their outdoor space to create a meeting place around the 'production process'. The user is more connected to the product through knowledge sharing, renting tools and space and organizing events. They are co-creator of their product which ensures a longer use of the product in the future. The goal is to roll out this formula to different cities and making each Buurman depend on material from their own city to keep transportation also as local as possible.

Interestingly, in the formula of Buurman matching supply and demand is paid for and not so much buying materials and selling. By focusing solely on matching, Buurman also saves from unnecessary transport.

Sharing knowledge, organizing events in collective space and the user/co-owner are also aspects that can be found in interviews with other circular entrepreneurs, for example from the food business (Uit Je Eigen Stad ²¹, Stadsvers), and are also strategies that are heard in the fight against vacant shops ²². If users can bring their waste back to shops in exchange for discounts (Shop & Drop app ²³) shops will also restore their important role as a physical place in the city.

Conditions

- The user is an active player in the economic system.
- The frequent and prolonged use causes long lasting products to be preferred to the rapid consumption goods. Producers must make their products robust and will also have to provide more services (repair / return).
- The bottlenecks are insurance, law and licensing. They are not adapted or leave no room for new revenue models. More opportunities should be provided ²⁴.
- The true cost of a product (including the impact on the environment) must be passed on to the customer. This makes recycling and/or upcycling competitive with finite resources ²⁵.

Advantages

- All parties are actively involved in the increase of the sustainability of the city.
- By renting products less waste is produced and therefore less energy is lost in the recycling of products.
- Because waste is sold in collection points, the recycling company saves on transportation costs (pick up at the various waste containers in the street) and the separation. This profit is the minimum value of the waste. Litter will decrease because waste is given a value
- The multitude of users implies a greater "demand and offer"-operation whereby not only the price but also the additional service will play a role. The multitude of users is a driving force for innovation in specific areas. The quality of the product and/or service is rendered transparent by a real-time rating system.
- In this model profits are distributed among producers, recycling companies and users.
- In the trade-offs resources connected to labour can be traded. By eliminating money as intermediate means (and therefore fiscal policy), labour is cheaper and the potential labour force in the city can be better employed.

Disadvantages

- The presence of many players may lead to a fragmentation of the market.
- In competition with others acquired social rights and obligations may be violated (e.g. discussion about Uber). Producers and suppliers need to adapt their organizational and business models to this situation.
- If the user gets paid for returning his/her waste, the price of recycled materials could also become higher. So, the model is only economically viable when the price of mining is also rising sharply.
- Due to the sales of the use of products, there is less need for products. Hence, the demand for recycled material and also the price will decrease. This will translate further into the price of the waste so that the economic model is under pressure in the long term.
- Furthermore, it may also increase theft because waste has a value.

5.5 Sustainability as Lifestyle

In this third and final perspective users are seeking to avoid waste. Here, the customer no longer buys the product but will (through the establishment of cooperatives) regulate the use of the product from a supplier (Greenwheels, Cambio). Other formal or informal partnerships are also possible. In this perspective, the customer has thus become a full-fledged user. The user (independent or part of a group) makes an agreement on the use of a product (e.g. a

washing machine) or a service (e.g. clean clothes) with the producer. If the agreement is made by a group it becomes easier to stipulate on price and service. In return, the user will have to accept that he/she has no sole rights to the product.

While this prospect may seem far-fetched, it is already very real. There are already cooperatives or platforms for energy (solar energy), mobility (Greenwheels), entertainment (Spotify), knowledge (Leeszaal West), workspace (Flexpackerz), landscaping (Stadstuin), financing (Crowdfunding and alternative currencies), food (Rechtstreex, Uit je eigen stad, Stadsvers), and products (Peerby). In addition, sharing experiences (for example, during physical and digital events by social media) with your peers is a clearly identifiable trend ²⁶.

As the producer remains the owner, he is responsible for the maintenance of the product. Depending on the service of the manufacturer and of the cost of use of energy, the user will determine with which producer he will close the deal. It is therefore important for the manufacturer to provide solid and durable products. Because the customer is no longer a consumer, but shares products several times, a possibility to improve products is created for the manufacturer. Today producers often have to compete with the continuous consumer demand for new products (for example, different clothing collections per year) and as a consequence the quality of the product is currently under a lot of pressure ²⁷. Instead, a product library gives the user the opportunity to try something new without buying a new product.

Although there are fewer products made, many customers who use the products will remain. So, the overall use does not change. In order to enable such use the producer will have to change his current space into space for repair and reuse of parts in the long term. As the producer remains the owner he has the possibility to recover and improve the parts and/or products at all times. The service does not stop with the products but along with other products packages can be assembled (washing machine and detergent (Bundles)) so that on the occasion of proper use, the products will also have a longer life.

Because of its focus on use rather than ownership, the service-economy will take a flight compared to the production-economy. Because everyone pays just for the use it is possible to have access to different services instead of saving money for the purchase of different products separately. The higher prices for housing gives the young customers for example less opportunities to buy products ²⁸. The choice of the type and grade of service is expected to be based on the frequency and duration of use, hygiene, investment and identity (exclusive or not) of the user ²⁹.

The success of this perspective results from combining various sub-platforms (mobility, nutrition, and so on) in order to create a sufficient mass to force change. This has the added advantage that the customer need not have a lease and/or weekly subscription by different services when he/she is offered the comfort of a total package ³⁰. Subscriptions are interesting for the producer as this ensures certainty of income. The subscriptions also represent a certain value, and should also be introduced as equity when applying for a new loan for further investment ³¹.

Besides products, you can also rent work (e.g. employment agencies). What if education, labour and health come in a package? From a certain age, you register and you become educated, someone will be looking for a job for you and will also regulate standard things such as health insurance, pension... This relieves both the worker and employer ³².

To lease and/or share products, less products are required causing the spatial effects in town for this model to be the greatest. Car sharing can save up to a third of the fleet ³³. This gain is even higher if working hours are flexible, so that not everyone needs a car at the same time ³⁴. This reduction of cars has a huge effect on the need for parking spaces in the city and provides space for e.g. an individual green spot such as a front yard or collective

playgrounds. Neighbours or neighbourhoods can make agreements about the use of products which enhance social cohesion. Furthermore, people do not need to have a storage room for tools, because it can be sufficient to salvage it at neighbourhood level. This will allow opening up the dead plinths of buildings for other functions to create more liveable streets. It is therefore expected that from the sharing and/or lease of a new product (social) meeting spaces will arise. These spaces will ideally go together with the clustering of several initiatives and the distribution centres will be working as new stores and will also be at more central places in the city.

Example

The vision for further development of their business of Peerby ³⁵ fits the "Sustainability as Lifestyle" thinking. Peerby allows you to borrow stuff from people in your neighbourhood. Place a call on their platform and Peerby will look around for you in the neighbourhood. Their business philosophy is accessibility: everywhere, everything, everyone. Peerby works demand-driven (out of a need) and not from offer (i.e. Marktplaats, Kapaza) and also enhances the neighbourhood feeling. The borrowers of Peerby are mainly people from the age of around thirty. These people come in a new phase of life (family, child....) and the acquisition of all new stuff is too expensive. They often do not have the space at home to store stuff either. On average, the lenders are older than sixty: they have bought a lot of stuff and have their experience and attained prosperity but also feel that they want to give something back to society. When we take these averages further, in several decades from now, there will be a situation with more and more borrowers and less lenders because no one will buy products anymore. In this way, Peerby sees a further development of sharing economy to slow and/or lease economy. The platform can then bring together users who demand better products from producers. The products are no longer purchased but rented or leased. So, use and not property will be paid for.

Because the users themselves share, it is interesting to lease the product so that the responsibility for maintenance lies with the producer and not with the group of users.

Conditions

- This perspective is strongly linked to the further development of cooperatives, platforms or other collaborations.
- Given the social importance of the expression of one's identity a possibility for the user to share a product with others or to have a monopoly on the use must always be extant.
- Producers will have to change their business models. This requires a change from current mainstream financing (banks) or laws and regulations (insurance and risks, destinations, and so on) so that new business models will be possible.
- Next to production, producers will also include services and repairs in their tasks. At the same time this requires changes in the design phase. The products must be designed and manufactured modularly so that components can be changed quickly.
- Governments must continue to provide basic public services to those who choose not to take part in a cooperative for their need for transportation, energy, education....
- Governments will have to support sustainable alternatives through tax system, targeted investments and sustainable alternatives.

Advantages

- Increase of sustainability for products, users and producers.
- By leasing and/or sharing products less materials will be used and the products will be more robust.
- The user needs less storage space which creates more living space in the house.
- For the producer this means a steady income and a closer relationship with the user

Disadvantages

- This model requires a lot of changes (social, economics, finance....) so it is not immediately implementable. Because of these major changes, effects are difficult to predict.
- The system depends on social structures, trust and good use. When products are shared people must also bring them back in time so that they are available for others.

6. First conclusions

The interviews with urban circular entrepreneurs and feedback from early adopters have made clear that mainstream Urban Circular Economy can still go in different directions. From this point of view three perspectives were defined by the design team, each having a different spatial effect. These are theoretical models and a further elaboration in practice is necessary. The perspectives will be further developed in practice through collaborations with circular urban entrepreneurs, early adopters and users of the municipality of Rotterdam and the city of Antwerp in the coming months. The importance of this project is high. Once scarcity of resources makes itself felt more strongly the common consumer, designers and governments will have to have in mind how an Urban Circular System can be given direction.

This research is part of the open call: "Tinkering with the metabolism of the city" of the Fund for Creative Industries. The design team consists of David Dooghe (Rotterdam) as project leader and Lieve Custers for Buro Boris (Antwerp). It is conducted in cooperation with the municipality of Rotterdam, Antwerp and R'damse Nieuwe.

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Rejuvenation of the Productive Area in the City: E4 Subzone of Delhi

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Synopsis: The paper elucidates the inherent problems of unplanned and unregulated industrial development in developing countries and its social and environmental implications on the quality of life of a city.

1. Introduction

The Industrial sector plays an imperative role in the economic and social development of a city. Despite productiveness of a city being a major economic driver, it often causes a stir due to its negative environmental impact. These unwelcome consequences are mainly the product of lax in the implementation of norms due to want of administrative and political will, and poor planning practices. This not only threatens the physical environment but also disturbs the social fabric and economic welfare of the city of an area.

In the developing countries, undesirable mix of land uses especially the presence of small scale noxious industries among congested high density residential areas have been a major concern. Though the presence of industrial units in residential areas proves to be quite a comfortable choice for the owners and the workers, but its negative environmental impact often overrides this favourable setting.

India has many such areas where industrial activities have infringed the residential areas and Delhi itself has over 20 such pockets. The scattered growth of industries and the undesirable mix of land use in Delhi has been a major concern for last five decades. The three master plans of the Delhi (1962, 2001 and 2021) have recommended the segregation of confirming and non-confirming industrial uses and detailed the relocation strategies, yet its implementation remains a work in progress.

2. Growth of Industrial Mixed Use in Delhi

Delhi has undergone a rapid process of urbanization and industrialization with growth of industries beginning towards the end of 19th Century. In the span of about four decades there was a scattered growth of industries and by the beginning of World War II (WWII), nearly all the areas in the city had some industrial concentration. After the WWII gave fresh thrust to the process of industrialization, the number of registered factories increased from 111 in 1939 to 227 in 1945, with a corresponding increase in the number of workers from 17,400 to 37,000 respectively (GOI, 1997). However, the unforeseen growth of industries in Delhi was due to the influx of refugees in 1947, after the partition of India and Pakistan. The refugees from West Punjab (in Pakistan) brought with them mechanical skills and the ethos of entrepreneurship. By 1953, the number of workers in registered factories was about 44,000 and most of them (>85%) were working in small scale industries (GOI, 1997).

Due to the sudden surge in the number of establishments in one decade, majority of them were operating in improper and overcrowded structures as there was a lack of planned industrial space in the city. Prior to 1962, about 258 Ha, i.e.1.6% of the total area was covered by industries (GOI, 1962), most of which were scattered all over the city and few of them were in 2 planned industrial areas. 8000 industrial units were lying in non-conforming areas, especially in densely populated areas (GOI, 1962). Also, inefficient enforcement of structural and operational factory regulations coupled with inadequate (or lack of) zoning enforcement and environmental laws created a chaotic condition in the city.

First Master Plan for Delhi-1962 proposed industrial use while keeping in mind the lack of planned industrial areas and the objectionable locations of the industrial units scattered all over the city. Hence, new industrial areas were developed, so that the non-conforming industrial units could gradually be shifted there. However by 1981, which marked the end of the first master plan period, the industrial mix was still an issue as more than 20,000 industrial units were operating in residential area, as shown in Table 1.

Table 1: Location of Industrial Units in Delhi, 1981

Type of Area	No. of Industrial Units	Percentage
Planned Industrial area	8,330	18%
Residential Area	20,025	44%
Commercial Area	9,710	21%
Industrial Cluster	7,013	15.2%
Others	904	1.8%
Total	46,000	100%

Source: (Saigal et al 1994, pp. 35)

The issue of non-conforming industries became a matter of serious concern in the aftermath of oleum gas leak from a fertiliser industry in Delhi. This gas leak occurred soon after the infamous Bhopal gas leak and panicked the residents of Delhi. The oleum gas leak resulted in one fatality and few causalities. Thereafter, a court case was filed by an environmentalist lawyer, M. C. Mehta, for closure of non-conforming industries in Delhi. The lawyer claimed that these industries were taking away 'right to life' from the residents due to their polluting nature. Subsequently, in 1996, the Supreme Court of India directed the closure of industrial units functioning in residential and non-conforming areas of Delhi.

The subsequent master plans made provisions for the relocation of the industries but the strategies never materialized. Though the factories in pre-existing structures are under-maintained and over-utilized but these are significantly less expensive on per worker basis than any new space would be. It saves not only commute expenses for the owners and the labourers but also proves to be time efficient. These facts motivates the manufacturers to stay put in these old localities and not shift to the allocated plots in the industrial areas.

3. Redevelopment of 22 Non-Confirming Industrial Areas

After the failed attempts of the first two master plans, the third Master Plan of Delhi (2021) proposes to regularise 22 non-conforming areas of Delhi with over 70% industrial concentration. The prerequisite for regularisation is to adhere to the redevelopment norms, which pertains to road width and services. Rest of the non-notified industrial areas were ordered to shift within three years. However, these non-notified, non-conforming areas continue to exist in the residential areas.

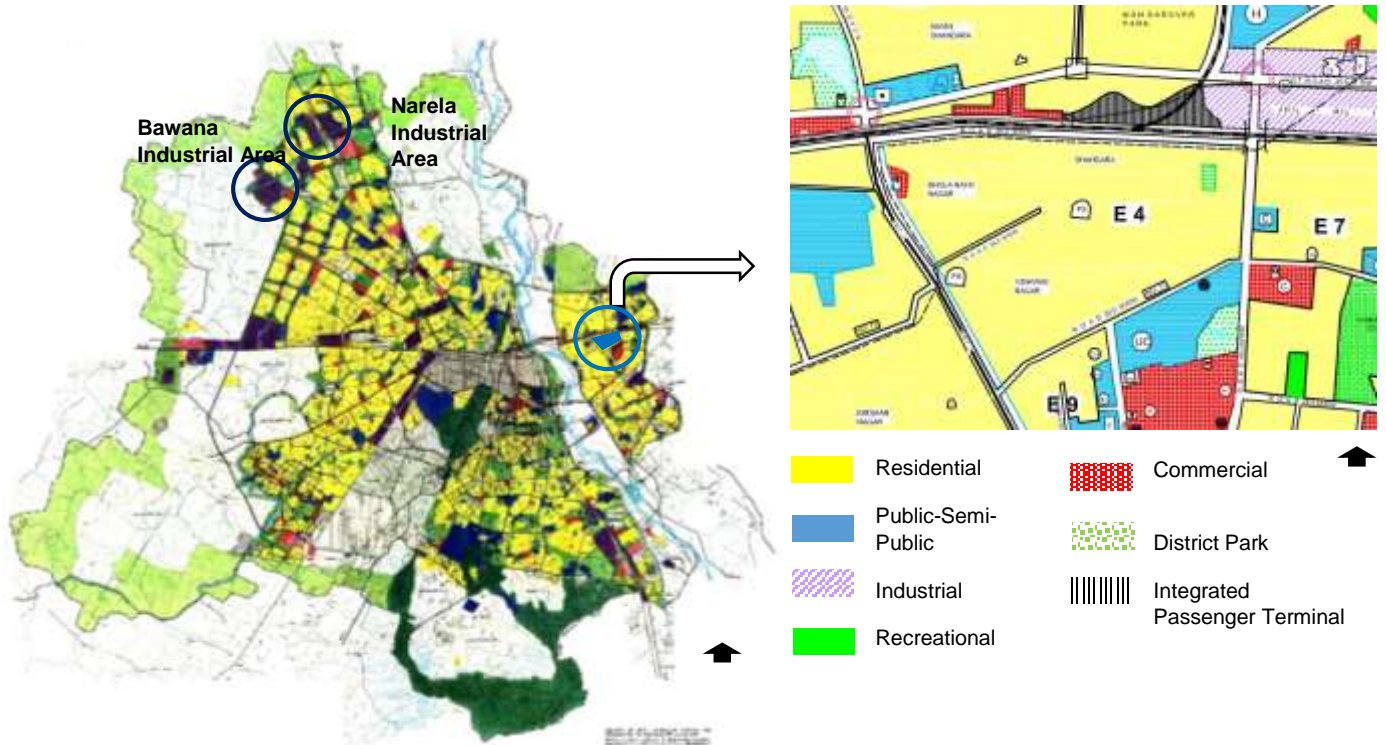
The present scenario of Delhi is such that three types of industrial area exists, namely, the planned industrial area, the 22 unplanned redeveloped non-conforming areas and the transitional non-conforming areas which are yet to relocate to the designated planned industrial areas. The third category of industries causes maximum damage to the residential environment as they're not bounded by norms of an industrial area, hence the pollution remains unabated. They are in transition stage for last eight years and not much has changed except the environmental quality of these residential areas, which has further deteriorated.

4. Introduction to Case Study Area: Sub-Zone E-4

One such case of transitional area is located in the planning sub-zone E-4 of Delhi. The case study area is located in Shahdara. Shahdara, literally means "door of kings", is one of the

oldest localities of Delhi. It was used as a passage from a neighbouring city of Meerut to Delhi during ancient times and developed around a small market called *Chandrawali* village dating to the 16th century. Soon, Shahdara grew into a major grain wholesale market and is still considered as a major marketplace in the east of Delhi.

Figure 1: Case Study City: Delhi, Case Study Area: Sub-zone E-4



Source: Master Plan for Delhi, 2021 and Zonal Development Plan, Division E, 2010

Sub-zone E-4 covers an area of 270Ha and accommodates 94,000 population as of 2014. Though it is designated under residential land use but industrial units are operating in the dense lanes of this urban village (shown in Figure 2). The area does not fulfil the 70% industrial concentration criteria and is therefore ineligible for redevelopment and subsequent notification. The majority of the industrial units, about 2500 are accumulated in 56Ha, known as Vishwas Nagar which is a regularised unauthorised area of the sub-zone.

Figure 2: Land Use Distribution of the Sub Zone

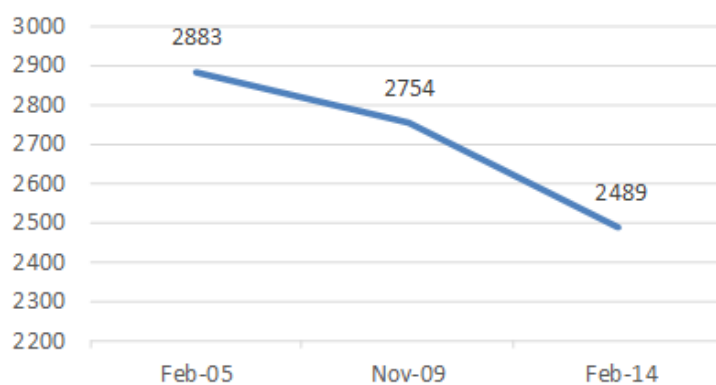


Source: Primary Survey, 2014

Unlike the old Shahdara, Vishwas Nagar came into existence later in 1950s and has distinctively orderly parallel streets. Vishwas Nagar started as a residential area, but in 1970s, a playing card manufacturing unit of medium scale was established here which changed the character of this area. Though the factory relocated to the outskirts within few years, but it triggered the mushrooming of small scale factories in the area. Land owners grabbed the opportunity to make money and rented out the flats to the industrial owners.

Vishwas Nagar started as a residential area, but in 1970s, a playing card manufacturing unit of medium scale was established here which changed the character of this area. Though the factory relocated to the outskirts within few years, but it triggered the mushrooming of small scale factories in the area. Land owners grabbed the opportunity to make money and rented out the flats to the industrial owners.

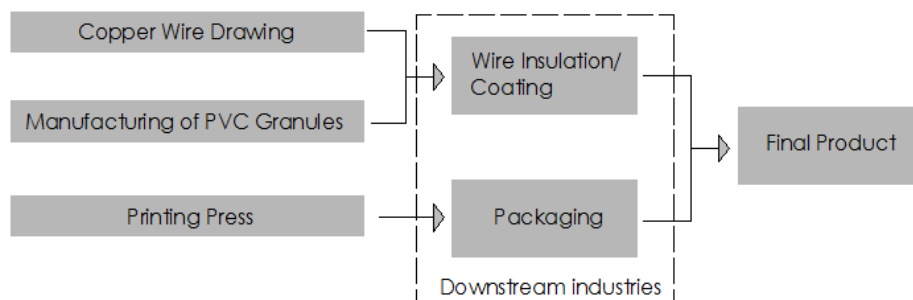
Figure 3: Industrial Units in Vishwas Nagar



Source: Survey by Delhi Pollution Control Committee, Govt. of National Capital Territory of Delhi and Primary Survey

Presently, Vishwas Nagar is well known for its industrial mix. In this maze of choked lanes, one can notice small manufacturing units dominating the area. Though 784 plots in the planned industrial areas of Bawana and Narela (Figure 2) have been allotted to the factory owners for relocation, but the industries continues to operate here. The industrial mix has been languishing here for past four decades and the owners are not planning to leave, albeit their number has been dwindling slowly. The allotted plots in the planned industrial areas have either been sold or rented out to other industries. They're mostly being considered as back-up option for the worst-case scenario, that is, when the municipal corporation seals the factories.

Figure 4: Types and relationship of the major industries in Vishwas Nagar

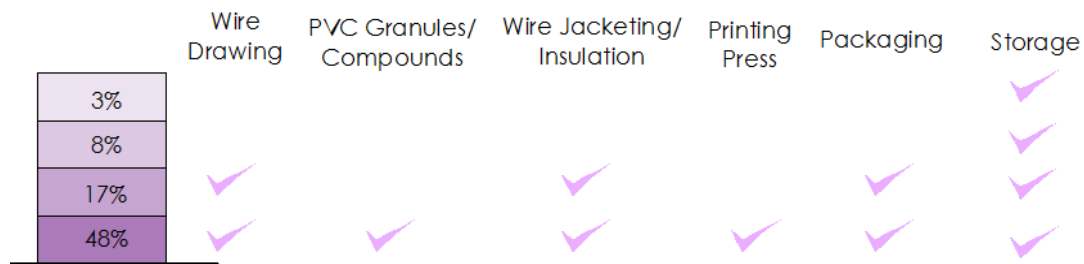


Wire manufacturing industries are flourishing in Vishwas Nagar. Since the area isn't classified as an industrial zone, the industrial units usually hide behind the closed shutters.

Ironically, the area is a stone’s throw away from the Karkardooma District Court. Most of the industrial activities take place at the ground and first floors, and the floors above are either used for storage or for residence by the owners or workers of the industrial units (Figure 5).

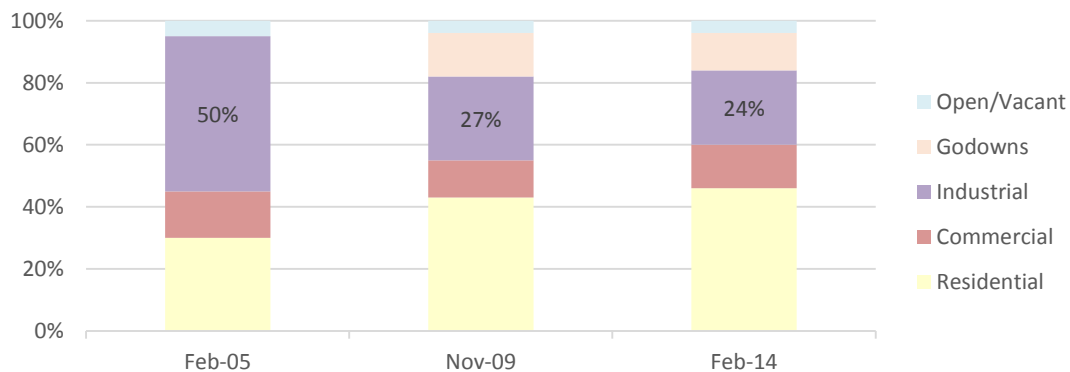
Majority of the factories here are orange category industries, which are significantly polluting in nature and hence unfit to operate in residential areas. In spite of that, a review petition has been filed in high court by the factory owners for Vishwas Nagar to be declared eligible for redevelopment. The factory owners have even offered to give up their allotted plots in planned industrial areas if Vishwas Nagar is notified under industrial use.

Figure 5: Floor Wise Activities in Vishwas Nagar



Source: Primary Survey, 2014

Figure 6: Built Up Land Use Distribution in Vishwas Nagar

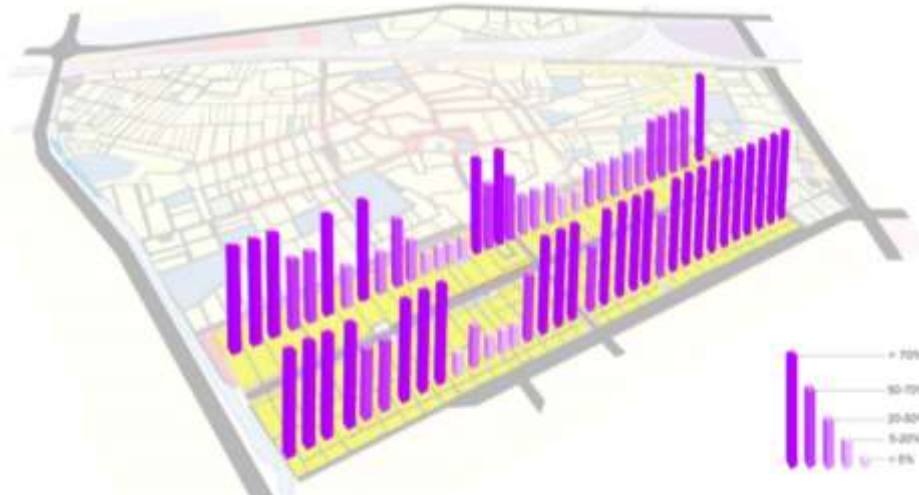


Source: Survey by Sub-Divisional Magistrate office, Vivek Vihar, Survey by Delhi Pollution Control Committee and Government of National Capital Territory of Delhi, Primary Sample Survey 2014

According to the Master Plan for Delhi (MPD) 2021, “Non-conforming clusters of industrial concentration of minimum 4 hectare contiguous area, having more than 70% plots within the cluster under industrial activity/use may be considered for redevelopment of area identified on the basis of actual surveys”. Though master plan suggests a plot wise survey, but the Delhi Pollution Control Committee (DPCC) takes into account of the whole built up area (floor wise activities) in its survey. Vishwas Nagar has been surveyed thrice by the concerned authorities but the share of industrial units comes out to be less than 70%, both plot wise and built-up wise (Figure 6).

Moreover, according to DPCC, industries falling under the F-27/33 categories of MPD 2001 are not allowed in non-conforming areas. The PVC compound making industries (F-27) and wire drawing, coating, electric cables (F-33) fall under this category. As more than half of the industries in the area comprises of these two categories, the concentration of permissible non-conforming industries falls to approximately 12%.

Figure 7: Bars Showing Industrial Concentration in Vishwas Nagar Residential Area



Source: Primary Survey, 2014

Table 2: Categories of Industries Operating in The Area

Manufacturing Type	Units		MPD 1962	MPD 2001	MPD 2021	DPCC
	Number	%				
Wire Drawing	673	26%	Extensive	Group F	Permissible in Industrial Area	Orange
PVC Compounds	441	17%				
Wire Jacketing/ Insulation	336	13%				
Packaging/Cardboard	492	19%	Flatted & Work Industries	Group A	Household Industries	Green
Printing Press	597	23%	Flatted & Work Industries	Group B	Group B – Permissible in Commercial Areas	
Sanitary Fixtures	53	2%	Light and Service			
Ice Cream & Water Cooling						
Electric Fittings						
Helmet (PVC) Manufacturing			Extensive	Group E		
Machine Assembly/ Small Machine Parts				Group F		
					Permissible in Industrial Area	Orange

Source: Primary Survey, 2014

Apart from the orange category industries, a red category (heavily polluting) industrial process is also taking place in Vishwas Nagar. The manufacturing of PVC compound is also done by reprocessing of waste like glucose bottles, discarded PVC toys, pipes, etc. Hazardous waste processing viz. hospital/ medical/ industrial waste are prohibited in Delhi due to their extremely polluting nature. However, industries in Vishwas Nagar take the leverage of the residential status and carry out the process during weekends

5. Factors behind persistence of the industry owners

There are various factors which come into play in the existence of these industrial units despite the owners having an available alternative from the government. These are:

5.1 Economic dependency of the residents on industrial activities

These industries are the primary source of livelihood for many families residing in the area and its vicinity. Owners of about 32% of the industrial units and 20,000 workers reside in the sub-zone and the rest are living in the vicinity of 2-5km radius. The location is best suited for them as it saves time and money on commuting. Moreover, 36% of the residents in Vishwas

Nagar are engaged in the ancillary activities like service/repair, lamination which are product of industries and will not survive without them.

5.2 Underdeveloped Planned Industrial Areas

The planned industrial areas where plots have been allotted to the owners are about 35-40 kilometres away from this sub-zone (refer Figure 2) and commuting to such far flung areas is time consuming and costly. Moreover, since Vishwas Nagar is not a planned industrial area, it offers few perks of its own. Illegality comes easy as the “transition” area doesn’t come under the scanner of the pollution board and the revenue department. Hence, the taxes aren’t paid and the environmental norms are more often than not are flouted. Furthermore, labour laws aren’t followed, the workers slog for more than 12hrs a day and power theft is rampant. These factors end up minimising the manufacturing cost for the owners. The owners of wire drawing industries here earn up to Rs.50 lac (USD 80,000) per annum, which will reduce drastically if they operate in a planned industrial area.

5.3 Lax on the part of government

The Supreme Court order dated 07-May-2004 (M. C. Mehta v/s Union of India and others) states that “*the water and electricity connection of the industrial units found operating after the due date closure shall be disconnected*”. Due to lack of cooperation among the municipal corporation, electricity and water board, the implementation is stuck in a vicious cycle where one is waiting for the factories to be forcefully shut and the other is waiting for the utilities connection to cut off. However, in reality, the authorities have been shying away from their responsibilities and a blame game is on. Corruption in the authorities is one of the major reasons in the delay of implementation. The industries are being benefitted by this and the residents are bearing the brunt of it.

6. Impact on the Residents

Owing to the presence of these non-conforming industries, this subzone has deteriorated in terms of physical and social environment. The area witnesses smoke, noise, odour, obnoxious gases, illegal dumping of untreated industrial effluents and waste (refer Table 3). To make matters worse, fire incidents and chronic diseases are constantly on the rise. Moreover, due to these flourishing industrial units, ancillary non-conforming activities have also mushroomed in the area in the commercial mixed use streets, which causes further nuisance due to the incompatibility of the land uses.

Residents are compromising on their basic human need like clean air to breathe and a peaceful environment. There’s no relief even at night. The scenario gets worse during the weekends, as red category manufacturing process is executed during holidays, when there’s no probability of government surveillance. Social nuisance coupled with physical deterioration of the environment is taking toll on the quality of life of the residents.

Table 3: Nuisance caused by the industries

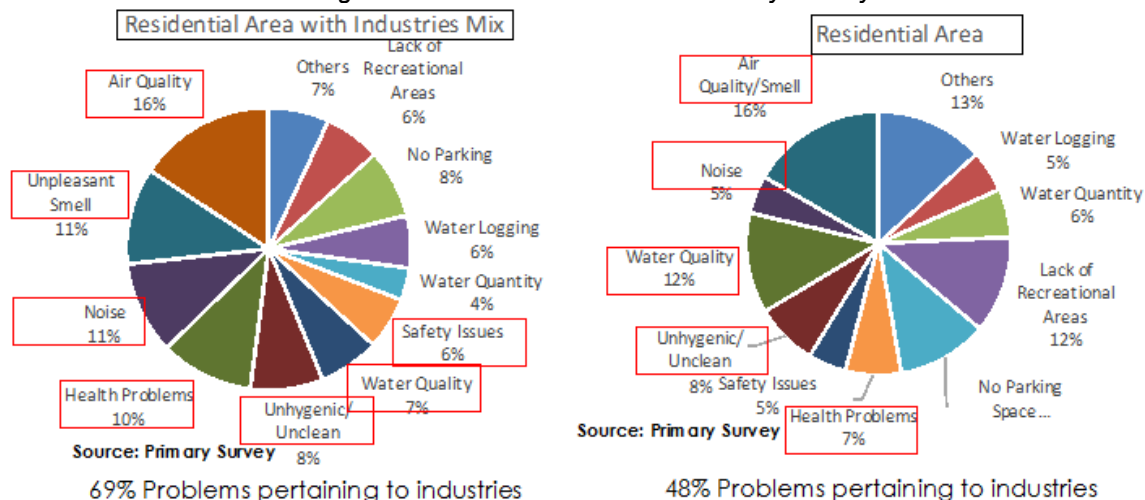
Manufacturing Type	Air	Water	Noise	Odour	Dust	Vibration	Fire Hazard
Wire Drawing	Severe	Severe	Moderate	Moderate	Moderate	Negligible	Moderate
PVC Granules	Severe	Severe	Severe	Moderate	Severe	Moderate	Moderate
Wire Jacketing	Severe	Moderate	Moderate	Moderate	Negligible	Negligible	Moderate
Printing	Moderate	Moderate	Severe	Severe	Negligible	Severe	Severe
Packaging	Negligible	Negligible	Moderate	Moderate	Negligible	Negligible	Moderate

■ Severe ■ Moderate ■ Negligible

The least nuisance causing industries in the area is that of packaging, which is categorised under household industry by DPCC. Wire drawing and PVC compound manufacturing are

the most polluting types and are blameable for the deterioration of the environment and health of the residents over the years.

Figure 8: Problems identified in Primary Survey



6.1 Air Quality

Table 4: Annual Air Quality of Shahdara and Delhi

Parameters NAAQS Standard	SO2		NO2		PM2.5		PM10	
	50		40		40		60	
	Shahdara	Delhi	Shahdara	Delhi	Shahdara	Delhi	Shahdara	Delhi
2007	5	5	50	44	87	84	195	188
2008	5	5	58	45	89	85	210	198
2009	2	6	43	49	77	72	224	243
2010	5	5	31	55	85	89	375	259
2011	6	6	59	61	91	95	486	222
2012	5		56				253	
2013	4		62				246	282
2014	4		57				272	318

Source: Central Pollution Control Board, WHO

The air quality of Shahdara is one of the poorest in Delhi and the city itself is the most polluted city in the world. The parameters of PM₁₀ is doing the worst among the parameters due to the presence of industries. Apart from the air polluting manufacturing process, the industrial waste is burned at night and early mornings which further add to the pollution. The quality is observed worst during the weekends, when the industrial owners take the leverage flout the norms by carrying out prohibited activities like reprocessing of PVC waste. The air quality has taken a toll on the health of the residents.

6.2 Noise Level

Table 5: Noise Levels observed during Primary Survey

Location	7:00 AM		2:00 PM		8:00 PM		10:00 PM	
	dB(A)							
	Min	Max	Min	Max	Min	Max	Min	Max
Vishwas Nagar	67	73	71	74	77	82	72	78
Near School	58	64	61	69	-	-	-	-
100% residential	42	49	46	52	49	54	39	51
Standard	55				45			
Market	44	52	68	75	48	56	42	55
Standard	65				55			

Noises in the industries are mostly the result of impact, vibration, friction, or turbulence in air. PVC granules and printing industries are most nuisance causing in this regard. The factories operate whole night and makes it difficult for the residents to sleep peacefully. The loading and unloading of trucks aggravate the problem. The noise level in Vishwas Nagar is over the prescribed limit throughout the day.

6.3 Odour

Though the factories hide behind closed shutters, but one can easily comprehend it because of the unpleasant smell lingering in the surrounding environment. The odour is mostly strong during the weekends when it can be sensed in the whole sub-zone.

6.4 Ground Water Quality

Ground water quality is affected by human beings both directly and indirectly. Direct impact is when the water is contaminated through discharge of pollutants, known as anthropogenic pollution. Indirect impact is due to water table depletion, which results in geogenic contamination, that is, elevation of concentrations of certain elements which affects human health negatively.

Table 6: Geogenic Contamination

	pH	EC (uS/cm)	Total Hardness (mg/l as CaCO ₃)	Fluoride
CBD Shahdara	8.41	5084	1190.95	0.38
Delhi Avg.	8.69	3285.26	938.09	1.30
Indian Standard	6.5 – 8.5	2250	300	0.6 to 1.2
WHO Standard	7.0 – 8.0		100	

Source: Central Ground Water Board

Factory owners (especially wire manufacturing units) use bore well. The constant need of water change during the manufacturing process has made the owners opt for a cheaper alternative even if it is not legal.

Table 7: Anthropogenic contamination

	Chloride	Sulphate	Nitrate	Nitrite	Calcium	Magnesium	Sodium	Potassium	Silicate	RSC	% Na	SAR
CBD Shahdara	1234.9	569	24.2	0.01	176.1	180	741	28.9	71	- 19.3	56.7	9.34
Delhi Avg.	622.77	387.3	98.6	0.09	130.3	163.9	479.5	61.9	48.0	- 14.6	43.5	5.59
Indian Standard	250	150	45		75	30	-	-		2.5	60	26
WHO Standard	250	150	50		75	30	200	-				

Source: Central Ground Water Board

The parameters which are exceeding the standards are the reflection of the raw materials that are used in these industries. Chlorinate Paraffin Wax (CPW) and Calcium Carbonate, the raw materials of PVC granule, have contributed to the shooting level of the chlorine and calcium. Sulphuric acid, used in wire drawing, when reacts with water forms sulphates. Moreover, the lubricant used in wire drawing industries is Sodium Nitrate. These raw materials have contaminated the ground water quality due to the negligence among the factory owners, labourers and the suppliers. The suppliers of the raw materials in this area

store chemicals like sulphuric acid in an underground water tank. The chemical can easily leach and contaminate ground water.

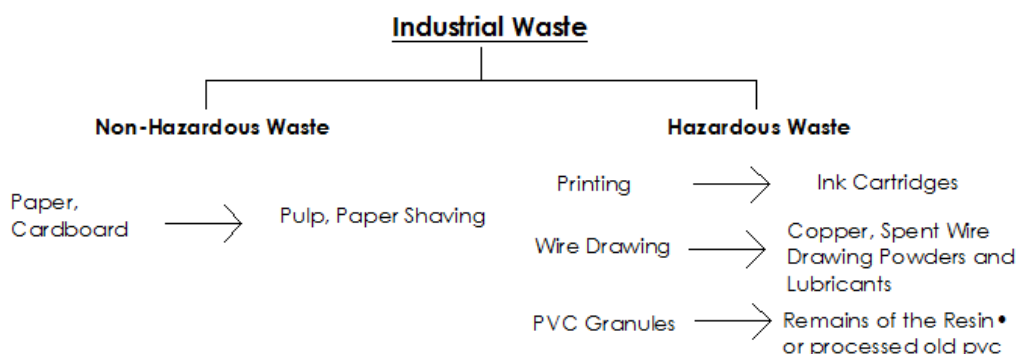
The lack of sense or indifference towards the disposal of waste is another major reason. The untreated chemical effluents of the industries are drained in the storm sewer, which contributes to the contamination of the ground water. As the industries here have a high demand of cooling water, processing water and water for cleaning purposes, the effluents are drained very frequently throughout the day. For instance, water is used to cool down the semi-melted PVC wire and because it gets up heated quickly, the warm water is replaced with fresh cool water to maintain the correct temperature. The phthalates can easily leach out of PVC because they are not chemically bound to the plastic. So, when dumped down the drains, these phthalates eventually leach into water. Similarly, wire drawing process builds up a toxic sludge of heavy metal when the water mixes up with a cleaning solvent. The sludge also contains minute particles of copper. This heavy metal sludge is also thrown in drains without being treated. Lastly, the industrial solid waste is dumped in undeveloped open lands in the vicinity and during rainfall the toxic waste seeps underground, causing ground water pollution.

6.5 Solid Waste

Figure 9: Industrial wastes are either dumped in drain or burnt on barren lands at night



The non-hazardous industrial waste in this area are the paper wastes from the printing press and packing industries. These wastes are recycled later when picked up by the local paper scrap dealers. However, the hazardous waste is illegally dumped by the factories. Industrial units located adjacent to the Shahdara drain take the leverage to dump the solid waste and effluents in the already polluted drain.



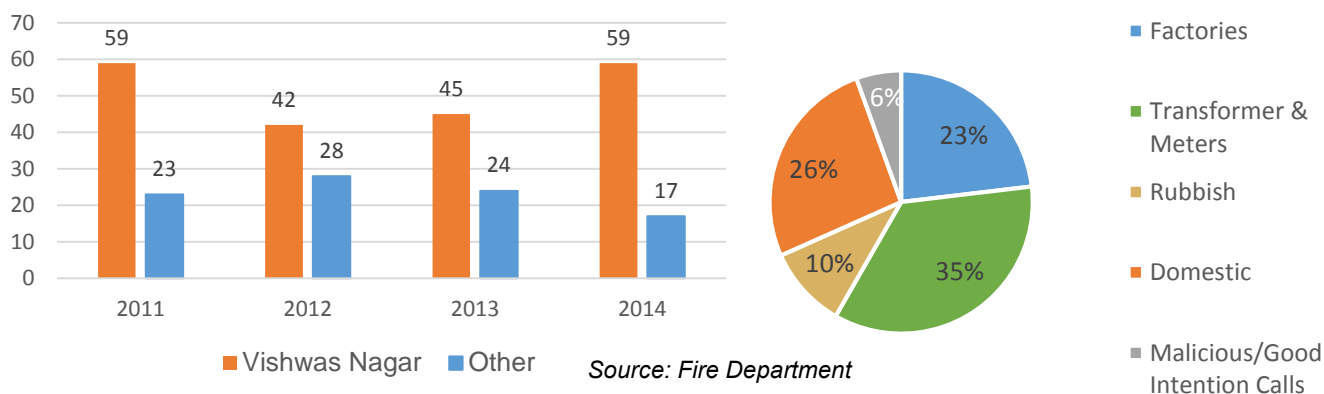
The vacant plots in the sub-zone have turned into dump yards for the industries. For instance, the CBD ground in the vicinity is yet to be fully developed, so the factory owners take the leeway of using it to dump and burn waste (Figure 9). Burning of wastes is a common practice and it worsens the already deteriorated air quality. Though the rag pickers collect the waste from these areas, but more or less the dump is always there.

6.6 Fire Incidents

Fire incidents have become fairly frequent in the clusters which have an industrial mix. On an average, 4-5 minor fire incidents are reported in the sub-zone every month. Though these fire incidents are mostly minor but due to the orange category industries and congestion in the area, there’s always a risk of a major fire outbreak in the area.

Vishwas Nagar has witnessed a major fire breakout in past. On December 7, 2005, a garment factory witnessed a major fire initiated by a sparkling machine kept near a 20 litre inflammable solvent can. The raging fire took lives of 12 workers and many were injured. Many workers ended up injuring themselves after jumping from the third floor of the building in desperation due to want of a fire escape and absent building byelaws.

Figure 10: Fire Incidents in Sub-Zone E-4



Most of the fire incidents (>70%) are reported from Vishwas Nagar. Though fire incidents due to factories comprise only 23% of the share (Figure 10), but other causes of fire hazards in the area are indirectly due to presence of the industrial activities. According to the Delhi’s Electricity Board, the area is classified as high theft prone. The fire in electric meters and transformers occur due to power theft and consumption of power beyond the sanctioned load, which puts stress on the distribution, equipment and network. Fire in rubbish occurs mostly due to the dumping of inflammable industrial waste like printing ink. The situations get worse as the narrow and congested lanes delays the emergency response in spite of the fire department being in the vicinity.

6.7 Occupational Hazard

Occupational hazard is one of the major concerns but is much underrated over here. Working behind the closed doors exacerbates the impact of manufacturing processes on the health of the workers (refer Figure 11). They work in an environment which is laden with chemical dusts and fumes and the concept of air change is unfamiliar here. One of the PVC recycling unit owners justified the condition by stating that residents are against the exhaust fans as the fumes and odour end up inside their home. Safety gears and safety measures are an outlandish concept in these accidental prone factories.

Figure 11: Despite the fumes, the workers operate in behind the closed shutters and nil ventilation



Furthermore, the factories are prone to fire hazard, and the vulnerability is amplified by the fact that there's no proper exit and the major gates remain locked from outside. The minor openings in the backyard don't suffice in the dire situations. To add to their plight, the medical first aid and fire aids are absent from the premises.

6.8 Health Hazards

The impact of the air quality has been confirmed by the primary survey of the residents and interviews with the local doctors. 45% of the health complaints pertained to Vishwas Nagar. According to the local doctors and primary survey outcome, airborne diseases like tuberculosis, thyroid and bronchitis/asthma are rampant here. Moreover, waterborne disease of kidney stones, which occurs due to high fluoride level in water, is fairly common among the residents. Diabetes and arthritis is prevalent among the workers due to irregular meal consumption and prolonged standing, respectively.

6.9 Other Issues

Due to industries, lots of impermissible ancillary activities like auto repair shops, scrap dealers have mushroomed in the area which cause nuisance. Loading and unloading activities and movement of commercial vehicles cause parking problem, congestion and other forms of annoyance in these narrow lanes. Since these industries are operating illegally, the products are transported every day rather than storing in their premises. As a result, about 1400 commercial vehicles like autos and truck frequent the area every day. Heavy vehicles are allowed in the city only between 10pm to 7 am, but one can see trucks plying in the area all day.

7. Root Cause of the Present Scenario

Environmental quality refers to the natural environment as well as the built environment. The built environment of the area is already compromised in unauthorized areas, such as less open space and built up ratio, inadequate right of way of roads, quality of structures, etc. Hence, it wouldn't be fair to say that the presence of industries has deteriorated a perfect residential environment. The following issues need to be addressed for the betterment of the area:

7.1 Delinquent Authorities

There is lack of co-ordination between the concerned authorities, i.e., Municipal Corporation of Delhi, Water and Electricity Board, which is delaying the implementation of the recommendation of Master Plan for Delhi, 2021. The lack of political will in the implementation process is a major setback which has resulted in the current scenario.

7.2 Relocation but no Rehabilitation

The industries require a developed site rather than a barren plot. Moreover, the plan does not include provisions for accommodation for workers and their families. Since the workers are usually in-migrants and don't have permanent residence in the city, it is necessary to provide accommodation as daily commutation and rent is a big cost for them.

7.3 Socio-Economic Dependency

About 60% of the residents are directly or indirectly dependent on these industries. Hence, shifting the economic base of the residents is a multifaceted issue and it's hard to tackle with a mere relocation strategy.

8. Possible Scenarios

Two future scenarios based on different assumptions can be built as recommendation for the area, as shown in Table 7. The first scenario is projected as a residential area with permissible household industries. The second scenario is planned with due consideration of the socio-economic dependency of the residents and allowing all the green category industries including household industries to operate in the area with their respective abatement procedures. In both the scenarios one can see the potential changes in physical environment and socio-economic status of the area.

Table 7: Two possible future scenarios for Vishwas Nagar

	Existing	Scenario 1	Scenario 2
Land Use	Residential + Industrial Mix	Residential	Residential + Industrial Mix
Type of industries	Household (19%), Green (23.5%), Orange (57.5%)	Household (Packaging) = 492 Units (19%)	Green (Packaging + Printing) = 1089 Units (42.5%)
Environmental Impact	Air Pollution, Effluents, Noise, Odour, Solid Waste	Impact Noise, Solid Waste, Fire Prone	VOC Emission, Effluents, Noise, Solid Waste, Fire Prone
Hazard (Fire, Occupational Hazard, Health Hazard)	High	Low	Low
Traffic congestion	1410 Vehicles/Day	140/Day (90% reduction)	395/Day (72% reduction)
Abatement Procedures	NONE	Acoustic Measures (a thicker under layer of sub-floor or shock absorber pads/pedestal/foundation under the machinery), Fire Extinguishers	Waterless Offset Printing, Water/Vegetable based Ink to Reduce VOC Emissions, Fire Extinguishers
Workers	19,900	1968 (10% retained)	5053 (25% retained)
Issues and Challenges		Loading/un-loading space need to be designated. Highly dependent on printing industries	Mildly polluting industries, so strict regulation on permissible industries required.

8.1 Proposal for the Remaining Industrial Categories

Out of the 1400 orange category industries, plot would be allotted to remaining 616 units as well and incentives to all 1400 would be accorded. Incentives could be like blanket tax concession for 5-10 years like SEZs. Moreover, developing rental housing for the workers

along with physical and social infrastructures. Moreover, the red category process would be ceased.

8.2 Provision of Loading/Unloading Space

Firstly, heavy commercial vehicles wouldn't be allowed in the area during day time. Secondly, the route of the commercial vehicles would be restricted along with a designated loading and unloading space.

8.3 Redevelopment Norms for Non-Conforming Industrial Areas

Master Plan's criteria for selection of non-conforming cluster based on 70% criteria need to be reassessed as everything boils down to the socio-economic dependency. Moreover, the redevelopment norms listed out by master plan clearly lacks the concern for physical environment and mostly pertains to social environment. Moreover, regular monitoring to be done in those 22 notified areas.

9. Conclusion

These transitional areas are often neglected and thereby continue to deteriorate the quality of life. Wiping off the industrial units from the area is not a suitable solution because the socio-economic dependency of the residents cannot be disregarded. These areas are complex in nature and require more than a mere relocation strategy. Therefore, a sustainable approach needs to be adopted so that the small scale compatible industries can exist without being a health hazard in the area.

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Reworking London as a productive city: Challenges of implementation

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Abstract

This paper examines the challenges that planners face if industry is to survive and thrive in a successful city. It does so in the context of London, where the difference between the value of land for residential and industrial use, and the pressure to address the housing crisis, is leading to the loss of industrial land and premises at an increasing rate. The paper first challenges a common perception that the loss of industry in London is not a problem, as well as assumptions around the decline of manufacturing. We highlight the symbiotic relationship between industry and the city, why many industries depend on a city location, and the important supporting role played by industry for the wider economy, London's communities and the vibrancy of city life. The paper then explores current approaches to planning for industry in London, identifying impacts of a policy framework which anticipates and plans for the decline of industry. It then focuses on the critical question of how to plan for a productive city: we explore the arguments in favour of integrating industry into the urban fabric and set out the challenges posed by this approach, identifying some of the benefits of separating out uses and retaining employment land designations. We argue that if London is to continue to prosper, and meet the needs of all Londoners, then we need to think more carefully about how to plan for a productive city, experiment with innovative ways of integrating industry and other city uses, whilst protecting the existing land for industry. We put forward a critical research agenda to enable the planning system to effectively meet this challenge in the future.

1. Introduction

Our cities need to cater for the industries of the future, as well as the industries of the past. We need to create the conditions for new industries to flourish, whilst holding onto traditional industries that enable the city to function, provide essential goods and services to businesses and residents, and provide employment for the many, not just the few. This paper explores this challenge in the context of London. Measured in terms of GVA (Gross Value Added), London is one of the top five most successful cities in the world, achieved through a shift to higher skilled, higher productivity employment (London First, 2015: 16). However, there are two strongly voiced concerns about London. The first is around London's global competitive position, which shows that the city's economic growth has slowed since the 2008 recession; it is no longer ahead of its rivals, "but has now fallen back to being one of the pack" (ibid: 18). This is leading to a strong sense that London cannot take its growth for granted, and that it needs to rebalance the economy and build its economic resilience through supporting growth in a broader range of productive sectorsⁱ. The second is a concern that, as the city's population grows and residential property prices escalate, "the city is eating itself"ⁱⁱⁱ. London is losing much of what makes it interesting and special, including well occupied and functioning employment space, suitable for both new and traditional industries, as well as

start-ups and small and medium sized enterprises (SMEs) that seek more flexible, affordable space.

Ideally, we need to facilitate the provision of adequate land and premises for all these diverse productive activities to thrive in the future. But at the same time, we have to find ways to build more housing for a growing population. London's government is exploring a range of possible scenarios to accommodate future housing (Robson, 2015: 23-24), but in the absence of more radical answers, it has been turning to the mixed-use redevelopment of employment land. At face value, this seems like a win-win solution. London's shift towards a service economy means that more businesses are compatible with residential in a mixed-use environment. Even modern manufacturing no longer requires large factories, but can be accommodated in small and discreet buildings (Marsh, 2015), more easily integrated into a mixed-use environment, with housing and other community uses alongside. However, in practice, this approach is not achieving much success. This paper therefore challenges some of the optimism around mixed-use redevelopment of employment land, and points to a critical research agenda if we are to move forward.

One of the questions commonly posed is 'why should we be concerned about the loss of industry in London'? 'Industry' in this context usually refers to traditional industries that are perceived as out-dated and better suited to parts of the country (or world) where both land and labour costs are cheaper. The first section seeks to provide an answer to this by considering what sort of industry a city such as London still needs, and in turn, why industry might need, or thrive better in, such a city. The second section then goes on to explore the question of how we best go about 'planning' for industry in the contemporary city, where there are also other pressures on land use. Here, we start by looking at existing policies, both at the regional and local level, which encourage mixed use redevelopment. These policies are critically discussed in the context of the ideology of mixed use and what it is trying to achieve, against what is actually achieved on the ground. The reasons for failure in implementation are explored, and an argument made for the benefits of continued spatial separation of (some) industry and housing, alongside experimentation with new typologies and strategies for mixing industry with housing. The extent to which separation is still required depends on our ability to find solutions to the mixed-use dilemma (both in design terms and the way land value is calculated). The third section concludes and reflects on implications for future urban policy.

2. Why industry in London?

Productivity can be achieved in many ways, through producing things, ideas and services. However, in recent years, the balance of the economy in post-industrial cities has shifted away from primarily producing things, and increasingly towards producing ideas (the 'knowledge economy') and providing services (especially financial, legal, and business). The focus of this section will therefore primarily be on the value of continuing to pursue material production – or making things – in cities such as London.

First, however, some myth busting. There is a widely held perception that manufacturing is in terminal decline in the UK, and certainly in London. The Greater London Authority's employment projections, upon which it bases major decisions in the London Plan, are that there will be an 88% loss of manufacturing jobs from 129,000 in 2011 to just 15,500 in 2050 and substantial loss of other jobs in industry, utilities, transport and warehousingⁱⁱⁱ. These

projections are based on extrapolating past employment trends; by this methodology it is only a matter of time before this is reduced to zero. However, there are already indications that this trajectory will not simply continue – official figures show that employment in manufacturing in London has increased slightly between 2010 and 2015 (London Datastore, 2015) and this is echoed (as a rise in industrial employment generally) by the Industrial Land and Economy Study (AECOM, 2015). The GLA's interim employment projections (GLA Economics, 2015) treat this as a 'blip', but this is debated and it is possible we might have reached a critical threshold. A report by PwC (2009) argues that focusing only on employment and manufacturing's contribution to GDP is misleading. The UK picture in terms of employment is that 1 in 10 jobs were in manufacturing in 2008, compared to 1 in 4 in 1980. In terms of its contribution to national GDP, manufacturing is in 'relative' decline because of the growth in service industries, but it has continued to grow overall as GDP has increased roughly fourfold since the 1950s. Advances in technology mean that, although jobs have been lost, there has been a steady rise in productivity in manufacturing, so that its outputs (measured by GVA) have risen.

There are also spatial variations. Mass production in large factories has generally moved away from high value locations in inner cities to lower value land on the edge of cities, in other parts of the country, or in emerging economies; in short, places where both land and labour are cheaper. Such trends follow the logic of *bid rent theory*^{iv}, whereby the location of land uses and their values are determined by a competitive bidding process, where those uses that benefit most from being located in the centre will outbid other uses. However, some industry has remained. As Curran (2007: 1429) argues in the context of New York: "Those businesses that could, left the city long ago; those that remain are the ones that need to be there or have a business advantage because of their urban location". There are broadly three reasons why businesses might need to be in an urban location: to be close to other businesses, to be close to their markets and to access labour.

2.1 *Industry needs the city*

Other businesses can be clients, customers, suppliers, service providers or subcontractors. The volume of business-to-business (B2B) transactions is much higher than business-to-customer transactions – there may be multiple B2B transactions in a supply chain - and proximity is often key for speed of service. In Charlton Riverside in southeast London, there is a collection of complementary companies working in lift manufacturing and repair. Here, lift manufacturers and repairers are located next to specialist steel stockholders and electrical fitting suppliers. Working in close symbiosis, these firms can offer a rapid lift repair service to firms in the City and Canary Wharf, as well as to local residential high-rise blocks (JSEP, 2014).

Proximity to other businesses in the supply and production chain is an important feature of the benefits of agglomeration – as famously described by Max Weber and Alfred Marshall – but other benefits include the availability of labour and ability to share equipment and premises. Scott (1982) argues that this is particularly important for businesses in the incubation phase. New, small firms tend to seek out the mutually supportive environment provided by a concentration of other similar firms, with similar needs. As firms grow, they become more self-sufficient and less dependent on other firms or the availability of such externalities, and can take advantage of lower land costs in more peripheral locations. This has been the trend in mass manufacturing, where the processes of design and production

can be easily separated. However, in mature economies, where we are seeing a growth of smaller-run manufacturing for niche markets, it is harder to separate from the manufacturing process, since design and manufacturing choices are closely intertwined. As the CEO of the design software giant, Autodesk, explains:

During the period where people tried to exploit offshoring and outsourcing, manufacturing and design got divorced from each other. Now companies are realizing that if you get too divorced from making the product, you don't understand how to improve it. (quoted in Leber, 2013).

What the implications of such change are for land use and design of premises is so far little understood and not reflected in land use classes. For example, in England, a single premises is categorised as either an office, a factory, a warehouse or a retail unit, whereas in reality there is increasing hybridity within a single premises (Ramidus Consulting, 2012).

Industry has traditionally sought a city location to be close to its markets. As documented by Peter Hall (1969), London was historically home to industries at the end of the production chain: clothing manufacturing rather than textiles; furniture, rather than woodworking; printing rather than paper production; and jewellery and watchmaking rather than metal manufacture. For these industries, their location was driven by proximity to the market (in London the large pool of potential customers and their relative wealth was an attraction - as well as access to the national and international markets). The increased use of road-based deliveries and the decreased cost of transportation has meant that industries no longer need to be cheek by jowl with their markets. Nevertheless, some recent trends are re-emphasising the importance of proximity. First, the rise of niche, bespoke production means that producers need to be close to their markets, to understand and effectively respond to them. Second, customers are becoming more demanding in terms of speed of delivery and service, and there is also a trend towards integration of manufacturing and retailing, where customers can buy products straight from the site of production. In New York's Industry City, this has been a key driver for flexibility of use classes in the development (Kimball, 2015). Increasingly, a separation between places of production and consumption can undermine business models and proximity to markets appears more important than ever.

The fact that London has been home to traditional industries toward the end of the production chain, means access to skilled labour has always been important. In new manufacturing, there is a closer symbiosis between production and design, research and development, which again relies on access to skilled labour. In London, there has been ready access to both skilled and cheap labour, due to it being a first point of call for most immigrants into the country (Hall, 1962). Scott (1982) argues that throughout history, there has been a tendency for labour-intensive firms to seek central locations (with access to the greatest 'pool' of labour), and for capital-intensive firms (those who depend more on larger premises or machinery) to seek peripheral locations, where land is cheaper. With improvements in technology, we have seen over the course of history, a displacement of labour (people) by capital (machinery) in manufacturing. Thus, over time, we have increasingly seen firms disperse or decentralize. However, the nature of labour in manufacturing is changing:

The manufacturing of the past was characterised by long production runs and repetitive manual labour. It was used to make goods that varied little between one day and the

next. The focus in the industries of the future will be on fast changing products, created to high specifications, often through mixing a range of technologies, from electronics to biotech. Next generation manufacturing will be tailored to individual requirements and fabricated in short runs. (Marsh, 2015)

This will require more skilled labour, proximity to centres of research and development, and other technology sectors. This all suggests that, for industries of the future, it will be increasingly important to be near other businesses, to be close to markets, and to have access to skilled labour – all of which are more accessible in cities than their peripheries. This all suggests that we are likely to see continued agglomeration in the materially productive sectors of the economy as well as the knowledge industries, hitherto well documented. In short, for industries of the future, cities will be more important.

2.2 *Cities need industry*

Conversely, cities also need industry. The most obvious reason is because there are industries that are essential to keep the city functioning, to provide goods and services to its businesses and residents, to deal with its waste, to provide materials for its construction, and so on. A consultants' study of industrial premises remarks:

Just consider the diversity of services and products consumed by the average office building: catering; cleaning; furniture; maintenance and fit out; office equipment and supplies; print and copy; security; waste disposal and many others...Much of this support activity is located away from the central area, often clustered around the central area and in outer London... Often the activity is "low key", but is vital to the efficient functioning of the city and in supporting its global role (Harris, 2013: 1).

The importance of activities on industrial land as a support function for London's businesses and residents seems obvious but is often overlooked. The demand for a wide array of just-in-time goods and services is increasing as London's residential and business population becomes increasingly wealthy, lifestyles are changing and the internet facilitates the delivery of such services at the touch of an app button. An employment study for a central London borough (Roger Tym and Partners, 2011a) identifies a number of examples of such businesses providing goods and services with a short 'shelf life', including florists serving small retail outlets in stations, Asian fast food kitchens, and taxi firm 'Addison Lee' which needs a central administration and vehicle garaging centre, to enable quick dispatch of vehicles to respond to market demand. A central location for such businesses is important as they are required to guarantee timed deliveries to customers or their own retail outlets.

The construction industry, which has supported London's property boom, depends almost entirely on industrial land available within London, particularly the manufacture and supply of construction materials, but also related services such as plumbers' merchants, scaffolders, trade wholesalers etc. Facilities like aggregate yards may be unattractive neighbours for nearby residents, but nevertheless form part of the essential infrastructure for London's construction industry.

The imperative for London to sustainably deal with its waste means that there is a demand for sites to accommodate this essential element of London's infrastructure. For example, Powerday building waste recycling centre occupies a site in Park Royal, and makes use of rail and canal infrastructure to transport waste thus reducing lorry movements (GLA, 2014:

72). Similarly, work by Cass Cities^v has shown that recycle production is increasing in London and is becoming a significant element of manufacturing. For example, the Dagenham gasification plant will turn 180,000 tonnes of waste each year into 19MW of energy, while producing metal, aggregate and glass recycles. Newer businesses, such as Closed Loop who produce food-grade plastic recycle out of plastic bottles, wanted to be in London because of its stream of waste.

The increasing demand for just-in-time goods and services, and increasing opportunities in cities for green industries, suggests there is a strong environmental argument for supporting industry in the city. If space for manufacturing and industry can be incorporated into the city, travel distances between production and markets can be reduced, and green industries can grow. So it can be argued that cities need industry in order to move towards a more environmentally sustainable future.

Cities also need industry in order to be more economically and socially resilient. It has long been known that diverse economies, i.e. those that do not rely on a narrow range of economic sectors, are more resilient (Chinitz, 1961). In London, there is a concern that the city has become overly reliant on the financial and business services sector, such that one of the three stated goals of London 2036 (London First, 2015: 4) is to increase London's diversity and resilience, promoting strong performance across more of the economy, with no single sector contributing more than 40% of GVA or jobs growth. Promoting resilience also requires ensuring a balance between imports and exports. At present, the UK imports more goods than it exports, but it exports more services. In 2012, the Chancellor George Osborne set a target to double UK exports to £1 trillion by 2020. London has a long history as a trading centre; its demography and international reach means it is well placed to lead the UK's exports drive (Theseira, 2014). However, its potential is limited by availability of suitable premises and land for new manufacturing activity (Marsh, 2015). Solving this issue would support the economy, but it would also promote social equity in the city, by providing a greater range of jobs, both skilled and unskilled, but with the potential for higher wages, job progression and satisfaction than the service industry. Camden's Core Strategy (LB Camden, 2010: para 8.12) explains:

Premises suitable for industrial, manufacturing and warehousing businesses provide jobs for people who would otherwise be at high risk of being unemployed or workless. The Camden employment land review 2008, using data from the National Employer Survey 2003 and the Annual Business Inquiry 2006, found that the skills required for these sectors are fundamentally different from other sectors with similar qualification level requirements, such as retail, leisure and hospitality. Therefore, it is unlikely that the retail or hospitality sectors will provide straightforward alternative job opportunities for people losing industrial/warehousing jobs in the borough.

Increasingly, it is becoming clear that the so-called 'knowledge economy' has not solved the problems of post-industrial cities, the gap between rich and poor has got worse and long-term unemployment remains a major issue (Madanipour, 2013). Therefore there is increasing interest in the potential of new urban manufacturing to bridge the gap.

Finally, another argument - currently underdeveloped – is that industry makes for a more interesting and vibrant city. As stated in the urban lifestyle magazine, *Monocle* (Tuck, 2009):

City streets need to be pleasant places to live but also home to small businesses, craft makers and even the odd car mechanic. They might be unsightly, noisy and lower the tone of the street but they are what make a neighbourhood thrive. And anyway, too much peace and quiet can be bad for you.

Such ideas underpinned arguments made in the 1960s by Jane Jacobs in her seminal book, *The Death and Life of Great American Cities*, later an inspiration for Sharon Zukin's (2010) *Naked City: The Death and Life of Authentic Urban Places*. Jacobs (1961) argued: "City diversity itself permits and stimulates more diversity" (p.145). The same conditions that create diverse commerce, she claims, also promote other types of city variety; diverse cultural opportunities and "a variety in its population" (p.148). Such ideas underpin the enthusiasm for mixing land uses in cities, which is discussed in the following section, but there is by no means a consensus about how we should effectively incorporate production into our cities.

3. Planning the productive city

The evidence suggests that if London is to continue to prosper, whilst meeting the needs of all Londoners, then we need to think more carefully about how to plan for a productive city. Before going on to discuss future options, it is helpful to explain how London currently plans and what the key challenges are.

3.1 Current approaches to planning for industry in London

Manufacturing and industry in London is protected through area-based designations at both the regional and local levels. Strategic Industrial Locations (SIL) afford the highest degree of protection, with losses only allowed as part of a coordinated process of consolidation. Locally Significant Industrial Sites (LSIS) require regular reviews of supply and demand to justify continued protection, and 'Other' industrial sites are not protected strategically but managed by borough policies. (GLA, 2015: 160; GLA, 2012: 7). Approximately half of London's industrial capacity falls within SIL, just under a fifth within LSIS and a third within 'other' industrial sites, with no policy protection (URS, 2010). The existence of these protective policies suggests that the elimination of these uses is resisted by the planning system, but overall the decline of physical production is anticipated and planned for. The evidence base supporting the London Infrastructure Plan predicts an 88% loss of manufacturing jobs by 2050, leaving only 15,500 jobs in this sector (GLA Intelligence, 2013). Policy documents refer to the historic structural change in London's economy, moving away from 'traditional manufacturing industries' to the 'service sector' (GLA, 2008: 14). Similarly, the Mayor's Economic Development Strategy (GLA, 2010) presents a potted history of London's economic growth where industry and manufacturing are portrayed as part of London's past. This narrative presents a justification to dispense with the protection of industrial sites and instead provide infrastructure to support growing sectors of London's economy, such as business services. These sentiments are echoed in many consultants' studies, for example one observes that "land use planning designations have lagged behind economic change and consequently too much land has been allocated and protected for industrial use in London" (URS, 2007: 82). The document *London 2036: an agenda for jobs and growth*^{vi} anticipates:

that large-scale manufacturing will not return to high-cost cities like London, even if re-shoring brings some manufacturing employment back to advanced economies as a whole. Changing technology may drive some pockets of growth, for example in close-to-market creation of prototypes through 3D printing. However, these pockets are unlikely to generate significant employment; particularly since the economic reasons to locate outside high-cost locations will become more compelling if employment grows. (London First, 2015: 22)

However, this view does not chime with that of writers on the 'new industrial revolution', who argue that "the world is on the cusp of a manufacturing revolution" which is only just gathering force, and that advanced industrialized nations are well placed to take advantage of this (Anderson, 2012; Marsh, 2012). Strategic policy does not recognise this potential adequately and rather plans for the continued decline of manufacturing and industry through the use of benchmarks for the managed release of employment land. Furthermore, planning practices - in response to development pressures - appear to be speeding this decline, over and above the benchmarks set out in policy. Between 2001 and 2006, 90 ha of industrial land were lost each year to other uses, approximately double the proposed benchmark in policy (URS, 2007: 9, 82). For the period 2006-16, the benchmark remained roughly the same at 48 ha per annum (GLA, 2008: 7), while in reality 86.75 ha industrial land was released each year between 2006 and 2010 (GLA, 2012: 8). Reasons for the unanticipated were explained through interviews with planning officers from six London boroughs, undertaken as part of a study for the GLA (Roger Tym & Partners, 2011b: 19):

there is very little understanding of strategic employment land issues in development control teams ... most policy officers reckoned that their development control teams had no familiarity with the benchmarks or with the GLA evidence base in general. They might understand the general strategy, but not the detailed benchmarks, rationale or technical detail behind the numbers.

Substantial losses of industrial land, over and above the benchmarks, has led to a lower benchmark of 36.7 ha per annum for the 2011-2031 period (GLA, 2012: 8), but the overall approach of managed decline remains. This is despite an understanding that the official figures are likely to underestimate the scale of loss, not taking into account transactions that take place under the radar, or that which is in the pipeline due to policy changes. The key question is to what extent demand is affected by supply, in other words has the loss of jobs in industry and manufacturing been accelerated by the inability of companies to secure suitable space in the capital? If this can be demonstrated, then a strategy of managed release to match declining demand does not stand up as a rationale.

At a local level, it is becoming common practice for London boroughs to give more flexible mixed use designations to their locally significant industrial sites. For example, the London Borough of Brent in northwest London has identified one such industrial area (Alperton) as a growth area, which needs to accommodate a proportion of the borough's housing targets over the next 10-15 years. As part of this process, sites that were protected for industrial use are being given a 'mixed use' designation, in order to be able to accommodate housing (LB Brent, 2011). In Lewisham, southeast London, several such sites have been given a designation of Mixed Use Employment Locations (LB Lewisham, 2013), but it is unclear how the Council will secure any significant employment on these sites. Many more examples across London could be given. Of course, in addition to the sites that were previously

protected by policy for industrial use, approximately one third of London's industrial capacity falls outside areas that are protected by policy and therefore they are much more vulnerable to redevelopment. In some cases, these are sites that are in local authority ownership, but ripe for disposal. For example, in Camden, there are a significant number of industrial sites and premises in Council ownership that are being sold to fund its Community Investment Programme^{vii}. The fact that local authorities are under pressure to sell off their own industrial sites in order to fund basic community services adds another dimension to the potential scale of loss in the pipeline.

3.2 Mixed use as an ideology

Underpinning this trend that is seeing employment sites re-designated as mixed use is an ideological argument against separating industrial from other land uses, which suggests that zoning (or separation)^{viii} is an outdated, now irrelevant way of managing cities, which does not support compact, diverse and vibrant mixed-use city environments, and is therefore unsustainable. The loss of manufacturing in industrial cities of north America and Europe has prompted many to question the logic behind the continued physical separation of employment land from other city uses and housing, the assumption being that businesses in the knowledge economy no longer seek traditional employment locations, but are more attracted to the mixed-use environments typical of city centres. Promoting more 'mixed-use' also allows employment land to accommodate housing development, and meet the pressure for housing growth. Aside from the practical considerations, mixed-use environments - whereby a range of different commercial, residential, leisure and community land uses are accommodated together within a building, site or district - support the environmental sustainability agenda of compact cities and have been promoted, following the traditional European model, by the European Commission in the 1990s (CEC, 1990), and the UK Labour Government in the early 2000s (DETR, 2000) as part of its drive for an Urban Renaissance. In many places, it is now the norm rather than the exception (Foord, 2010). The trend towards mixed-use and urban renaissance has its parallels in the 'new urbanism' and 'smart growth' movement in the US. Building on the success of the traditional European model, smart growth enthusiasts promote non-industrial over industrial activities; on the basis that they promote compact development, increased jobs, attracting residents to the city centre and increasing local tax revenues.

There are others who actively support industry in the city, but argue that it should be much more integrated into the urban fabric. Cotter (2012) argues for the integration of light industry into mixed-use urban development in Atlanta, in the US. London's Deputy Mayor for Business and Enterprise suggested that we are going to have to find ways to integrate housing into industrial areas and intensify the built environment: "The idea of an industrial park is really a modern phenomenon" and "what we will return to is a 19th Century model, where industry is mixed around housing"^{ix}. Although this agenda is no doubt also driven by the urgent need to find more sites for housing in London, it resonates with the concept of the "industrious city" promoted by the Urban Design Group, which supports bringing more industrious activities into cities, as well as re-appropriating our business parks. This is driven by a desire to support and celebrate manufacturing activity in cities:

There is an opportunity to move away from the rooted practice to design these sectors out of our towns and cities. Let's make them visible again and stop housing them in anonymous sheds. Let's re-appropriate industrial estates and districts

through raising the quality of their design and maintenance. As a result, local communities could have a better understanding of how their local economy is formed and develop a sense of ownership. Let's celebrate manufacturing industry again. (Urban Design Group, 2014: 2).

This challenge was explored in an Urban Design Framework for the Blackhorse Lane industrial estate in northeast London (LB Waltham Forest, 2011). Building on architects Gort Scott's survey of the industrial land and businesses on the estate, design proposals are presented that integrate existing businesses and buildings into a commercially viable development plan. The approach is to creatively adapt and re-use buildings, to retain and build upon the existing diversity of uses in the area by enabling local businesses and industries to remain in-situ wherever possible. The framework insists that "extinguishment of businesses is to be avoided at all costs." (p.40).

The concept of a future "industrious city" might well entail overlap of land uses that are often deemed 'incompatible'. But the enthusiasm for reintegration is driven by revolutions in technology, which mean that traditional industries are cleaner and quieter than they used to be. There is also an enthusiasm for embracing the potential of the 'new industrial revolution', where production no longer entails large factories capable of mass producing goods. Nonetheless, in many peoples' eyes, there is a long way to go yet and the prospect of integrating productive activities with other uses can present a range of problems. The next section first sets out some of the counter arguments to promoting such integration.

3.3 The case for continued protection of industrial land

Despite enthusiasm amongst architects, urbanists and urban designers for increased mixing, there is still strong support in policy circles in the US and UK for continued protection of industrial land (Dempwolf, 2010; Leigh & Hoelzel, 2012; GLA, 2015). In London, the Mayor has been advised to continue protecting industrial land on the basis of both economic efficiency and social equity (see Roger Tym & Partners, 2011b: 5-7). It is argued that land use allocations based on the price signal alone would not take into account long time horizons or negative externalities such as the pollution caused by relocating further from London. Even if markets did work perfectly, there is no reason why they should produce a fair distribution of the wealth generated, or take into account the costs of generating it.

Heikkila and Hutton (1986) summarise the range of arguments in support of industrial zoning, which include the fact that it promotes a diversification of the economic and employment base, helping to ensure a range of different types of businesses can thrive and a range of different types of jobs are provided for the workforce. In particular, it supports the location of small, new firms in central locations, important in the 'incubation' phase, when firms rely on the agglomeration benefits of the inner city. It also makes the provision of public services and infrastructure required by similar types of businesses more efficient and less costly. Chapple (2014) has further argued that the availability of industrially-zoned land contributes to the regional economy by providing flexibility, specifically offering a reserve of relatively large sites that can accommodate a range of businesses. Whereas startups (in their very initial phases, as low-overhead home-based businesses) can locate in residential areas, firms that expand – whether in production, distribution, and repair or information-based services – benefit from the ability to spill into available space in large buildings. Industrial

zones facilitate this more effectively than commercial zones, she argues, perhaps because they have more of the 'flex' space that allows firms to grow and shrink readily.

Property agents acting for the industrial sector have argued against 'vertical separation', where business uses are accommodated on the ground floor, with residential uses above. In a report to Camden, a central London borough, consultants Roger Tym & Partners (2011a: 14) state that although occupiers are generally prepared to compromise on the quality of the building stock and price, they generally do not compromise on key locational features such as proximity to customers, unencumbered access and sufficient distance from residential neighbours to enable 24 hour operation without complaints. They report many new mixed use developments with industrial space on the ground floor that remain un-let and argue that developers tend to pay little attention to the design and specification of the industrial part of the development, treating it as a 'loss-leader' and may even have in mind a future change of use to residential.

Furthermore, mixed use environments are not without their problems (see Foord, 2010) and presumptions about the benefits need to be balanced with the important function of employment land being to protect lower-value commercial uses from the rising land values of the inner city and competition from higher value land uses, in particular housing. To date, there is no effective mechanism in the UK context to protect employment land values within a mixed-use area. Rather, there are likely to be knock-on effects of the loss of employment land to mixed-use. First, new employment floorspace created within mixed-use redevelopment schemes tend to be let at significantly higher prices than the employment floorspace it replaces (Ferm, 2014). Second, the expectation by developers that mixed-use redevelopment can be achieved raises land values across the industrial area and means that new commercial development is less viable (Roger Tym & Partners, 2011a: 13). Designated employment land provides a 'reservoir' of affordable space, relatively insulated from the high and rising land values associated with mixed use areas. Our next phase of research will explore the nature of planned mixed use redevelopment on employment sites in two London Boroughs, in terms of the imperative to increase the supply of housing and the kind of employment floorspace re-provided.

Arguments against planning control and interference are often made on the basis that this interferes with the market-led mechanisms that promote agglomeration^x. However, due to the susceptibility of industrial uses to displacement by higher-value land uses, a counter argument to this is that we need to protect industrial land if we are to create the conditions for industrial agglomeration to occur at all.

A successful industrial district requires a critical mass of business, and the existence of that critical mass depends on the availability of industrial land. Rezoning not only shrinks the amount of available land legally available for industry; it drives up prices in broad areas where industrial businesses are located, produces uncertainty about long-term capital investments in industrial operations, and invites conflict with nearby residential and retail uses...If urban industry is to survive, not to say thrive, it needs protection from market forces... treating industry as a relic justifies the conversion of industrial land to other uses, thereby further weakening the possibility of industrial revitalization. And like farmland, once lost, industrial land is gone forever. (Bronstein 2009: 30)

Critics of the smart growth agenda (Bronstein, 2009; Leigh & Hoelzel, 2012) also argue that protecting industrial land is wrongly seen as undermining sustainable land use. On the contrary, sustaining urban industry “fends off urban sprawl” (Bronstein, 2009: 28) caused by outward movement of industry. It also promotes more sustainable transportation between businesses occupying industrial land and the other businesses they serve and interact with.

4. Conclusion

This paper has explored the challenge of how to facilitate the provision of adequate land and premises for diverse productive activities to thrive in our future cities, whilst at the same time building a sufficient quantity of new housing for a growing population. We have argued that, for industries of the future, cities will become more, not less important. At the same time, we need both traditional and new industries to be able to locate in our cities – many are essential for London’s functioning, others play a crucial role in contributing to the economic and social resilience of cities and urban vitality.

The paper has grappled with the divisive question of whether or not the continued separation of industrial land is desirable. We have asked, whether it is possible, through clever urban design, to accommodate businesses currently occupying industrial land within a higher density mixed use context? Such optimism is prevalent and its potential should be explored, particularly as industries become cleaner and quieter with improved technology. But ultimately it does not address a fundamental problem, which is that there is currently no effective mechanism within the UK legislative and planning system to manipulate land values within a mixed-use context. Even if one could address – through design or legislation - the concerns of industrial occupiers regarding the proximity of housing and the resulting restrictions on their operations, how could one prevent the ongoing loss and displacement of the lower-value industrial land uses within such a mixed-use context? To date, employment-led mixed use has been notoriously difficult to achieve and negotiate. Rather than try and redevelop the whole of London into new mixed-use quarters, we need to acknowledge the importance of industrial land as a vital component of a compact, smart city, not a barrier to achieving it (Bronstein, 2009; Leigh & Hoelzel, 2012). Therefore, although we believe there is scope to experiment with greater mixing in some urban locations, we believe that - in London at least - the imbalance of land values and the strength of the residential property market means that we now have little alternative but to protect the industrial land we have got. A positive approach to industrial land is required, which acknowledges its importance as a vital component of a compact, smart city, not a barrier to achieving it.

It is clear that reconciling different views on this matter is far from straightforward and in order to better understand the potential impacts of any proposed policy in this area, we suggest that there are four areas of fruitful research to be pursued. First, we need to better understand the workings of industrial areas and their businesses, through utilising more qualitative and ethnographic methodologies^{xi}. Second, we need a better grasp of the impacts on land values of introducing residential land use into industrial areas. Third, a finer-grain understanding of the types of activities and uses that can co-locate with residential uses is required. This could be effectively informed by international examples, for example in San Francisco and Los Angeles, there are said to be effective models of co-location of residential and high-tech manufacturing. Finally, we need to do further research on how to protect land values within a mixed use context, with a view to reforming the planning system to facilitate this.

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ⁱ To this end, the UK Government has a target to double UK exports to £1 trillion by 2020.

ⁱⁱ This phrase was coined by Cass Cities, London Metropolitan University, and strongly influenced the headline of a recent article in the Observer by Rowan Moore: "London: the city that ate itself".

ⁱⁱⁱ p.8, GLA Intelligence (2013).

^{iv} see William Alonso (1964) for an explanation of bid rent theory as applicable to the urban context.

^v Summarised in Email communication to Just Space Economy and Planning (JSEP) group list from Mark Brearley, Professor at CASS Cities. Subject: Response to GLA Employment Projections 2013. Date:17 October 2014.

^{vi} London 2036 was produced by London First and McKinsey's for the London Enterprise Panel. Although sometimes referred to as London's Economic Development Plan, it is not the Mayor's Economic Development Strategy.

^{vii} See <http://www.camden.gov.uk/ccm/content/environment/planning-and-built-environment/two/placeshaping/twocolumn/community-investment-programme/>

^{viii} In the UK, planners can identify areas where industrial uses are protected (designated as strategic or locally important industrial land in local plans). However, this is not akin to zoning in the US as it is not bound by law. The UK's discretionary planning system means that developers can submit a planning application for a change of use on such land, and each case is considered on its merits against relevant planning policy and 'material considerations'. These differences are worth keeping in mind. In this paper, we refer to industrial 'zoning' as a generic term used to describe both mechanisms (statutory and non-statutory), but acknowledge that there is technically no 'zoning' in the UK.

^{ix} Kit Malthouse, Deputy Mayor for Business and Enterprise, speaking at the GLA Briefing for the Park Royal Business Group, 23 May 2014.

^x See Heikkila and Hutton (1986)

^{xi} Researchers and practitioners in London have done some important work here, from which we can draw inspiration. See, for example, UCL's Adaptable Suburbs project, led by Laura Vaughan (see <http://www.ucl.ac.uk/adaptablesuburbs>), LSE's Ordinary Streets project, led by Suzanne Hall (<https://lsecities.net/objects/research-projects/ordinary-streets>) and Gort Scott's work on Blackhorse Lane (LB Waltham Forest, 2011).

Reuse of economic freckles in urban tissue, the case of South West Flanders

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Recently in South West Flanders the transformation of economic freckles in urban tissue into allotment areas is increasing. But seen from an urban point of view this transformation is unnecessary and more over leading to problems on different levels. The intermunicipal development agency Leiedal is studying this phenomena and developing instruments to counter this transformation process. Among these instruments, a series of design studies is carried out, leading to different spatial strategies and demonstrating the benefits of reusing economic freckles in urban tissue.

1. The spatial context of South West Flanders

A strong mixture of dwelling and working is a continuity in the spatial development of South-West Flanders. The absence of topographical or hydrological restraints combined with a fertile soil made it possible to open up the territory early in history (De Meulder & Dehaene, 2001). Some even state the Flemish countryside vanished somewhere in the 12th century (Declerck, 2012).

Economic growth in South West Flanders was grounded in the agricultural development. South West Flanders isn't characterized by mining, heavy production or steel-industry. In contrary the region specialized in flax, linen, home-based production,... making it possible to combine living and working in a domestic environment. Our spatial condition is characterized by small economic freckles in urban tissue.

This resulted in a sprawled patchwork pattern combining small cities, farms, housing, factories in a seemingly random configuration. The so called horizontal metropolis (Secchi, 2013) or peri-urban (INSEE Première, 2009) condition. Although strongly contradicting the model of a compact and dense city, the sprawled patchwork pattern offers high living qualities and proximity but also mobility problems and environmental issues.



Figure 1, Aerial showcasing the mixed character of the South West Flemish territory © luchtfotografie Henderyckx

Until present this mixed land use is strongly present. In 2002, 80% of all economical activities was established outside an industrial or business area (Strategisch Plan Ruimtelijke Economie, 2002).

2. A paradigm shift

Recently we notice a shift in this model. Vacant factories in urban tissue are no longer reused by economical programs but are replaced by housing developments. (New) economic development is almost exclusively (re)located on industrial zones and business parks (IDEA, 2014). This shift has different origins:

An ideological thought.

Industry used to be polluting and noxious. Originating in a modernist endeavor to build healthy cities, industry was displaced from city centers to specialized industrial zones. This way of thinking led to a planning discourse of spatial separation, specialization, zoning plans and the disappearance of industrial activities in cities and towns.

In Flanders this reasoning was transmitted in 'gewestplannen', the construction of large specialized industrial zones and the relocation of economic activities. Up to now this is the main discourse when thinking on economic development.

Profit driven motifs.

Profit driven motifs are amplifying this paradigm shift. The reconversion of abandoned industrial sites into housing developments is a profitable business. The conversion can triple the ground value.

Path of least resistance.

Erecting or expanding an economic development in a build environment is complex. A strict set of rules and legislation (fire safety, soil remediation, insulation,...) is contrasting with the 'easiness' of building on greenfield.

A survey amongst 50 entrepreneurs indicated a significant price difference between an allocation in an urban setting or industrial zone. Causes can be found in higher ground value of urban locations combined with higher standards and demands concerning (architectural) quality of the buildings and surroundings, extra measures in terms of good neighborhood, the cost of renovation, efficiency issues on irregular parcels,... (Leiedal, 2014). So instead of going through the difficulties of re-using existing sites the path of least resistance is preferable and a new location is developed.

Intolerance.

Neighbors become less and less tolerant for (potential) nuisance due economic activity and potential leading to heavy traffic, irregular hours or unwanted activities. The transformation of economic activities to housing, commerce or services is therefore seen as positive by the neighborhood and by extension by the policy makers.

3. Problem setting

As stated, the mixed character of our territory is gradually declining due an ongoing demix of functions and a continuous transformation of greenfield into specialized zones. But where this paradigm shift at first seems beneficial, it becomes clear after a closer observation there are several problems connected with this transformation.

Space is scarce

Firstly, available space is scarce. The continuous transformation of greenfield into housing or industrial zones is increasingly becoming difficult due to the negative spatial, environmental and social consequences (Fishman, 1998).

A growth based economy in which a continuous greenfield transformation is applied causes conflict. Our spatial reasoning is often narrowed down to a mathematical equation in which each agency claims its hectares of 'nature', 'agriculture',... The sum of all these hectares doesn't fit in our territory.

This is expressed in a growing resistance against greenfield development. Large scale developments are frequently contested and often subject of jurisdiction.

Not enough specialized zones.

Secondly, the existing available surface on specialized zones is limited. More than 2/3 of all economic activities in West Flanders is based in so called 'residential areas'. Industrial & business areas only contain 14% of all economic activities. (Pom West-Vlaanderen & Dienst Economie Provincie West-Vlaanderen, 2011)

Knowing South-West-Flanders has 3.500 hectares of industrial & business areas, this simple figure demonstrates the impossibility to relocate (if even wanted) all economic activity to specialized zones. Furthermore, since there is a scarcity in industrial & business zones a more selective policy on allocation should be recommended.

Livability of municipalities.

Thirdly, the separation of working and living has a negative impact on the livability of municipalities. Businesses departing from inner-city location often leave behind empty sites and buildings. Combined with an eventual pollution this (could) lead to long-term vacancies. This is harmful in terms of perception and quality for both the site and its surroundings.

Moreover, the absence of economic activities leads to mono-functional living areas. This again has an impact on the livability of municipalities.

Mobility

If economic activities relocate to specialized zones, distance between work and living is increasing. The number of daily movements increases leading to both a reduced access to labor for less mobile people and a energy and time consuming living pattern for the commuters.

No programmatic need.

A clear need for the reconversion of vacant industrial sites to housing is missing. The comparison of growth in the number of households until 2030 versus the unbuilt surfaces in residential and residential reserve zones indicates only 1/6 of these areas is needed (Leiedal, 2015). To keep up with the growth in number of households no new zones need to be created.

Research by design on the station area of Anzegem demonstrated the building possibilities in existing build-up tissue. By reworking and densifying the existing parcels and structures the number of houses could be doubled within the compact and existing village, leaving the surrounding landscape untouched (Heirman, et al., 1 Ma Ar 2014-2015).



Figure 2, study on building possibilities in Anzegem station by Jelle Heirman, Camille Degroote, Inès Van Ransbeeck

So if the existing building possibilities already cover more than sufficiently the actual need for housing, it is obvious there is no argue to transform built up economic tissue in housing development.

Preliminary Conclusion

As described above on the one hand the conversion of greenfield into new and sufficient industrial & business areas is becoming more and more contested. On the other hand, there is no clear need to transform the existing economic freckles into housing areas. Moreover, these transformations generate a series of disadvantages in terms of urbanity, mobility and so on.

4. Opportunities to reuse economic freckles for economic activities

Where large scale greenfield development has become increasingly difficult, a number of tendencies and changes in both the nature and size of the economic activities combined with a legal framework create opportunities to reuse existing economic freckles.

First of all, our type of economic activities has changed over the years. The polluting and unhealthy production industry has been replaced by a clean manufacturing economy. In this manufacturing economy, 90% of all activities is no longer polluting at all. The logic need to separate living and working is gone.

Next to this policy makers recognize the need for mixing. Different spatial policy plans and instruments confirm this tendency by stressing the multifunctional use of sites, stimulating reconversion to economical programs and the ambition to build 'space neutral'. A set of laws has been created in order to encourage the mix of working and living.

Finally we notice the majority of businesses in industrial zones are SME's. 44% of all surface is used by firms having less than 20 employees, 75% of all surface by firms having less than 100 employees (IDEA, 2014). It is obvious small scaled companies are much easier to integrate in urban tissue

The combination of these three opportunities and the crisis of the paradigm shift gives the opportunity to think on reusing economic freckles in urban tissue. A model in which living and working is combined, a model of vivid municipalities. In this model existing economic freckles are kept, new types of economic activities are introduced and brown-fields are converted into living and working areas.

5. Kameleon

To pick up this opportunity and to counter the paradigm shift, Leiedal (an intermunicipal development agency in South West Flanders) launched a project called 'Kameleon'. This project is supported by the Flemish government and runs from 2014 till 2016.

The aim of Kameleon is multiple: to maintain economic activities in urban tissue, to stimulate economic development and eventually to create new economic development in build environments.

Since the problem setting is complex, Kameleon is focusing on different instruments/solutions/... to tackle the issue of reusing urban freckles in urban tissue.

Central in the study is a dual track. Firstly we examine the way governments deal with questions on the reuse of abandoned economic freckles. By setting up a LEAN-traject they should be able to provide a quicker, completer and clearer answer when confronted with redevelopment questions.

Secondly we develop a pro-active policy on economic freckles. Not all of them are suitable for reuse while others are extremely valuable for reuse. By setting-up a reflection on: "what kind of activities are organized where and under what conditions?" a long term pro-active policy is developed.

To inspire this long term pro-active policy a series of design cases is carried out. The cases for these workshops are grounded in real-life sites, some of them already vacant, some still having activity. The cases are tackled both by a design team at Leiedal and a collaboration with the first master year at the Faculty of architecture of KU Leuven (Gheysen, et al., 2014-2015).

The goal of the design cases is to develop a vocabulary of tools and methods, to generate inspiring examples en to deploy strategies for the reuse of economic freckles.

6. Lessons from the design cases

At present 17 designstudies have been carried out. They differentiate in location, size, context and activity. The design interventions can be organized in 3 scale levels: interventions on the site but effecting the whole community, interventions on the site that changes the relation with the context and finally interventions having effect on the site itself.

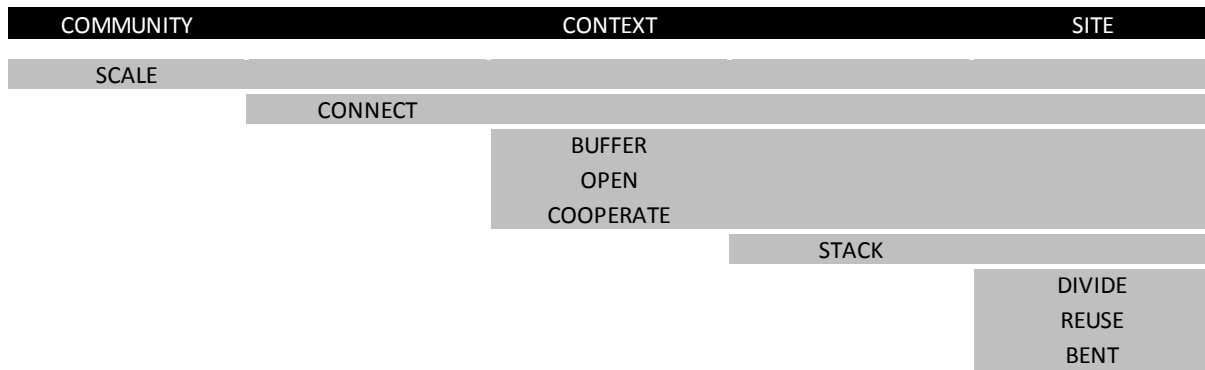


Figure 3, Organizing the design cases

The strategies are documented and described in such a way they become both an inspiration for future designs but also a tool to unravel themes and topics that are crucial in the debate on reuse.

The strategies have a pedagogic meaning in terms of countering the first reflex on transformation of the economic freckles into dwelling. Combined with the other Kameleon-tools they will influence the decision making process in municipalities.

Community

Group 1 (community) focusses on those interventions redefining the spatial relation between the economic freckle and the community. When redeveloping a new economic activity on the site, sometimes opportunities arise to inscribe the site as being part of the community instead of being an isolated and locked-of island in the community. To do so we noticed it is important to (a) give limits or *scale* down the economic activity so it balances correctly with the dwellings and public domain in the surroundings and (b) create connections so the economic freckle is opened up for pedestrians and cyclist thus giving meaning to the site besides the economic activity.

(a) Deknudt is a typical historically grown factory. Started in 1923 it grew from a small atelier to a specialized company. Because of this growth the oldest sites in a buildup environment are now abandoned in favor of a new site on an industrial zone. The historical atelier has grown over the years from east to west thus consuming the whole building block and diminishing dramatically the living qualities in the environment.



Figure 4, Scale: the original build up monolith (l) is broken up in smaller units (r)

By evaluating the build in terms of heritage, isolation, stability, renovation costs,... we came up with a proposal to split up the monolithic factory in smaller units. Each of them is no longer 'served' from the streets but from in-between open spaces to reduce the use of the

public domain by the economical function. More-over, the in between open spaces are designed in such a way the operate as a farmers market during the weekend.

(b) In some cases the redevelopment of an economic freckle has the opportunity to connect missing links in the pedestrian and cyclist network in the surrounding urban tissue. In the case of Douterloigne we noticed the development of the economic freckle could connect the creek in the south with a new playground in the north of the village. This connection becomes a new spine, linking the school, municipality centre and the church with the two green elements and thus forming an alternative for the east-west road crossing the village.



Figure 5, Connect: the development of the economic freckle connects the northern and southern part of the village

Context

Group 2 (context) deals with the direct relation between the site and its surroundings. Economic activity is too often something hidden, something being part of another world. This results (partly) in the intolerance to economic activity as described above. Unknown is unwanted. Group 2 strategies stress the importance of intermediates such as collective spaces, buffers, fringes,... They can play a role in giving limits and scale to the economic activities, organize and divide where necessary or open up possibilities in attracting secondary programs (market, playgrounds,...).

By working on the proximity and visibility we restore the contact between the context and the economic activity. This is done by (c) opening the industrial box, (d) a multiple use of the buffer and (e) stimulating cooperation between neighborhood and economic activity.

(c) Economic activity is 9 times out of 10 completely interiorized. Anonymous and cheap prefabricated concrete boxes block of all connection with the outside world. In his research, on the building, urbanity and public space Jan Gehl (Gehl, et al., 2006) discovered a strong link between the scale of the façade en the use of space. Made simple, small scale facades have a bigger contribution to urbanity when compared to large scale facades. So if we want

to increase the relation between economic activity and the urban issue, the usage of large scale blind facades is not done.

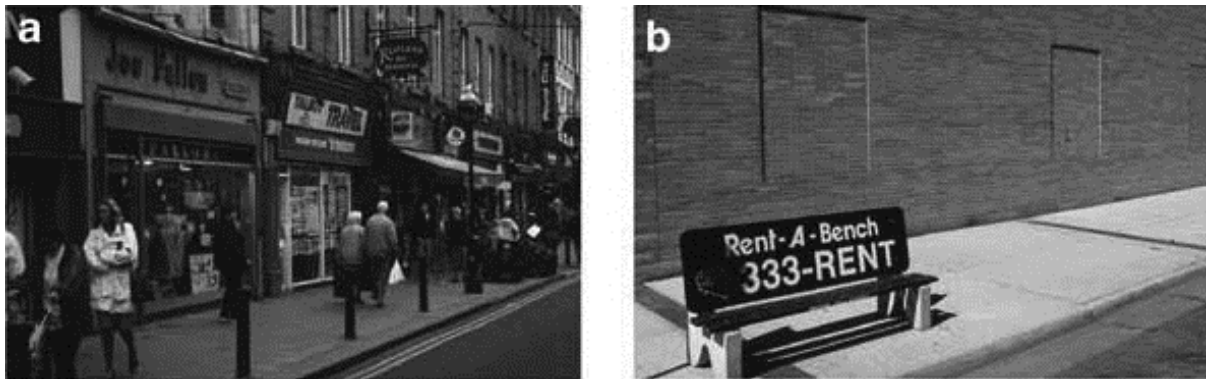


Figure 6, Jan Gehl, comparison in scale

In her inside/outside studies, Radka Vilímková (Vilímková, 2014-2015) explores different activities and their relation with the exterior. These relationships vary from a simple window to see through, an outdoor terrace or an exterior showroom. The, sometimes literally, creation of relationships increases the appreciation on the economic activity and should decrease the level of intolerance.

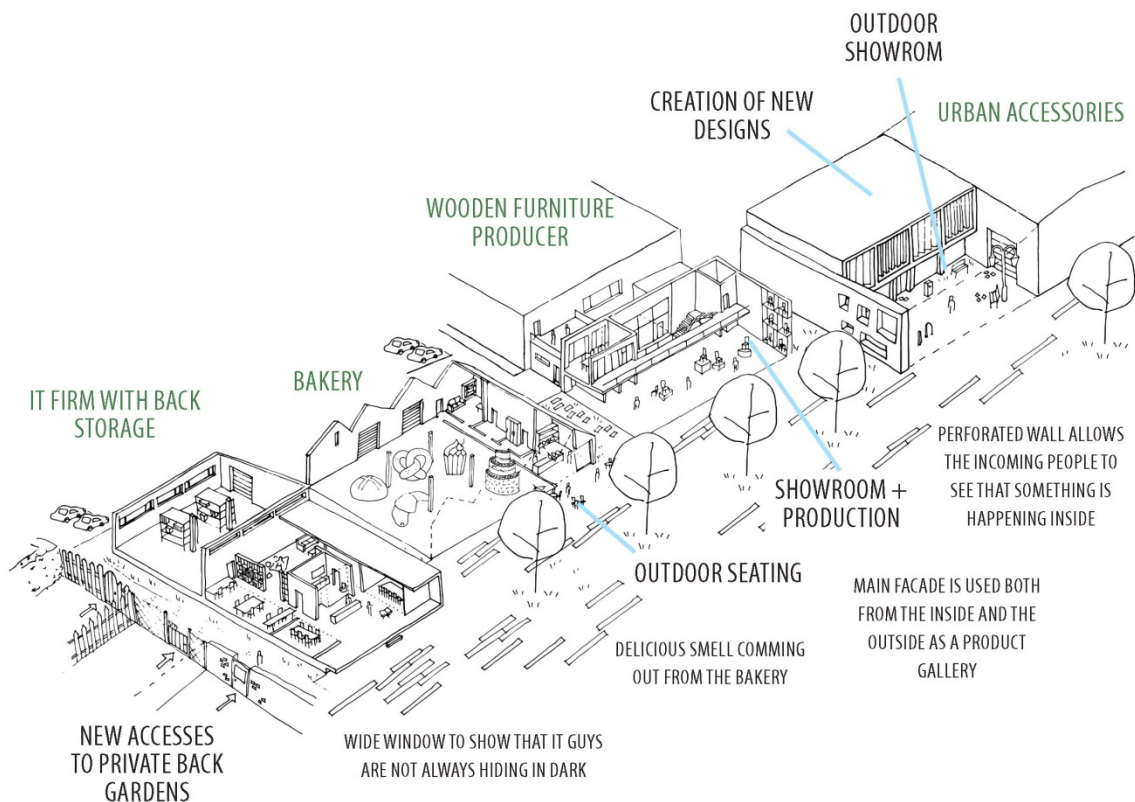


Figure 7, Study on inside/outside relations by Radka Vilímková

(d) Legislation obliges to create *buffers* between economic activities and dwelling areas. These buffers vary from 10 meters to 50 meters, depending on the kind of activity. . Different scales, different rhythms, different interests,... could cause conflict so buffers are created to absorb the friction between economic activity and dwelling.

But buffers are rarely interesting and most of the time a mono-functional 'greenish' area.

By putting in a figure, literally a fringe, between housing and working an in-between figure originates. This in-between element can be programmed so both working and dwelling can use it. The docking station being a playing ground after hours. Or the rainbuffer becoming a pond for the neighborhood. Parkings could be used for both housing and working. Just like the collective garden (Leiedal, 2014).

(e) Economic freckles or not seldom heavily build up. The absence of open space is often a reason to relocate the activity (lack of expansion possibilities) and a cause of friction with the surrounding neighborhood (no intermediate between the economic activity and dwellings). When redeveloping the economic freckle, *stacking* should be considered. By doing so, the plot is opened to introduce buffers, shared spaces and shared programs, other functions,... All these operate as an intermediate and offer an added value when redeveloping the economic freckle.

Site

Group 3 is composed by strategies who work on the level of the site itself. These interventions of course have an impact on the context but there merits are mainly located on the site. This group consist of strategies that introduce a multiple use of the public domain (f) *Share and divide*, the re-use of (parts of) the building (g) *Re-use* and benefitting from existing topographical differences on the site (h) *Bent*.

(f) As long as the economic freckle was an enclosed entity, open space could be considered pure infrastructural; a buffer, parking, road or docking bay. When redeveloping and opening the economic freckle, the infrastructure gets a new role, it becomes public domain. This public domain both acts as a *sharing* mechanism by its use for both the site and the context but simultaneously can *divide* the activity form the context (the public domain acts as a buffer). This strategy has potential when dealing with sites with a mixed program.

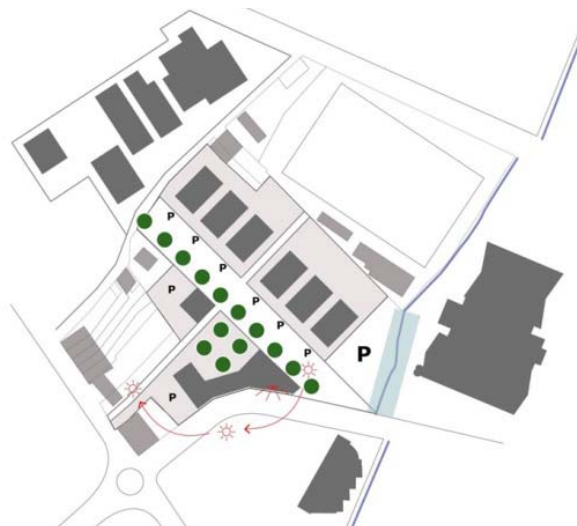


Figure 8, Share/Divide, between dwelling (S) and SME's (N) a multifunctional public space is introduced containing circulation, parking, water buffer, grass field and trees



Figure 9, Reuse: the wooden construction in this warehouse proved to be an unique feature. The site is going to be reused as a covered farmers market in the nearby future.

(g) Reuse: the buildings in economic freckles have a history. Some of them are simple concrete structures, other are interesting brick construction with unique features. When redeveloping an economic freckle, the evaluation of the existing build is a crucial element. Since the economic function is no longer production, the qualities of the build are having an increased importance. They can make the difference in the search for unique working conditions. 'A building with a history' has proven to be an asset when redeveloping.

(h) Industrial sites are often characterized by large horizontal surfaces. These were needed to ensure a horizontal production process (for instance weaving). But in a landscape that gently folds, these horizontal planes are disconnected from the surroundings. The horizontal plane easily gets under or above the surrounding ground level. When reusing these industrial sites, the horizontal surface is a benefit. It is in many situations very easy to develop a second level by using the difference between the topography and the horizontal surface.

7. Conclusion

In a context that has always been characterized by a strong mixture of working and housing the concept of zoning and division is difficult to implement. Moreover, the strict need to divide polluting industry and housing has vanished since our production methods changed and became cleaner. The strict division between working and housing has proven to be less beneficial because of a decrease in urbanity due to a mono-functional character of the urban centers and an increase in mobility, transformation of greenfield and loss of biodiversity.

To preserve the mixed character of our territory and to stimulate the re-use of economic freckles in urban tissue a trend reversal is needed. Economic freckles are too often transformed into dwelling areas due to different reasons.

By the development of different policy making tools and by testing and designing different cases, Leiedal demonstrates the potential economic freckles have. By reusing them for economical purposes both the site, context and community benefit in a direct (spatial) way. The redevelopment of these sites also contributes in the larger picture to no longer consume greenfield and fully work on reconversion of existing areas

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City Logistics Vienna

Transport challenges in urban areas within a disordered institutional framework

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Synopsis

Production moved out of cities and goods consolidation takes place mostly on green-fields at the fringe of cities. This paper examines in the context of the City of Vienna ways of both, bringing (green) logistics operations back into the city and defining opportunities for a holistic freight transport concept.

1 Summary

This paper examines possible solutions towards a CO₂-free commercial traffic in Vienna, but at the same time reveals the lack of institutional framework setting for an inclusive and efficient stakeholder-integration for the purpose of decarbonizing city logistics. The public institutions in Vienna have confidence in private initiatives to establish CO₂-free cargo transport. Still this confidence is contradicted by rising cargo transport demand to and from Vienna and extensively underlined need by hauling companies for central cargo hubs within the borders of Vienna and clear incentives for greening city logistics processes. Despite this need the city of Vienna administration and political decision makers hesitate to start establishing an overall city logistics concept for Vienna.

Results of this paper are based on a research project conducted under the co-funding of FFG (Austrian Research Promotion Agency).

2 Introduction

New opportunities by e-mobility, greening of logistics processes, industries on the basis of 3D-printing production, significantly growing e-commerce supported by just in time parcel deliveries, innovative non-motorized ways of cargo deliveries for the last mile, and cooperative cargo consolidation are just a few key fields of future transport operations within the metropolises and cities in a world of globalized goods flows. Especially in socially and environmentally sensitive but economically powerful areas of cities and towns new solutions for cargo transport are demanded. These developments offer new chances for urban brownfields and areas in conversion. Despite strong (economic) pressure on central locations in urban areas, a rethinking has started, whether residential and office use is the only sustainable way of meeting the needs of future urban growth.

These general conditions Europe and the world will face during the upcoming decades. This is the starting point of this project which has been conducted under the public call of the Austrian Research Promotion Agency (FFG-Forschungsförderungsagentur) for the support of research projects in the field of “mobility of the future”. As part of the overall objective of “How to reorganize mobility of goods?” within the urban context, the project team – Austrian Institute of Technology Ltd., Econsult Consulting Ltd., Port of Vienna Ltd. and TINA Vienna

Ltd. – has strived to identify opportunities of a public inland port in a well-connected location for future activities in city logistics. The objectives of this project study are to find out whether inter- and multimodal hubs like the port of Vienna can serve its cities as urban logistic center for a regional and local distribution hub of goods. What kind of technological and organizational measures are necessary to render such a function possible and efficient? What kind of companies is interested in such a concept?

The port of Vienna is located in close vicinity of the city center of Vienna (about 10 km), combining three main modes of transport: rail, road and inland waterway (Danube river), hence it offers various theoretical options in hosting enterprises which operate in city logistics.

The design of the project didn't pursue a demand- or supply-driven approach towards the development of concepts, but it has been based on four specific tasks for the port of Vienna in order to assess the possibility to establish city logistic operations:

- A positioning concept: how to promote the port of Vienna within the counterbalance of demand and supply for logistic services?
- An organizational concept: how and where to position city logistic services on the area of the port of Vienna?
- A functional concept: how to adapt processes of operational planning to requirements of city logistics under the consideration of using vehicles with alternative driving technologies?
- A technological concept: how to integrate the means of new technologies for port superstructure and IT-supported processes?

Essentially, for assessing future opportunities to organize last-mile transport, a first analysis of the legal, process-related and planning-related framework conditions for urban transport in Vienna has been conducted. Deduced from the overall project objective, of which a first glance at stakeholder involvement in urban transport planning has been integrated part of the elaboration, a closer look is taken to the institutional framework in Vienna within this post-project paper. The leading questions to guide this analysis are:

- Who are the key players and how can city planning support sustainable and future-robust urban freight transport solutions?
- Which mechanisms have major impact on city logistics?
- How does the city of Vienna contribute to private measures of greening logistics?

Starting from the overall content of the project mentioned above, the intra-municipal processes of Vienna are dissected for a deeper understanding on how to bring the logistic sector back into the city.

3 The Project IMPALA

3.1 Context and Setting

At the beginning of the project IMPALA (Intermodale Knotenpunkte als Urbane Logistikzentren) which serves as a trigger for my analysis of players in city logistics in Vienna, the project team needed to define certain most important terms for the topic of urban freight transport. For the purpose of this paper a few play a major role in the identification of players and stakeholders in Vienna city logistics, for instance *freight village*, *smart urban logistics* or *urban freight mobility*.

As a *freight village* we consider a concept for a central freight distribution system in which logistic providers and transport services cooperate in a geographically and access-related

convenient location. Usually areas and superstructure are leased from a central administration unit of this freight village which guaranties neutrality and open access towards independent and interested companies. Besides business-as-usual functions (e.g. commissioning and handling of goods) supplementary services (e.g. packaging, cleaning etc.) can be offered by the administration unit of the freight village or additional service providers (Malina, 2014)

Smart urban logistics is the tag for future freight transport. For the purpose of Vienna smart urban logistics is considered to be: the implementation and development of new, sustainable and efficient good distribution schemes for metropolitan agglomerations with focus onto the last mile in order to reduce overall inner-city traffic (IMPALA 2015).

Urban freight (cargo) mobility is defined as the potential of movement of persons and goods in a physical, urban space in order to change place of being. This potential of movement goes beyond the understanding of traffic which describes the actually realized movement (BMVIT 2012).

These three definitions partly contain already who to address when talking about changing conditions for goods deliveries within a city framework in order to reduce the carbon footprint of transport operations. Especially the concept of smart urban logistics is open enough to consider a variety of measures with two focuses, technology and organization.

For a clear identification of stakeholders in city logistics three sections have been identified for a closer look on how to integrate an inland port into urban freight mobility for a whole agglomeration, as well with regard to the transport chain: freight village – delivery (chain) – city/metropolis. This threefold approach combines commercial and public aspects and integrates both sides into the stakeholder analysis. The project additionally analyses international good practice examples and interweaves the results of the analysis – an overview of supporting and limiting influential factors (drivers & limits) – with statements of public and commercial stakeholders who have been interviewed with respect to city logistics as such, to planning responsibility of the public administration and to commercial operations of businesses.

An overview of drivers and limits and their interlinkage with each other can be seen in figure 1.

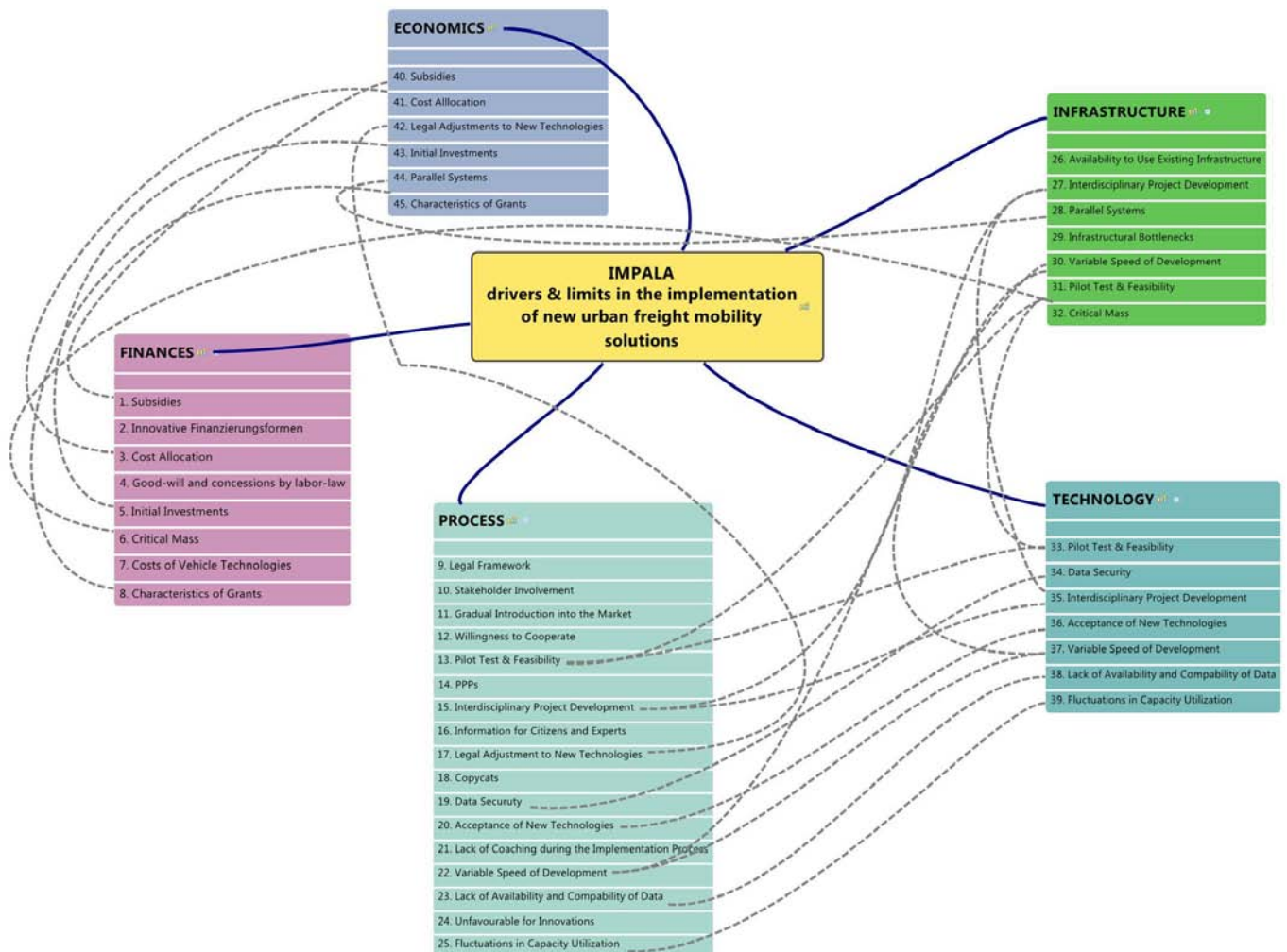


Figure 1: drivers and limits in the implementation of new urban freight solutions (IMPALA 2015)

The identification of drivers & limits for new urban freight mobility solutions, deriving from success factors of good practice examples and statements of stakeholder interviews, facilitates to have a first idea about which stakeholder plays a vital role in certain influential fields for city logistics. Some limits & drivers need to be taken into account from different perspectives; hence an impact description is provided from certain angles, as shown in the figure above in repeated entries in different fields.

The stakeholder interviews showed a broad range of opinions on necessary measures towards a coordinated freight distribution scheme. Several stakeholder statements from fields like research, politics, logistic operators and shippers anticipate already obstructions and an unclear setting of responsibilities within the city of Vienna, e.g.:

- “Well coordinated single measures shall be favoured over a holistic urban freight distribution scheme.”
- “Citizens need to become aware of their responsibility in influencing urban transport.”
- “An urban freight distribution scheme is considered a command-driven economic interference in commercial processes.”
- “Additional road infrastructure mitigates future transport bottlenecks.”
- “Urban development areas are planned without regard to local goods distribution.”
- “Flexibility in labour law regulations mitigates peak stress in urban transport systems.”
- “SME commercial traffic is the main originator for urban freight transport need.”
- “Commerce should be the driver in a future city logistic concept for the city of Vienna.”
- “Currently there is no urgent need to realize a holistic urban freight distribution scheme.”

- “External and neutral coordination of district distribution schemes is welcome.”
- “Urban spatial planning needs to take logistic processes better into account.” (IMPALA 2015)

Following these statements and first research results this paper will evolve around a deeper stakeholder analysis in chapters 4 and beyond.

3.2 Further results of IMPALA

Besides a first stakeholder screening the project IMPALA developed a catalogue of requirements which a variety of stakeholders within a city expect and wish from an urban logistics hub like the multimodal terminal port of Vienna. These requirements are structured along the categorization city – client – operator of a city logistics terminal – logistics operator. These requirements from stakeholders to stakeholders show whose responsibility is expected in case of different management assignments within city logistics. E.g. logistic operators demand public electricity charging stations in case of (legally) enforced use of electric vehicles for inner city freight transport (for instance within a limited transport zone). These statements and research results add their contribution to a first stakeholder-analysis of the institutional framework.

In a positioning concept results from all the work done so far in IMPALA - growing demand for transport services, increasing e-commerce and future challenges - are taken into account to frame a picture of future needs to city logistics. The method morphological box has been used to extract on the basis of three particular (pilot) examples, which conditions are necessary to render city logistic operations feasible from the point of view of the port of Vienna. The organizational concept has analyzed current conditions at the port and put them into the context of the demand/supply situation for logistic services in the agglomeration of Vienna. Summarizing, these two concepts showed potential for city logistic services operated from the port of Vienna despite non-ideal current conditions for warehousing and transshipment for the three scenarios (pilot examples) which were considered within IMPALA (IMPALA 2015 [2]).

Furthermore for the three scenarios technological and functional tests have been run with regard to suitability for electric vehicle use for transport operations, range of vessels and vehicles and technical feasibility of transfer of good practice examples to Vienna.

4 Stakeholders in Vienna urban freight transport

The range of interview partners in the project IMPALA has been a first attempt to identify different groups of stakeholders, important to urban freight transport in the city of Vienna. A categorization into politics and public administration, logistic operators, shippers and research institutions gives a first trajectory for stakeholder identification. Within politics and public administration, necessarily a more precise classification is needed. Directly and indirectly public administration is guided by politic and political decisions, additionally the system of Sozialpartnerschaft (social partnership) plays an important role in terms of public impact on economic operations. It comprises a cooperative check and balance relationship between social partner organizations which represent associations of employers and employees. Social partners are the Austrian federation of trade unions, Austrian chamber of labour, Austrian chamber of commerce and the Austrian chamber of agricultural businesses. Additionally other chambers and representing bodies of employers are accounted as social partners. Hence the public dimension is split into politics, public administration, lobbying groups (transport associations etc.) and social partners. Research is extended into organizational and technological research, including innovation. Taking these and one more group of important stakeholders (population) into consideration, a first picture of stakeholder categorization can be drawn (see figure 2).

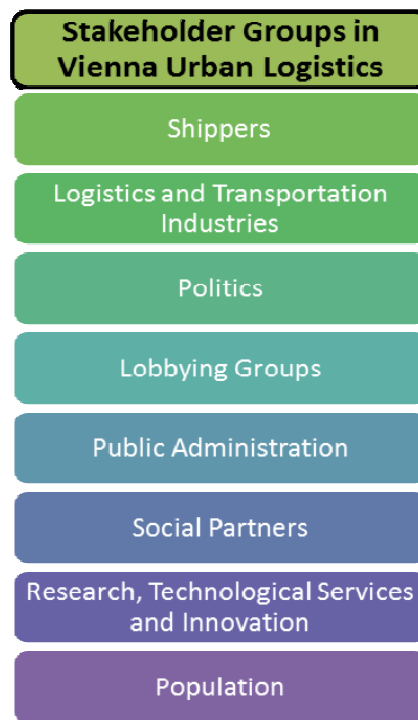


Figure 2: Stakeholder Groups in Vienna Urban Logistics (own research)

These stakeholders are embedded in the overall framework strategy of the city of Vienna, called Smart City Framework Strategy, which demands to render “by 2030 commercial traffic originating and terminating within the municipal boundaries to be largely CO₂ free” (Vienna City Administration 2014). This significantly excludes the transit freight traffic but sets ambitious goals for a medium-term time horizon under overall development paths like: reduction of emissions, optimized deploy of resources, increase of efficiency, improved integration of cargo transport, increased transparency and enforced sustainability. The EU white paper on transport sets less strong goals by halving the use of conventional carbon fuels in urban transport by 2030 (European Union 2011)

The influence of stakeholders in urban freight transport oscillates between logistic demand and logistic supply. These two poles and their detailed aspects determine ways for influencing in a multiple stakeholder effort future city logistics (Climate and Energy Funds Austria 2013).

Logistic demand is differentiated by:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Consumer • Commerce • Catering • Production | <ul style="list-style-type: none"> • Construction sites • Services and craftsmen • Maintenance & repair • Medical and care services |
|--|---|

Logistic supply is differentiated by:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Store Logistics • Courier, Express, Parcel Services • Factory traffic • Trucking services | <ul style="list-style-type: none"> • Waste management logistics • Construction material logistics • Service traffic • Special shipment (e.g. heavy cargo) |
|--|---|

transport)

By the identification of general stakeholder groups in city logistics we reveal slowly the specific stakeholder constellations in Vienna. This only includes Viennese stakeholders, although it is clear, that federal decision makers and administrative bodies, but as well European legislation have a strong impact on urban freight transport organization. In figure 3 the main stakeholders of Vienna are mentioned.

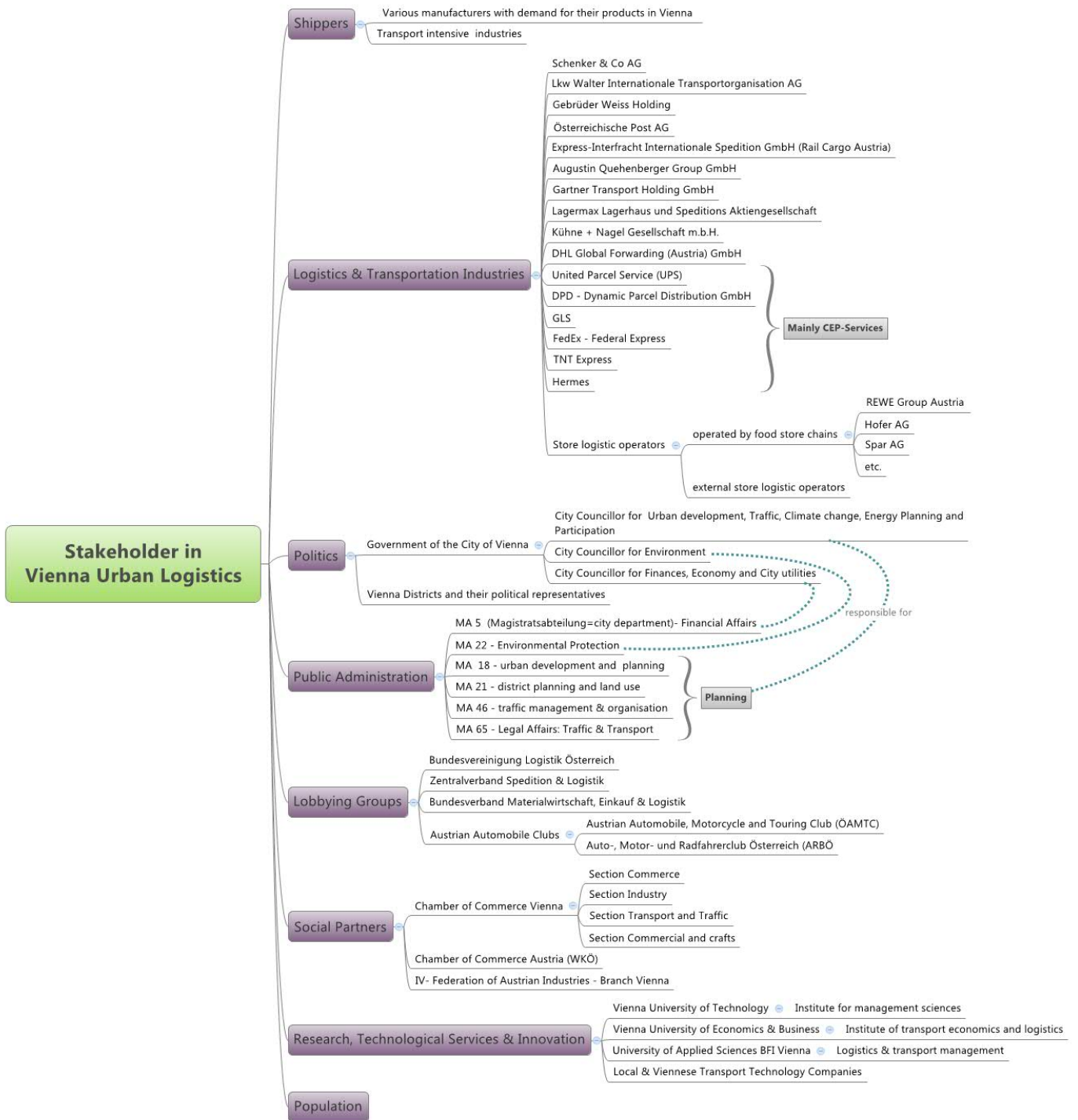


Figure 3: Stakeholder in Vienna Urban Logistics (own research).

Of all these stakeholders the regulative power is concentrated mostly with the public administration units (MA) which elaborate urban freight transport related measures and actions on the basis of policies of governing parties in Vienna. Additionally, social partners may have influential impact on city logistics concepts due to their assignment of representing sectoral organized business branches. The actual process of the (currently hypothetical) creation and coordination of a city wide city logistics concept would be accompanied by social partners and additional stakeholders with informal influence (e.g. chamber of commerce, district administration, public transport organization of Vienna), although not all of these stakeholders are mentioned in the overview chart (figure 3), due to their informal role in processes. Nevertheless, overall political determination in Vienna can finally overcome strong veto by important stakeholders without relevant legal obstructive power to fight such concepts.

Chapter 5 gives a brief overview of ways how to regulate urban freight transport in Vienna.

5 Measures for and influence on city logistics

The City of Vienna hasn't adopted an overall city logistics concept. Only single measures like limited traffic zones for good deliveries in pedestrian areas (e.g. in the inner city), nominated parking lots for cargo loading and unloading as part of the city wide public parking network, small subsidies for the purchase of an e-vehicle for cargo transport etc. are implemented. Such single measures often have the focus on managing local challenges triggered by goods deliveries but they don't pursue a strategy for the whole economic eco system metropole. Stakeholders within the city administration legitimate a missing city logistics concept with a lack of actual need. Neither the articulation of the population or the lobbying groups, nor politicians underline the need of better regulated goods distribution.

The city administration unit MA 18 – urban planning & development is responsible for strategic questions of traffic and transport development in Vienna. This MA defines – together with a variety of stakeholders – the overall development trajectories for transport in Vienna. The actual implementation and legal realization of new regulations is duty to the MA 46 – traffic management & organization. Usually such a motion (for a city logistics concept) is initialized by politicians, elaborated by the MA 18, coordinated with the stakeholder groups as described in Figure 2, decided about by the municipal parliament and implemented by the MA 46.

But both of these MA don't anticipate the topic of city logistics as important although in overall strategic goals action towards zero-emission logistics are demanded. Even when considering aspects for future city development areas, logistics, and neutral cargo consolidation centers for new settlements within the city of Vienna, or certain needs of logistic operators and CEP-services, are only minor topics within the district planning. As well the city planning doesn't save space within the city of Vienna, in order to establish a neutrally operated consolidation center. Rival functions and "more valuable" uses of space easily overcome the currently rather weak wish to render city logistics green.

Who will be then the driver for a freight transport scheme in Vienna? Is it commerce and store logistics which voluntarily transform their logistical processes towards zero emission? Will the branch of commerce demand new ways for the last mile of good distribution? Is it the local chamber of commerce as representing body of thousands of businesses both in the logistics sector, and in the commerce sector? Will the social partnership demand more regulations both for the employees being represented and the employers?

The Viennese strategy "Fachkonzept Mobilität" (development concept mobility) discusses commerce traffic but only mentions concessions for further support for production businesses in order to concentrate their logistic flows. Additionally the strategy considers stronger financial support for the purchase of e-cargo-vehicles; the multimodal hub port of Vienna shall serve together with a new rail/road terminal (Inzersdorf) as local freight village/distribution center; local distribution boxes for urban blocs shall serve as reduction

measure for CEP-service-trips; commonly used loading yards may trigger cooperation between different logistic operator; good conditions for cargo bicycles shall green the last mile transport and the introduction of an overall truck-toll on federal level for every street but not only motorways is supported by the city of Vienna (Vienna City Administration – Urban Development 2015). Still there is no holistic strategy on how to pursue the goal of greening logistics in Vienna but merely single measures.

6 Conclusions

As described in the elaboration above, the management of city logistics is rather complex in urban areas, due to a big variety of stakeholders involved but as well due to various influencing parameters like environmental sanctions, supranational agenda setting and specific local stipulations. The city of Vienna is no exception, but even presents a few unique circumstances which need to be faced by future efforts for the establishment of an urban freight scheme. These are mainly the integration of social partnership and framework strategies which need to be translated into concrete management plans for transport related policies.

The (theoretical) realization of a city logistic concept needs to integrate requirements and wishes of both transport industries and the population. Still the current status in Vienna places this topic on a minor level of the agenda of urban planning issues. This circumstance shows already that city logistics is considered to be a topic of urban - and strategic mobility planning. Additional dimensions of city logistics like economic growth and economic stimulation, diversification of business branches within a city, raise of awareness for the impact of actions of single citizens in terms of transport or legal challenges due to new ways of (private) goods transport – as operated by checkrobin.com or planned by amazon.com Inc. (Gassmann 2015) – are treated as secondary and less relevant in the discussion.

Interviews with stakeholders and the analysis of planning documents show that urban freight transport is not a burning issue for Vienna. There is potential for optimization and certain local problems (e.g. for single shopping streets or particularly congested dense areas of Vienna) severely need to be tackled for individual solutions, but there is no overall need articulated by neither the public administration and the population, nor the transport industries for a city wide concept to manage freight transport in Vienna. Chances to meet future challenges in economic development and related transport operations by setting proactive measures and concepts are ignored so far, despite the self-proclaimed goal to make transport (commercial traffic) within Vienna “largely CO₂-free by 2030” (Vienna City Administration 2014). This gap between goal setting and actual action towards achieving a change in the logistics cityscape is the main indicator for a lack of clear institutional responsibility in Vienna. Hence the disordered institutional framework for city logistics in Vienna bears responsibility of missing the chance to present the city of Vienna as a role model smart city and paragon for a city wide logistics concept.

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Intra-Urban Labor Mobility: New Perspectives for the Use of Big Data in Urban Analysis

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Abstract

In spite of the great interest in Big Data, very few studies have been carried out to assess the validity and usefulness of Big Data in social scientific research, and fewer explore methods through which existing data types can be combined with Big Data to produce richer analyses. One social scientific area in which Big Data could be very useful is that of daytime labor mobility at an intra-urban, or city, scale. Given the role that mobile telecommunications play in enabling this daytime labor mobility, and given that mobile telecommunications generate huge amounts of geolocated data then it is interesting to explore which of these data can shed light upon the new geography of economic activity.

1. Introduction

ICT, and in particular their data-gathering and geographic tracking capacities, are altering the way society functions in ways that remain little understood: behind the headlines on the privacy, surveillance, marketing and productivity advantages and dangers of the Big Data gathered through ICT, it is still unclear how it is actually impacting our daily lives.

Indeed, the very notion of Big Data remains ambiguous. On the one hand, Big Data are information, usually derived from users of particular technology or from sensors, without people being aware of the data collection. On the other hand, Big Data are a tool: their quantity, and the rapid rate at which they are refreshed, enable them to be used in feedback loops, altering the behavior (or at least the networks that underpin the behavior) in almost real time. Although data have always had this dual aspect – observation of a phenomenon and input for action – the speed and scale at which this can now be done are leading to qualitative changes in the feedback mechanism: from being a fairly slow, deliberative process, open to analysis and debate, it is becoming a real-time phenomenon guided by algorithms that are often opaque.

The opaque nature of Big Data algorithms, and of the underlying data themselves, is due to their operational, and often private, nature. These data are not gathered by statistical agencies or through surveys, which focus on a pre-conceptualized population and for which adequate sampling is important. They are usually gathered opportunistically from users of particular networks or technologies: the data are massive, can be used to influence (and, hopefully, improve) the particular function for which they are gathered, but their use in a social science context, to further understanding of social processes which are multidimensional and which extend beyond users of particular technologies, remains unclear.

One social scientific area in which Big Data could be very useful is that of daytime labor mobility at an intra-urban, or city, scale. Indeed, people- particularly in intellectual or service-oriented jobs- are increasingly able to work from a variety of locations, arrange meetings and meeting places in real time, and it is less and less realistic to suppose that they have a fixed place of work. Thus, traditional approaches to the study of employment location- using census data or establishment registries-

are decreasingly useful as ways to understand where economic activity actually takes place.

Given the role that mobile telecommunications play in enabling this daytime labor mobility, and given that mobile telecommunications generate huge amounts of geolocated data (phone users can be tracked, the intensity of data and line use can be geolocated and tracked throughout the day, twitter posts can reveal activities taking place at a particular place and time, etc.) then it is interesting to explore which of these data can shed light upon the new geography of economic activity.

This is of particular importance in cities, where the nature of traditional office space, the use of public meeting places, and the economic function of places such as restaurants and cafes, even transit, are all evolving fast in ways that remain little understood. Meanwhile, policymakers and urban planners continue to focus their attention on factors that, in light of these changes, may be less relevant.

The daytime mobility of labor has rarely been studied, since most studies of employment location rely on business surveys or census place-of-work data that essentially records the administrative location of jobs. Big Data, without replacing the need to understand where companies are physically located, open up the possibility of understanding where work - or value creation - is actually performed in cities, be it in offices, factories, cafés or subways. Although Big Data have been used to track the movement of people within cities, these analyses have not so far been able to produce policy recommendations beyond transportation, and have done even less to produce a comprehensive image of the city and its uses (Graham and Shelton 2013; Batty 2013). Big Data are a powerful lens, which, if looked through to study labor mobility, could produce a richer, more informative portrait of the city. Understanding where people work in the Information Age will not only provide new knowledge about the spaces where people actually perform their work, it will also contribute to our understanding of how the city is changing, and how planning and governance can help support the activities that are rooted in space.

The purpose of this paper is to, first, briefly outline the way in which the economy-jobs and job location in particular- have evolved over the last 30 years or so; second, to highlight the possible impacts of mobile communication technologies; and, third, to assess the extent to which Big Data can renew our understanding of labor mobility, job location and of the economic function of different places in the city.

2. Unprecedented flexibility and mobility of labor: the new role of location

By the 1970s the increasing technological prowess of developed countries had, on the one hand, enabled a massive outsourcing of manual labor to developing countries; and on the other, induced structural changes in the local economies, with changes in production processes, value-chain organization and employment conditions. Stagflation, in combination with rising markets in Asia, led to an unwinding of the production system. The shift from Fordism to Post-Fordism left in its wake large pools of unemployed and precariously employed people, and a fiscal situation that called for a structural and institutional change. Neoconservative reforms in the UK (Thatcherism) and the US (Reaganism) accelerated the rollout of neoliberalism, and, effectively, a more flexible form of production (Harvey 2007; Harvey 1989; Scott 1988). With more options for production also came a new configuration of relations, or networks, between economic agents. This required new regulatory measures, as well as new forms for industrial co-operation (Frenken, Van Oort and Verburg 2007; Maillat et al 1995). The main objective of this new configuration was the reduction of uncertainty, or risk aversion, as well a systematic

search for new resources and technological innovation (Harvey 2005). Pressures in the economy (whether cost or regulation related) were resolved by geographic arbitrage, i.e. increased mobility of capital across geographical scales, now enabled through innovation in transport and communication technologies (Howells 2005). This internationalization of capital (associated with considerable restrictions on labor mobility, and with the continued prevalence of regulation at the national scale) intensified the speed and expansion of information transfer, affecting not only the manner in which work was carried out, but also the location, or rather locations, of the production process (Dicken 2007; Sassen 2002; Sassen 1990). In turn, this allowed for rapid changes in productivity, as well as the ability to produce a variety of goods, all through the increasing computerization and externalization of the production process. The cyclical nature of the techno-economic system, as presented by Kondratieff (1925), reveals a strong link between the economy and the need to innovate and generate new demands; also, it warrants the need for an entrepreneurial mentality in the face of a crisis (Schumpeter 1942).

More and more places are able to house production processes, driving down costs (wages in particular), and increasing the need for a speedier, more efficient generation of ideas as competitive advantage shifts towards quality and uniqueness rather than cheapness. This means that labor itself needs to be more versatile, more flexible, in order to compete with labor pools elsewhere. This has led to greater uncertainty within both the global and local labor markets, as wages decline as a proportion of value-added and contractual arrangements shorten continuously. Essentially, the neoliberal economy is both a bonanza and a curse, as opportunities have never been greater, but with grave uncertainty (Piketty 2013). In order to secure jobs, workers are expected to exhibit high adaptability to systemic changes, as well as a willingness to work longer hours in various locations. Old divisions of labor are no longer apt at depicting broader trends (Malecki 2010). The very nature of the knowledge intensive economy is non-routine and unpredictable, and is not distributed equally everywhere.

3. Labor mobility and locating where value-added occurs

Labor mobility can be defined as the ability of workers to move across geographical scales (Sassen 1990), across industrial sectors (Massey 1984), as well as within firm structures (Farber 1999). Reasons for mobility include levels of education, higher income and career opportunities, but also the changing costs of labor, heightened competition, the local economic and political conditions, and personal reasons (Hübler 2015; Piketty 2013; Turok and Mykhnenko 2007). Notwithstanding the importance of assessing mobility determinants of workers so as to develop a better understanding of regional economic inequalities, this paper is concerned with the movement of labor at an inter-urban, or city, scale as a result of increased uses of ICT and as a reflection of global trends.

On the subject of the location of labor in cities, earlier studies stressed the importance of the local milieu in attracting firms and capital (Storper and Venables 2004; Krugman 1998; Porter 1998). Theories on factor endowments, or location factors, were widely accepted and translated into policies seeking to create local competitive advantage. These policies favor clusters and agglomeration economies, valuing proximity and space, as well as the presence of certain physical attributes such as infrastructure and cultural amenities. It has been important to understand the wider institutional framework, historical context, and numerous endogenous and exogenous factors, but also the level of technological progress and ICT infrastructure as elements affecting firm location. However, as advancements in the latter stirred a debate on the relevance of distance, academics called for a more in-depth

exploration of factors that make places *stickier* in an increasingly unpredictable global economy and a virtually borderless world (Huber 2012; Urry 2012; Gallaud and Torre 2005; Markusen 1996). It has become important to understand that firm location no longer depends solely on Christallerian (access to services) and Webberian (access to production inputs and markets) factors, since both of these can now be accessed from a wide variety of points in time and space.

Even if the benefits of agglomeration and physical proximity have become unclear, space remains a fundamental dimension of human activity – people, and economic activity, are necessarily situated, and necessarily involve face-to-face interactions, even if these are temporary. Thus, space continues to have a role as support for meetings, and also as support for the transport networks that enable the mobility of agents who attend these meetings (Rainie and Wellman 2012; Agrawal, Cockburn and McHale 2006). To use Castell's terminology – physical space undergirds not only the nodes, but also the flows, of a networked society (2011). Whilst this much is a given, the way in which this undergirding occurs, and the functions that take place along the networks or at the meeting places require exploration, since physical networks and physical meeting places need to be designed, built, and maintained.

4. An ecosystem for knowledge creation: the impacts of mobile communication technologies

Meanwhile, the digital divide is closing. Studies show that 85 out of 100 people have mobile phone subscriptions (Steenbruggen, Tranos and Nijkamp 2015; Miller 2010). It is important to note here, however, that despite the proliferation of mobile telecommunication technology, the level of access to Internet infrastructure varies across geographies. Accessibility to the Digital Economy remains the privilege of larger cities, most especially in the West (Tranos, Reggiani and Nijkamp 2013). Notwithstanding the uneven distribution of ICT infrastructure, technology is becoming increasingly embedded in our daily lives. In a growing number of places gaining access to the Internet is no longer as problematic, and the ability to access and control household and work appliances through the Internet is improving. Portable *smart* devices are essentially enabling individuals to carry their personal and professional networks in their pockets (Greengard 2015; Rainie and Wellman 2012). Never before has the world been this connected, and this, in turn, affects individual perceptions of time and place, presence and connectedness.

Whilst daily lives have been fairly routine and linear in the past, with established times and places for work and socializing, today the work and life balance has been disturbed, and personal and professional times and places overlap. Even waiting time has become productive as work can be carried out while in transit, or from locations other than the office. In other words, mobile communication technologies fill virtually all time slots with all sorts of activities. Documents, spreadsheets and correspondence are increasingly stored in the *cloud*, and through *smart* applications we can access them from anywhere, analyze them anywhere, edit them and send them to others via email, instant messaging, or discuss them via Skype or FaceTime. A significant portion of the population is always online, available, and with access to information shared through the Internet. We learn and create new knowledge simultaneously- online, on the go (Rainie and Wellman 2012).

People who can move and act faster are those with the most power in the contemporary global economy (Bauman 2013; Sassen 2002, 2001). Access to networks enables a speedier response to a problem or a glitch, and heightened mobility enables the expansion of current networks, the formation of new ones, and

the uncovering of new opportunities (Granovetter 1973). Mobile communication technologies allow us to be connected to various networks and build new ones at the same time (Castells 2008). Social networks such as LinkedIn, Facebook and Twitter play a dominant role in forming and maintaining these networks, and are constantly evolving to produce new markets (Zervas, Proserpio and Byers 2014). While LinkedIn and Facebook connect people, other peer-to-peer platforms such as Airbnb and LiquidSpace connect people to flexible living and workspaces. In response to losses instigated by the global crisis, these networks generated alternatives to existing service and goods providers. Airbnb, a home-sharing platform, continues to drive down short-term accommodation process, and is changing the economic function of homes and hotels in the city. In response to the sharing economy, Marriott has launched a program that provides workspaces on demand with state of the art facilities that promote collaboration and networking (Meister and Willyerd 2010).

Doreen Massey (2005) has shown how cities have become spaces of interlinked trajectories. As companies and people grow more mobile, and most of our social interactions take place in cyberspace, the ideas of a pre-arranged rendezvous become virtually obsolete; and yet, geography remains important in maintaining these networks (Stephens and Poorthuis 2014). Space is not dead, the office –and, for many jobs, the specific work location - is. The workplace has become an abstract concept: not only is there no grasp on where work¹ actually takes place but there is very little understanding of how and when existing workspaces are being used. Defining the right design for workspace of an increasingly interconnected and mobile workforce has become a challenge. It is important to re-evaluate present social and economic functions of places in cities, and better understand the factors that keep networks rooted in space.

Essentially, understanding where people live and work these days calls for new conceptualizations and new methodological approaches. And as planning theory shifts from agglomeration and density studies to notions of edgeless cities (Lang 2003), to edge cities and places in between (Garreau 2011), new studies are needed to rethink present theories and develop more accurate understandings of modern urban life.

Meanwhile, the communication and transport networks supporting daily mobility are generating vast amounts of passive data (Mayer-Schönberger and Cukier 2013). Researchers have begun to investigate ways in which this information, or Big Data, can be transformed into knowledge that could be applied to problem solving (Miller 2010). They are investing heavily in the development of data mining techniques that could lead to new knowledge (or at least to uncovering unsuspected relationships that require understanding and theorization). This could undoubtedly be a tremendous opportunity for spatial sciences. Telecommunication patterns can be used for real-time urban analysis, e-ticketing can provide new information on commuting patterns, and participatory GIS and social networks can offer insights into the new uses of space. Many are quick to claim that we are now in the position to see, perhaps for the first time, the mechanics of the global economy as well as to better understand society (including the city and its functions) (Mayer-Schönberger

¹ This does not apply to all types of work. It is higher-order service work (Reich's (1992) symbolic analysts) for whom work location has become very ambiguous – and these activities are predominantly urban, traditionally concentrated in and around the CBD. Other person-to-person service jobs sometimes require a fixed location (e.g. restaurant work), sometimes do not (e.g. hairdressers and cleaners can travel to their client's location to perform their work). Production work, on the other hand, still requires interaction with equipment that is not mobile on a daily basis.

and Cukier 2013; Tranos and Nijkamp 2013); furthermore, as individuals we have been enabled to more actively participate in political, economic and urban processes through the widespread uses of technology and the growing number of links between society and the government (Goldsmith and Crawford 2014; Townsend 2013). Notwithstanding the usefulness of Big Data to transit analysis and better participation in governance, it is difficult to assess the extent to which Big Data enable the understanding of (as opposed to tracking and real-time optimization) underlying layers of the global economy and the generation of knowledge on changes in our society and cities. Even though the global economy is dependent on ICT, and we are using these technologies to extract Big Data to help track behavior and reveal social patterns, very little is known about and how their uses are affecting urban life. Whilst certain general theoretical frameworks have been developed, (see Castells 2011, 1996; Batty 1995; Massey 2005, 1991) there has so far been limited empirical investigation and theory testing.

5. Big Data and cities

Big Data, and harnessing them in order to understand social and urban change, have not yet become mainstream research. There is much speculation about the capabilities of Big Data analysis, and actual studies have been limited to few researchers at MIT, UCL and the University of Tartu. The technical nature of Big Data is one of the main causes for the lack of new knowledge on its applicability and usefulness (Tranos and Nijkamp 2013; Miller 2010). As it is so closely tied to digital infrastructure, researchers feel that their lack of technical knowledge will limit their understanding of Big Data: indeed, much current research is focused on statistical techniques that enable the extraction of information from Big Data rather than on what Big Data can tell us about social processes and how accelerating feedback mechanisms structure and alter these processes. Many believe that once these technical issues are resolved, research using Big Data will help improve cities by offering real-time explorations of the city, providing information and helping identify patterns that could be used to predict future problems (Batty 2013). Furthermore, there is widespread belief that Big Data can support better decision-making by helping identify the right partners and form relationships, thereby enabling cities and city planners in better addressing the needs of multiple actors (Goldsmith and Crawford 2014; Townsend 2013). Policymakers are increasingly drawn to the Smart City framework without definitive proof of its actual benefits to the city (Kitchin 2013). And as Big Data become increasingly more embedded in decision-making without proper understanding of what it can or cannot do, or thorough exploration of analytical tools and methods used to extract new knowledge, cities are at risk of misinterpreting causality (Graham and Shelton 2013). Even though there are opportunities for Big Data, they must not be treated as panacea (Steenbruggen, Tranos and Nijkamp 2015). Furthermore, the complexity of urban environments demands an approach that consists of a mixture of data sources and methods.

Let us consider the benefits of Big Data. First and foremost, they are real-time, fine-grained and ubiquitous. Second, Big Data can be extracted from surveillance technology and sensors, or indirectly through the use of smart devices (records of transactions and interactions stored in the device's history), or volunteered by users through their exchanges on social media outlets such as Twitter and Facebook. Third, unlike traditional data sets, such as the census, Big Data are varied and produced frequently over wider spatial scales (Tranos and Nijkamp 2013). They promise to fill existing knowledge gaps and produce richer analyses of social and spatial phenomena given their spatial attributes. Moreover, they promise more sophisticated studies in terms of methods, models and theories (Kitchin 2013;

Graham and Shelton 2013). Finally, due to these inherent traits Big Data has the potential to reflect dynamic processes in the city.

As a result, cities are scanning Big Data for knowledge that helps deal with complex, multi-scalar- wicked - problems, and continue to invest in smart technologies to both produce and analyze Big Data (Townsend 2013; Morozov 2013). However, there is a limited body of work that addresses the effectiveness of Big Data analysis in addressing, and unraveling, this complexity. MIT SENSEable City Lab and the University of Tartu have pioneered research on the urban metabolism with the use of Call Data Records (CDR). This data provide the origin and destination of calls, as well as their timestamp, the duration of the call, and identify the status of the caller (worker, non-worker, or student). CDR promises information on population clusters, travel patterns, and temporal clusters of activities, which, when combined with demographic data and land-use plans, can produce an image of the city and how it is being used by certain groups of individuals (Jiang, Ferreira and Gonzales 2012; Jiang, González and Ferreira 2011; Becker et al 2011; Calabrese et al 2010; Ratti et al 2006). However the quality of CDR depends largely on the presence of cell towers within the desired area of study, and data is generated only when an exchange or transaction occurs. Furthermore, the data is not open source, and privacy regulations grant limited access to researchers. Also, it is very difficult to determine the type of activity or exchange (personal or professional, and in what sector) taking place through CDR alone.

Access to Big Data is one of the main challenges to researchers. Other challenges include the design, development and testing of new methods capable of handling the volume and versatility of the data. Traditional methods are no longer applicable, and researchers will increasingly need to acquire skills in coding, statistics and modeling. Companies are working hard on developing new data mining techniques, and are exploring other sources of data, such as noise and mobility sensors. Scholars question the impacts of such changes on social science on the whole. The rise of computational social science is based on the need to collect and analyze massive amounts of data on human behavior, but little is known about what all of this can actually tell us about society, politics, economy and space (Kitchin 2013). Furthermore, the drivers behind computational social sciences are private tech companies such as Google and IBM, and government surveillance agencies (Morozov 2013). If computational sciences become the exclusive domain of the tech industry, the knowledge created will address a specific set of questions and problems and ignore wider concerns, especially in terms of understanding social and urban change. Finally, without an anchor and other more static data types, Big Data are poorly adapted to uncovering change. Big Data should not go to waste, but in order for them to generate more concrete knowledge on the changing urban dynamic it would require careful matching of new and existing data types (Steenbruggen, Tranos and Nijkamp 2015; Becker et al 2011; Frias-Martinez et al 2012).

Studies on the spatio-temporal patterns of human mobility across different neighborhoods are scarce (Isaacman et al 2012). So far these studies reveal commuting distances and patterns, and identify hotspots and population density. They do not, however, indicate real-time land-use patterns, the types of activities taking place, and new economic functions of places in the city. It is difficult to ascertain the benefits of Big Data, using current methods, in tracking social and spatial changes such as increased labor mobility and changing job locations in the city. Undoubtedly, a better understanding of how, where and when people move and where they rest on a daily basis could lead to better planning policies. But adding to the equation places of work and leisure could produce new information for better urban design, infrastructure provision and environmental impact assessment.

The widespread use of ICT, namely mobile communication technologies, has signaled a point of no return: the data exists and will be used, whatever the quality of the knowledge generated from them. Notwithstanding the issues concerning privacy and surveillance, it is important to assess the benefits of data that is generated -and analyzed for other purposes already- to the creation of new knowledge on, and the understanding of, social and spatial changes occurring at the city scale. Adding to the equation the study of social networks through tags could gain insight into wider social and economic trends (Rainie and Wellman 2012) and how they play out on the ground (Castells 2011). Encouraging voluntary information (geographic and otherwise) could not only eliminate privacy concerns, but also enable bottom-up data creation to fill gaps previously generated by static, more traditional data collection and analysis. Furthermore, this would build a sense of inclusiveness on the part of the users in decision-making processes. Also, opening up Big Data to academic researchers could balance out corporate interests. Combined with census data, surveys, and voluntary geographic information, Big Data has the potential to provide an elaborate, detailed portrait of the city and its current uses. It is important to contribute to existing studies on Big Data and urban analysis, and explore more ways in which these data types can be matched to produce new knowledge on job location and inter-urban labor mobility.

6. Conclusion

Technology is undoubtedly changing the face of the city. The creation of cyberspace, or cyberspace (Batty 1997), has led to a detachment of certain, more mobile economic activity from physical space. Today, people can work at an office, or from their homes, or at a café, or from a subway or train station. It has become more difficult to pinpoint where work takes place, and, essentially, where innovation occurs as business is conducted on the go. As the idea of an office grows more abstract, urban planners need to concern themselves with the fate of fixed places that are no longer desirable, nor affordable, for firms as well as individuals.

Meanwhile, networks that enable this greater flexibility and mobility of labor, are created and supported by technologies that generate vast amounts of information, or Big Data, that could be used to better understand the dynamics of these networks and how they impact the use and configuration of space in cities. In spite of the great interest in Big Data, very few studies have been carried out to assess the validity and usefulness of Big Data in social scientific research, and fewer explore methods through which existing data types can be combined with Big Data to produce richer analyses.

The reasons for this, in addition to the general reluctance of social science researchers to engage with data types that require more specific technical skills, include inherent biases that make the data unsuitable for the analysis of population as a whole and/or for targeted subgroups, and the lack of access of Big Data to researchers as a result of strict regulations and privacy laws. And yet, the penetration of private tech companies in the field of computational social science raises concerns over the extent to which these regulations actually protect privacy, and, what is more, the extent to which the information produced reflects social and spatial trends and not just corporate interests. If Big Data remain within the realm of private companies, the debates necessary for knowledge creation will be stifled. As a result, the “knowledge” produced will be geared towards questions of efficiency and competitiveness to the exclusion of a myriad of other types of knowledge such as inequality, identity, land-use, personal mobility and other that are unrelated to markets.

Furthermore, the distinction between correlations and knowledge is an important one: at the very least, knowledge requires theory and an understanding of social mechanisms. Correlations can support and confirm theories, but can rarely produce them. However, inductively, correlations can help build new theory, which then needs verifying and testing by means that extend beyond just more correlations. Big Data present many opportunities, as well as challenges, for research, and more attention should be paid to ways in which Big Data can be paired to theory and matched to other data types to produce more concrete images of changing urban dynamics.

Inter-urban labor mobility is a reflection of wider global economic trends, and the economic function of places in the city carries implications for future planning practices. It is important to understand how Big Data, with their ability to track movement and show real-time urban mobility, can be used to grasp both of these increasingly dynamic processes.

Finally, distance is not disappearing as a basis for human organization, but the parameters that define its importance are changing. Widespread use of the Internet has altered the geographic organization of our economy, sense of identity and how we interact with places in which we live and work. At the same time it has also served to reconnect us with place, as social and economic networks have geographic properties, and are essentially rooted in space. It is important to understand these changes at a city scale, and use this information to improve planning practices and policy.

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Heterochrony in Architecture

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ABSTRACT: Architecture allows us to experience places that go beyond our own existence. As a testimony of our development and our way of inhabiting them, cities are naturally composed by different parts, built in different times. That is the paradox that makes it so interesting: cities have to stay as well as continuously advance and change. Permanence is becoming harder in this context of hurry and missing values that our society lives in and therefore our memory concepts nowadays are somehow vulnerable. But this permanency still has several ways to happen - to turn architectural heritage and obsolete industrial pieces into creative and alive places is the real challenge. Different ways of reusing existing buildings demonstrate legitimacy as far as they allow us to enjoy these buildings, use them and recognize them as transmitters of artistic, cultural and historical aspects of humanity. This heterochrony in architecture is the theme of this study, that rethinks the architectural project as an important tool for heritage preservation in most varied forms, and existing buildings as part of a bigger and continuous live process - the city.

Key words: memory; architectural heritage; architectural design; heterochrony.

1. Foreword

Life is a continuous process and in many ways our cities are a reflex of what is happening in our lives. Hurry is the global command now, and this makes a big difference in every item that composes our places and our thoughts. Everything must be done and answered in seconds, most of the things should not last for a long time - we do not have time to lose thinking about reasons in life and about ourselves. And when we think about heritage, in special architectural heritage, this hurry effect turns into a sharp edge - dangerous and harmful.

Concepts as post-modernism, cognitive capitalism and liquid life are presented to us daily, in a frenetic way and somehow they try to explain this strange sensation of lack of time. According to Françoise Choay (2006), in 1913 Giovannoni is already worried about the innovative role of the "new techniques of transport and communication", foreseeing exactly what we are living nowadays. Thomas Carlyle in the middle of the XIX century, speaking about the Industrial Revolution, says that not only the physical world was then organized by machines, but also our spiritual world, our thoughts and our sensibility. Men have turned so mechanical in their spirits as in their hands. (CHOAY,2006). Considering the hyperconnection and the virtual revolution that we are living now, if we think in the same proportions of Carlyle, how is it actually our world, our way of living, our material places, our architecture future?

Our relation to the past as to our memories is also being redefined. The attitude towards old buildings suffers in a paradoxal way too. Neglect is one of the possibilities, since we do not know the history, we do not know the buildings and their reasons, so we do not care about them. Creativity is the other side, when so many different manners are possible to rehab old buildings and enjoy them, learn with their histories and in so many different scales and approaches.

This study seeks to identify the project lines that guide this creative types of reuse in our architectural industrial heritage, making its permanence not only possible but also economically viable. There are several interesting ways to design this that can be found in many different places around the world.

How has this heterochrony (Comas, 2010) - a concept brought from biology, defined as a developmental change in the timing or rate of events, leading to changes in size and shape of species according to its needs during its evolution through time - worked out?

How is this time passage being noticed in our cities? It is a consistent worry if we consider that the perception of places also change along time. According to Lineu Castello (2007), several different places were criticized but some of them, due to the popular appropriation,

due to its real use, ended changing peoples minds and becoming recognized as nice places to inhabit.

As pre-existences are the taxable event of a project, the combination of old and new is the contemporary response to the challenge. Even more instigating is the fact that some of the old industrial buildings were not even noticed, and after rehab are in a much higher level of recognition in the cities.

2. Ways to Rework Industrial Architecture

Ruth Verde Zein (2014) says that our memory is made of "rememberings" and "forgettings". Both are fundamental for us to be healthy people living in society. We are what we remember but also what we forget. And forgetting is another kind of art - that means, an ability that can be acquired and so, improved. To forget is not a defect, is the condition for us to create new memories, new spaces, and even a better city.

How can architecture stay through time? Being updated and used permanently is one of the main answers. The mixture of different times is a very important ingredient in an architecture that uses pre-existences. The heterochrony in these projects must deal with special conflicts, for example, the ones that will exist between the *Zeitgeist* and the *Genius Loci* of that "place" that will be reused.

The concept of place, following the research of Prof. Lineu Castello (2007), varies according to the experimentation of each person in it. The perception of new places, when designed to fulfill the needs and practices of each society defines them as being places of urbanity or not. This perception can be transmitted in a visual, sensorial or informational way. A space turns into a place as long as it acquires definition and significance.

When Charles Bloszies (2012) defines historical buildings as architecture comfort food, he signalizes important aspects for preservation: their esthetic appeal, as known and with simple forms that comfort the views, as well as their participation in the city legibility. In the example below, working and living are places under the same roof (a common desire in our society nowadays). A glass box is put inside the brick shell.



Figure 1: Walden Studios, California

Françoise Bollack (2013) mentions in her book *Old Buildings New* the *as found* theory. Since Marcel Duchamp, responsible for the *ready-made* concept, the barriers between art and normal life can be eliminated. The reuse of a building in its ruin state is also possible - and is one of the highlights at the moment.

Engaged with this way of thinking appears the upcycling concept, that goes beyond recycling since it suggests to reuse materials as they are, not expending energy to rework them. A radical recycling *in situ* of a building, for example - uses what exists and gives it a new meaning. Taking as most important sustainable actions that will result in a new esthetic language.

This old deposit in Bund District in China, for example, was transformed in a luxurious hotel. The concrete carcass is kept and corten steel walls are added to it. From the interiors people can experience both old and new parts together.



Figure 2: Exterior and interior of The WaterHouse Hotel, Bund District Shanghai .

A very important item to be considered when reusing old industrial buildings is the scale that connects them to the city, making a different relation to pedestrians. According to Carlos Eduardo Comas (2011), recycling a building redevelops its function in several dimensions: symbolic, operational, spatial and technical, all together. An important sample of this kind of reuse is the SESC Pompeia in the city of São Paulo, Brazil. An old drums industry was transformed into a cultural center, allowing the community to live the place and appreciate the historical construction.



Figure 3: SESC Pompeia a great example in São Paulo, Brazil.

All these ways of manipulating the pre-existences reinforce a very important component of memory that is evolution. This evolution registers the art will of each time, the *Kunstwollen* as defined by Alöis Riegl (1903). Evolution and development are conditioned to changings. Heritage cannot be frozen in time. For some authors the best defense of an authentic historical architecture is the complement of an authentic contemporary architecture; an architecture that transforms and preserves at the same time. An architecture that transforms exactly by being recognized as part of the historical process, a time dialogue between them, not submission from one towards the other.

"Good architecture of a certain period always goes well with good architecture of any other previous period, what does not match with anything is the lack of architecture."

Lúcio Costa

The greatest deal is also to search the conversation between old and new, floating between autonomy and codependence. In a form and time speech as says Fernando Diez em Summa +128 (2013). Not to accept new, just for being new is the same as defend the past and deny contemporaneity its right to history - says already in 1903 Alöis Riegl in his book "Der Moderne Denkmalkultus".

Françoise Bollack (2013) in her book divides the reuse design strategies in five categories: *wraps, weavings, juxtapositions, parasites, insertions*.

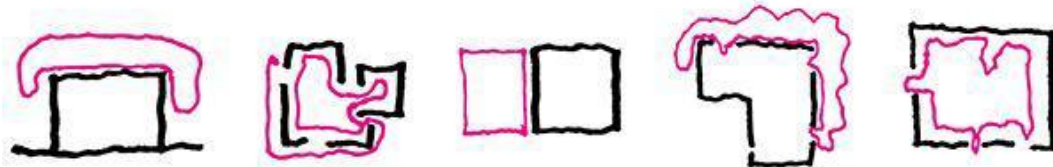


Figure 4: Categories of Intervention following Bollack in her book *Old Buildings New Forms*.

An example of insertion is an interesting case in renowned Tribeca, Nova York. A cheese industry was transformed following this strategy. Built in 1871, it became an office building through an insertion of a new structure, which is a little bit smaller than the old building, creating a porch. This allows the interior to be illuminated and the separation between them is like an interstitial place some meters wide. Just like a mask, the metal skin covers the new glass brick wall. This new wall works like a neutral background to the old, and this game between them permits an easy reading of the composition.

This way of working the new "floating" inside the old enhances the perception of what contains and what is contained. The urban scenography is kept, since the scale and the relation with the street is the same as when the building was erected.



Figura 5: Old façade as a mask in front of the new one and illuminated interiors.

Interiors are designed in a contemporary way, unmatching old levels and new ones. A grid is made to play with the strong hierarchy of the old classic facade and the new used places. A void space was left illuminating even more the longwise inside.

In the juxtaposition cases of intervention, the addition stays next to the existing building, but in an interesting way, not in an obvious conversation. The original stays completely legible and no frontiers are mixed up. The contribution of each part is done in a relatively distant way. A visual separation is clear by the use of different materials, colors, textures or even a formal abstraction - this increases the individual values of each part. This is somehow the way a case was developed in South Brazil.

3. A Case in South Brazil

In South Brazil, specifically in the city of Porto Alegre, as several port cities in the world, there is a brownfield that nowadays is turned into a focal point for real state production. It is close to historic downtown, has a flat geography, is well served by public transportation and has some interesting green areas, but is full of abandoned industrial buildings that turn it into a not well seen area. The government is trying to update the place, but their actions are not enough. Private investments are needed to obtain the aimed results in a larger scale and in a shorter period of time.

The example shown here is an old textile industry that has left the buildings empty for decades. It is not yet ready - part of it is a work in progress - but it shows already how results can come in this kind of project. It is a large scale project that involves a big area inside this District (around 36 thousand square meters). It is called Rossi-Fiateci.

The permanence of architectural industrial heritage was enabled through a strong negotiation between the interested parts. Some advantages were given by the city planning team, in order to get main buildings restored (and most important: making possible for the community to reuse them and somehow live inside them again). Permission to build sixteen storage buildings, for example (for living units and offices). With completely different use, now the historic buildings receive commercial and service businesses.



Figure 6: The heterochrony of the construction and its site.

A complex strategy of placemarketing was elaborated, selling the idea of revitalization and new places to live and work in the city. Its success was proved when after three months of launching the project, more than 50% of the units were already sold.



Figure 7: Image used in the marketing campaign of the project

This shows how *placemaking* and *placemarketing* have the power of shortening the time needed to create and to form an urban place. With a shopping center, a museum, open areas, it is possible to duplicate the aura of urbanity found in other city areas that are alive and full of people according Lineu Castello (2006). Architecture office Brasil Arquitetura (2014) which is used to work with rehabilitation projects say that the reuse of buildings must respond to the need of new uses, and also to a clear way of a spatial situation that already existed in the same place. Even more, should create new places of living together based on the local history and the contemporary values administrating situations that are around it as

different social classes, conflicts, tensions, searching for tolerance and cohabiting. This is what is promised by Rossi-Fiateci project.

Its importance is huge when we think about turning alive such a big area as the IV District. There are steps to be followed and the first one is exactly reactivating specific important points in the whole net.

After that, other points should be resolved also, then all of them should be connected to "healthy" parts and after that, they should connect themselves to the others, making a strong configuration of ways to bring people to the part of the city to be renovated.

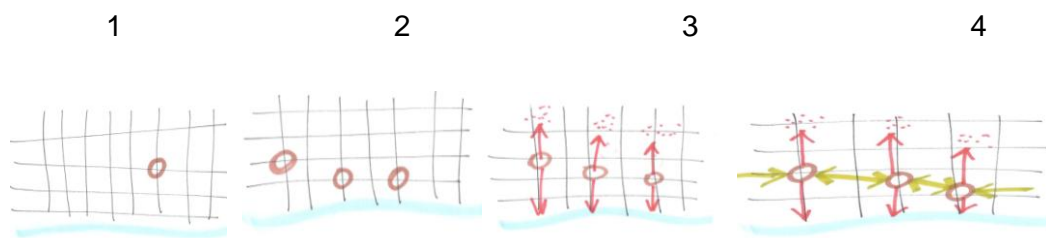


Figure 8: Diagrams from the author explaining the steps of rehabilitating an area.

A positive point is the fact that the city of Porto Alegre has a plan for establishing new central places - and that will be surely increased by this project. As mentioned by Lineu Castello (2007) in his research, the imagetic force of some elements in the city stay even when they are useless. This is how industrial buildings with their specific building constructions and chimneys work in peoples mind. These symbols have the potential to receive new elements in their images regenerating the places, bringing them back to life.

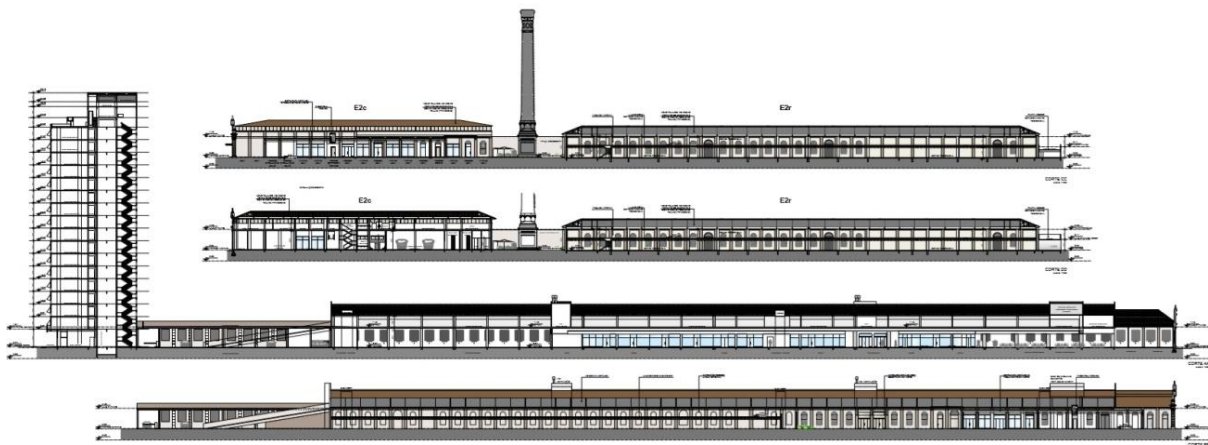


Figure 9: The image in collective memory: chimney as an important landmark in the project.

The impact that the new towers cause in the city skyline, since the major number of buildings in that area are two floor buildiconstructions, is huge. If analyzed as urban acupuncture, as part of a whole strategy based on several points that will be connected, it can produce a positive effect (Casanova and Hernandez, 2014). But part of the global project should necessarily be the improvement of open green areas in between, as well as buildings that allow visual interest for people that walk in the streets (Jan Gehl, 2013). What is seen in this project in Porto Alegre is a small conversion: the space in between the buildings will be part covered, used as internal squares and meeting point for the users. The streets around the new buildings will certainly feel the improvement of new users in their economy, but also are somehow not connected to them. Very few entrances are positioned to let the pedestrians flow across the block.

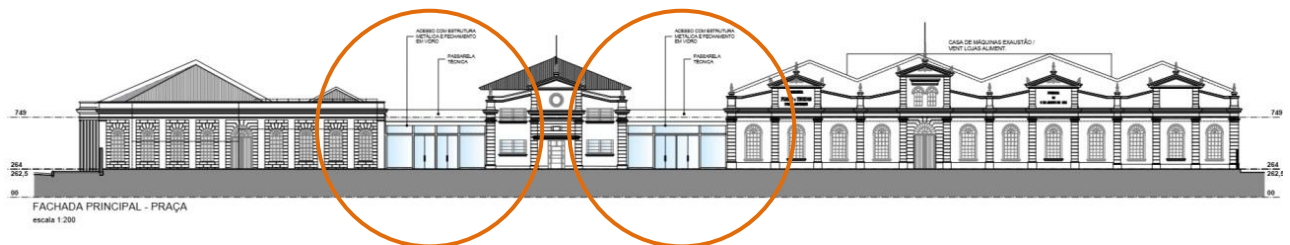


Figure 10: Internal squares created by covering the void spaces between buildings.

4. Some conclusions

It is possible to say that only the real use and its dynamics can prove the success of heritage permanence as a place in the cities. Its permanence through time is justified by being inserted in everydaylife as a place for working, enjoying, meeting and living. As a great point is the fact that old buildings perception (the perception that stays in peoples minds) works as a positive influence for the companies that reuse the buildings and have their images connected to them.

What is not recommended is the use of same strategies and plans in every city, turning the solution an "urbanalization" (Munoz, 2008) since every history and every place needs according solutions to its reused areas.

Cities in developing countries are merging from industrial era to information economy. It is urgent to define ways not to neglect the historical industrial buildings, but somehow with creative and sustainable projects bring them back to activity. Since there is a noticed need of places for the new kind of living and working, why not take them as basis for renovating but also preserving methods? Heterochrony is part of architecture itself. It is important to learn

how it can be pro development used and studied. Special connections to the whole city are primordial action to obtain success in conversion projects.

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The plight of the "Chinese-style peasant economy" in the transformation of urban industry

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Keywords: Chinese-style peasant economy, the transformation of urban industry, farmers' interest, informal economy

Abstract:

The urbanization of China has already entered a period of industrial restructuring and upgrading, whose major direction is speeding up the development of service industry. As the significant branch of service industry, rural tourism industry brought many undisputable economic benefits to Chinese villages and farmers, which accounted for nearly a third of the economic benefits of the total Chinese tourism market. However, rural tourism has brought intense impact to the "Chinese-style peasant economy" structure, which is the China's rural stable reservoir in the development of Chinese modernization. The rural tourism development pattern, including scale development, diverse planning and market-oriented, have a conflict with the "Chinese-style peasant economy", which is characterized by management dispersion, landuse fragmentation and villagers self-administration. Therefore, "Chinese-style peasant economy" structure has the features of informal economy. It has made great contribution to the transformation of the urban industry. The paper researched that how to incorporate the informal economy which plays an important role among precarious populations into the transformation of the urban industry and protect the farmer's interests. Firstly, the necessity of the "Chinese-style peasant economy" structure which is characterized by informal economy in Chinese villages was proposed. Secondly, the traditional production pattern was broken due to the non-coupling between the rural tourism and the "Chinese-style peasant economy". Therefore, the peasant lost the elastic space and flexible choice in the transformation of urban industry. Finally the responsibility of planning in protecting the "Chinese-style peasant economy" structure and incorporating the informal economy were discussed. The multiple interests should be harmonized in rural tourism by planning. In particular, farmers' interests could be guaranteed and maximized by means of clarifying the land right, protecting rural space and guiding the cooperation.

1. Introduction

Along with the rapid industrialization, China has acquired obvious achievements. But also, many problems not allow to neglect have appeared. Against the background of the global rebalancing and the re-adjust of the industrial pattern, global supply structure and demand structure have been changed profoundly. The contradiction between the strong production capacity and the limited market space is prominent, and China will face more intense competition. Therefore, China has faced up with great challenge in economic restructuring and industrial upgrading. Especially, accelerating the development of service industry is the main direction of industrial upgrading. As one of the most important branches of service industry, rural tourism is a new attempt for modern tourism extending to traditional agricultural. It is a new form of industry, which combined eco-agriculture and eco-tourism organically by the promotion of tourism. Rural tourism originated from Europe and has a history of more than 100 years. China's rural tourism sprung up in the late 20th 90's. It has played an important role in optimizing rural industrial structure, narrowing the income gap

between urban and rural areas, promoting the rural employment, driving the development of related industries, accelerating the cultural exchange between urban and rural areas, and so on. In the 21st century, rural tourism has entered a period of comprehensive development. The increasing attractions, the expanding scale, the extending distribution, all show a good momentum of development. Data show that China's rural tourism income reached 300 billion yuan in 2014, accounting for one-third of its economic benefits of the tourism market. The "first document", signed by the Central in 2015, pointed out the importance of rural tourism development for increasing farmers' income with a large space. And pledged to give full support from land, finance, banking, taxes, etc. Therefore, the development of rural tourism has become an important industrial form for increasing peasant's income.

However, the development of rural tourism is a game process among multi-stakeholder. Developers, government, farmers, tourists and other groups all want to pursue their own maximal interests in the process of rural tourism development. But in the process of the game, farmers are often in the inferior status, and their rights can't be protected properly. So, although the development of rural tourism brought great material benefits to some extent, the obtained benefits are not sustainable. Considering the reason, it is directly related to the "Chinese small-scale peasant economy" in the Chinese rural society. The "Chinese-style peasant economy" has the same characteristics, including the small scale and separate management, as the informal economy. Especially, it has not been involved in market management and urban strategy. Thus, the peasants participation in the development of rural tourism is lack of fundamental protection. Therefore, this article hopes to study based on the necessity of the "Chinese small-scale peasant economy". Then the conflict between rural tourism development and the "Chinese small-scale peasant economy" was analyzed concretely, and dissect the root causes of farmers' interests being damaged. Finally, we discussed how to use plan to dilute the conflict in the rural tourism development and incorporate the informal economy into the strategy of urban industrial transformation. Thus to protect the fundamental interests of farmers.

2. The necessity of the small-scale peasant economy

Before the industrialization process, small-scale peasant economy exists throughout the countries and regions all over the world. China is a typical small-scale peasant economy country since ancient times. Small-scale peasant economy has existed for thousands of years in the history of China, and is the economic foundation of Chinese civilization's continuation. It has experienced the transition of system, forms and features since the formation. From modern times to the founding period, small-scale peasant economy shows an overall change from closed to open. What's more, due to the impact of Chinese economic development, it presents the transition character from tradition to modern in recent years. Although "Chinese-style peasant economy" has certain common characteristics with the informal economic, and many western scholars have predicted the inevitable demise of the small-scale peasant economy. It still exist in the Chinese rural society, which has a profound impact on farmers' living and production.

2.1 The main characteristic of Chinese small-scale peasant economy

The concept of "Chinese-style peasant economy" is a long-term study by Professor He Xuefeng, which proposed to describe the agricultural business and rural livelihoods mode, structure on the basis of "semi-cultivated in the intergenerational division of labour based semi workers" in the current stage of China. In particular, with the development and urbanization of China's economy continues to accelerate, a lot of young labour force move into the city for their livelihoods from rural. They leave the countryside temporarily or permanently, making the countryside has become a "three Left groups" (stay for the elderly, women left behind, left-behind children) habitat. These groups are also left to become the

main practitioners of the rural economy at this stage. Therefore, the current peasant economy shows different from the one emphasis on family as the main production unit of the peasant economy expressed by the classical theory, but also different from ranch business model by capitalist agriculture. It performs to form a reproduction of labour power mode, based on the peasant economy family and inter-generational division.

2.1.1 Basic characteristics -- "semi-cultivated in the intergenerational division of labour based semi workers"

With China's urbanization and industrialization, more and more farmers choose rural migrant to increase the income of workers for family, in order to improve the overall level of income. For rural households, rural migrant farmers are mostly in young or middle-aged labour force. According to statistics, 80% of farmer families have the phenomenon that young children work away from home, whose parents farm in rural. This structure of "semi-cultivated in the intergenerational division of labour based semi workers" begins form national flow of rural labour since the reform and opening up in the 1980s. The earliest (1970s) appeared in the southern township enterprises. Farmers farm in busy season and work in the other time. This division formed "institutionalized half work half farm" by Professor Huang Zongzhi. Due to the rapid development of township enterprises, the policies allowing farmers to engage in trade and industry. Some labour move into the cities and move into the business. It makes the labours liberating from traditional agriculture. It improves the efficiency of agricultural production, but also improves the lives of farmer level. By the 1980s, migrant farmers began to increase, predominantly male scale. Mostly elderly, women and children are left behind. In the 21st century, the vast majority of young rural labour force have moved into the city for work or business, who become important part of the urban labour force and important means to improve the living standards of the rural population. On the other hand, after the main labour force flowing out of rural, women's farm, elderly agriculture and peasants planting operations and other forms become the main mode of food cropping. Some carry out featured planting or breeding and some elderly and women who are still strong search opportunity to do "odd jobs" to make money. They farm in busy season and work in leisure day in the towns. Or even do manual processing in the home of the operations. Such as the development of rural tourism is one of the ways to increase revenue for villagers who stay in the village.

2.1.2 Essential character -- a stable reproduction form of rural labour

Although with a large number of rural labour outflow, the phenomenon of rural hollowing tends to be serious. Production began to be done basically by old people and women in agricultural. However, the current structure of "semi-cultivated in the intergenerational division of labour based semi workers" remains a stable workforce reproduction mode. Firstly, from the "semi-farming" perspective, the household contract system is the basic agricultural management system in China, and agricultural production is the fundamental mode to maintain income and it is also the guarantee to maintain stable development of China. And with agricultural industrialization and modernization developing, labour for agriculture will be required less and less. The development of industrial diversification, rural tourism and other tertiary industries also led to increasing the added value of agriculture. The basis of agriculture development will further reinforce, and farmers can likely be achieved "income-place" increasingly, therefore staying rural farmers on agricultural production still remains great enthusiasm. Even the old people are not suitable to continue to engage in agricultural production and labour, due to the lands transfer and implementation of contracting policy, the people also can contract and transfer the lands to the other residents of the village to carry on the sustainable agricultural production. Therefore, the structure of "semi-farming" is very stable. On the other hand, from the view of "semi-working", along with the urbanization process promoting, the gap between urban and rural areas is actually still growing. In the

current situation, many rural areas cannot satisfy the demand for improved their living standards by simply engaging in agricultural production, due to tensions between people and land. Therefore, the labour force is bound to liberate from the limited arable land resources out into the city to engage in secondary and tertiary industries, which has more productive rate of return. Statistically speaking, the proportion of the structure has been rising steadily when it appears in rural since the 1980s. In the 1980s the proportion is about 20%, and the regional distribution is unbalanced, mainly in the coastal areas; In the 1990s the proportion should be about 40% or more, and the region have been all over the country; After 2000, the proportion rose to 80%, and it has reached a relatively stable maximum value. Such a high percentage may be maintain for 20 years or even more. Because, after 20 years, the parents whose children were the first of the young migrant workers out of business are too old to do farm work. And the young man's children have grown up and start migrants. When they are no longer young, they would return home to take over the farming parents. This realize the reproduction of the structure of "semi-cultivated in the intergenerational division of labour based semi workers", which is very stable.

2.1.3 *Spotlighted issues -- the small scale of Chinese-style peasant economy*

The small scale of Chinese-style peasant economy mainly shows in two aspects. Firstly, from the macro perspective, the underdeveloped Chinese agricultural modernization and the lack of technological innovation and technology promotion capability have led to a small scale of China's peasant economy and inefficiency of land management. In recent years, to improve the level of agricultural modernization and industrial development has become a great concern of the Chinese government. Since 2004, the first policy document has focused on the "three rural issues" and emphasized the issues of concerning increasing farmer's income, agricultural modernization, rural planning and construction, and social issues. Rural Tourism Development which will be discussed in this article is one of industrial development path to increase the added value of agricultural production and land management benefits.

From the micro perspective, most of the Chinese current peasant families are running small-scale production and management activities. This is mainly because the farmers' production-scale is restricted by land and capital. Compared to peasant population, China's arable land is extremely inadequate. Besides, the accumulation of farm families is limited. It is difficult for the peasants to have sufficient capital and advanced technology to expand production scale.

In addition, studies have shown that: because a variety of agricultural production factors have good divisibility, modern agriculture did not show obvious scales economy advantage within the family compared with other sectors. Therefore, farmers lack sufficient power to expand family business scale internally. Therefore, the traditional idea of "self-sufficiency" and our household land contract system have made our land management become fragmented. And this is the biggest problem faced by the Chinese Agricultural operators at present. Fragmented land management has eventually lead to excessive inputs of invalid labour, poor land management efficiency, and lower output efficiency.

2.2 *The necessity of Chinese-style peasant economy*

2.2.1 *Chinese small-scale peasant economy always ensure the agricultural income of farmers*

Although with the developing of industrialization and urbanization, more and more of the agricultural population will join into the urban population, rural industry is also gradually tend to diversify and farmers' income structure will change. But agriculture has always been the

fundamental industry of farmers. China has 800 million farmers living in rural areas, accounting for nearly 60% of China's total population. It's an important safeguard for Chinese stable and healthy development to ensure that 800 million peasants' lives. The main form of peasant economy as a traditional agricultural production to ensure the continuation of the agricultural economy, ensures the ultimate source of income for the 800 million farmers and provide sustainable basic living guarantee for them.

2.2.2 Chinese small-scale peasant economy is the ultimate protection for migrant workers returning home

With the accelerating process of urbanization, China has about one million migrant workers working in cities, become the resident population, but did not enjoy the urban population as a welfare policy should not be the domicile of the urban population in the true sense, no really integrate into the city, so that employment which 200 million people are always at risk. But this is the part of migrant workers to complete reproduction of labour power by the "semi-cultivated in the intergenerational division of labour based semi workers" structure. So that migrant workers at risk of unemployment, you can choose to return the countryside, continue to engage in agricultural production, ensure the overall income of the family. In other words, the vast majority of migrant workers did not sever ties with the countryside. As long as the current agricultural basic management systems stable, staying in the country farmers can still guarantee their life and production stability through diversification of agricultural production and industrial development path similar to rural tourism development, and they may fail to migrant farmers Workers provide a smooth passage to return home.

In addition, for the reproduction of small-scale peasant, the failure migrant workers into the city don't have to stay in the city. Compare to the average of developing countries, Chinese farmers are much more fortunate, because they can return home to work in agriculture. The so-called rights, first and foremost is the right to choose. The choice rights of farmers into the city or return reserved, is to give farmers the most basic human rights. Because the city failed farmers can choose to return home, so when migrant cannot survive in a decent city, they will choose to return home.

2.2.3 "Chinese-style peasant economy" structure is the China's rural stable reservoir in the development of Chinese modernization

Any developing countries in the development are impossible not to meet the economic, financial, social, and political aspects of the crisis that occurred in the city and its most highly developed structure. Once the urban structure of crisis, whether this country has the ability to deal with the crisis or not, has become the key to the country's modernization can be completed. Chinese urban crisis, if the centre of gravity in rural areas remained stable, the Chinese-style crisis manifested in the city, then under the stable centre of gravity of the role of the countryside, and soon stabilize. China Rural fairly stable and provide support for the city of migrant workers huge peasant economy was stable social structure where the centre of gravity of China, is one of the key for Chinese stability in any complex situation.

3 The present condition of the "Chinese-style peasant economy" in the development of rural tourism

In recent years, the development of rural tourism is increasingly prosperous. First of all, in the circumstance of the experience economy, profound changes have taken place about the idea of the consumer's consumption and the way how they consume than before : In terms of the structure of demand , while the tourism consumers focusing on product quality, we find out the increasing proportion of emotional needs among them; In terms of consumption

content, Popular tourist products are losing their advantages, consumers begin to pursue the products and services which can reveal their personalities ; In terms of the value and target , consumers have changed from paying attention to the products itself to value the feeling when accepting it; In terms of the way receiving products, consumers are willing to participate in the product design and manufacturing initiatives. Consumers are increasingly emotional, personal, perceptual, changing their core demands from the pursuit of practical to pursuing the experience. Along with the improvement of the traffic conditions and the quality of life of visitors, domestic existing hot spots become crowded, and the environmental quality of urban living people falls down. Cities and traditional sights is no longer able to provide proper and comfortable experience for visitors. While the vast country with diversity natural landscape and rich cultural connotation, acting as a major carrier to the original idyllic scenery and traditional way of life, can provide tourists with multi-level diverse experiences of visual, hearing, and further interaction. Therefore, the rural tourism development has been developing rapidly in recent years, followed with the considerable economic benefits. As too many Subject of interests are involved in the development of the rural tourism, including the government, farmers, corporations and tourists, and farmers are vulnerable groups whose interests will always be subject to a strong sense of market competition. As for the reason, it is because the "Chinese-style peasant economy" structure On behalf of farmers' management characteristic is impacted by the rural tourism development.

3.1 The characteristics of the rural tourism development

3.1.1 Multi- subject of interests participation

There are four main relative subject of interests of rural tourism development: farmers, governments, corporations and tourists. The process of the development rural tourism is actually the process of the four subject of interests pursuing their own interests maximally in the game play. Government determines the development orientation of the whole rural area, guiding rural development, strengthening the infrastructure, attracting foreign investment to build a platform to enhance regional influence by taking charge of the rural tourism planning. The development corporations of rural tourism hope to do some development activities with taking advantages of the rural land, agriculture, ecological resources to obtain maximum profits by cooperating with the government. Meanwhile tourists hope to attain their expected travel experience form the ecological environment and the rural landscape in the countryside with the cooperation projects and activities set by the government and corporations. For rural residents, the priority is to improve the quality of life, by changing the traditional mode of production through the development of rural tourism, increasing the added value of agricultural production and increasing the income of "semi-cultivated" part. Meanwhile farmers hope to improve the environment, improve infrastructure, and improve the living environment through the development of the rural tourism. Therefore, based on the demands of different subject of interests, the process of rural tourism development becomes a multi-subject's participation and game.

3.1.2 Large-scale of the development and management

Large-scale of the development and management is mainly reflected in two aspects: land resources and projects. Rural Tourism Development Project is generally based on ecological or agriculture, thus requiring a large area of land, so in order to meet the needs and benefits of large-scale operation of the project, brings out the need for rural development to integrate the existing land resources management.

Those common picking garden, organic food cultivation, leisure farms and other development projects, all need the land resources which is centralized, larger scale, and the

better ecological basis to meet the needs of project development. On the other hand, even a single project area may not need a large area of land, such as a simple farmhouse, simple handicrafts, and other specialty products for sale, but because the government vision for the positioning and development of the whole area generally requires companies and enterprises to form an industrial chain forming a sustainable driving force, therefore the scale effect among similar enterprises and the cooperation among heterogeneous enterprises and also need to be gathered on the development and operation of the project is running, to form the whole area of the scale. As used herein, select research Huaijiu road Area Rural Tourism Development Area of Fanchang County, Current situation is there already exists some picking based enterprises, but they business their own way, be independent to each other, there is no agglomeration of scale, and cannot form the entire Area core competitiveness and foreign brand.

3.1.3 Government-led, market operation

Development of rural tourism refers to the original landscape has not been carving, the beautiful natural landscape and historic folk culture and tourism with the appropriate resources and tourism products in rural areas, including the Integration and development to rural bucolic, rural architecture community, rural natural environment, traditional farming village farming, rural traditional rural folk culture tourism resources. It is the technical economic activity to meet and attract urban population come here to travel.

Therefore, as tourism development, within a certain range land, it is a comprehensive social and technical and economic activities in order to attract and reception of tourists with tourist facilities conducted training and other construction of tourism environment. Thus, the tourism development is a systematic project, mainly premised by the development of tourism, market demand-oriented, tourism resources as the core, focused on improving and enhancing the appeal tourism resources to the tourists,

Reaching around a lot to attract tourists and meet their, visit, study, entertainment, or simply relax contains a certain technical content of various needs of economic activity. Therefore, the government leading of unified planning and market demand as the leading factor is one of the important characteristics of rural tourism development.

3.2 The impact on the farmers' interests of the rural tourism development

According to the analysis of "Chinese-style peasant economy" and the characteristics of rural tourism development, it is easy to find that there are some conflicts and contradictions on the main feature. The conflicts of the characteristics will impact and even violate the different interests of farmers in different ways which includes the land rights, sustainable economic benefit and environmental benefit.

3.2.1 The landuse right

The characteristic is widespread in the peasant economy that the land management is a small scale, which conflicts with the characteristics of scale management in rural tourism development under the market economy. The conflicts and contradictions are reflected in farmers' land rights. In particular, the land is the most elementary condition for the development of rural tourism, some enterprises and developers ignore the local actual. Therefore the rural collective land is often expropriated. The resources including the land in the development of rural tourism are generally owned by villagers collectively. According to the nature and process of the rural tourism development, expropriation of land is an essential link for most of the rural tourism developments, unless it is spontaneous for farmers to run

their own range of small-scale rural tourism model. Land is the most basic factor of production and the basis of survival and development for farmers, and the land right is the farmer's most important property right. So if the farmers lose their land, they not only lose the right of management, usufruct and some disposition, but also a lot of relevant rights and interests attached to land. In the actual development of rural tourism, because the government is engaged in the profitable business activities of tourism market, it has become one of the main beneficiaries in the development of rural tourism. However, countryside and farmers have become spectators, instead of enjoying the economic benefits from rural tourism, they have to endure a series of adverse consequences. The government seized a large amount of revenue because of the wide difference between expropriation compensation and land price. As the developers, the enterprises or individuals will also grab the high profits. As a result, the landless farmers will lose much.

3.2.2 The sustainable economic benefits

Farmers in the small peasant economy have relatively free production autonomy, while the rural tourism development has the obvious market rules that it determines the direction and content by the market demand. Therefore, the independent production and the market operation have a certain conflict in the "Chinese-style peasant economy" which will affect the sustainability of the economic interests of farmers.

The limited space determines the risks when the farmers participate in the development of rural tourism. If the farmers' land is used as a rural tourism development, the agricultural production of farmers is bound to be impacted. Because the limited land cannot simultaneously meet the demands of the scale of rural tourism and agricultural production. Also, the market is always risky, the rural tourism and agricultural production have a strong seasonal and random characteristic. In the rural tourism season, farmers may obtain substantial revenue because of the successful development of rural tourism. But in the low season of tourism, farmers' incomes cannot be guaranteed, because the land has been occupied by tourism development, they have been out of agricultural production.

On the other hand, project development of rural tourism requires an accurate assessment of enterprises and need to analyse the demands of the market. Once the analysis fails, the fragile ecological space has altered substantial construction and development, its recovery will be very difficult, and it will take a very long period. Therefore, farmers will suffer greater economic losses during this process. Instead of obtaining benefits through the development of rural tourism, farmers lose their land in the construction and development. The reproduction of agricultural land is very inelastic, and the land is poor of reversible. Therefore, after the production independence of peasant economy is destroyed, the economic interests of farmers in the market operation may be only temporary, is not sustainable.

3.2.3 The environmental rights and interests

Development of rural tourism is essentially a process during the period of destroy and rebuilt. In particular, in order to obtain economic benefits from the development of rural tourism, the destructive behaviours must have done. This destroy is not a pejorative concept in the narrow sense. In the long term, destroying is the first step and prerequisite to benefit. It can seem to ignore the temporary economic losses caused by the destroying while the damage caused by destroying and the harvest are compared on the economic benefits. But from the point of view of social and ecological benefits particularly the environmental, the countryside is an area with very advantageous ecological. And some countryside also assume the functions of eco-conserving division and ecological conservation areas. Therefore, once the rural ecological environment has been destroyed by the tourism development and construction, not only the primitive rural scenery will disappear, but also the ecological value

of the countryside will reduce. It is an obvious manifestation that the farmer's living environment quality greatly diminishes. On the other hand, the rural carried rich and varied cultures and the history is long, industry modernization invasion will inevitably erase the traces of traditional culture, including traditional houses, traditional settlements and so on. And then the traditional architectural culture, neighbourhood atmosphere and long farming culture will disappear. Nowadays, the city's living environment and culture has been buried by the rapid development of urbanization and industrialization. As the last pure land of environment and cultural heritage, countryside assumes a more important and extraordinary ecological, social and historical significance.

4 The responsibility of planning-- protecting the "Chinese-style peasant economy" structure and guarantying farmers' interests

"Chinese-style peasant economy" is the production and management of Chinese farmers'. Production and life interests of farmer concentratedly reflected in the structure of "Chinese-style peasant economy". The development process of rural tourism attacks the "Chinese-style peasant economy". In fact, it attacks the structure of existing production and living of farmers. The peasant economy is not without problems, but the main features of the peasant economy still determines the necessity of the existence of it as the above analysis.

Therefore, planning as government action, should effectively slow down the impact of rural tourism development to peasant economy, to ensure the interests of farmers and to achieve maximum benefit of farmers in rural tourism development.

4.1 Large-scale of the development and management based on clarifying the landuse right

The scale operation of rural tourism development is the inevitable requirement under market economy. To protect farmers' land rights and interests as well as to follow the laws of the market competition of rural tourism development, the main way is to operate on a large scale on the basis of making clear of the land rights of farmers, the main means is a diversified land circulation form. Land circulation refers to the transfer of land use rights. Land use right transfer means farmers transfer their land management rights to other farmers or economic organization through subcontracting, transferring, investment, cooperation, lease, exchanging and some other ways. Government encourages farmers to transfer contracted land to professional investors and cooperatives, to develop the scale of operation in agriculture. Diversity land circulation promotes the appropriate scale of operation of rural land, improves the land utilization ratio and output rate; brings about the agricultural structure adjustment, improves the economic efficiency, promotes the transfer of rural labour force, increases the income of the farmers. It is conducive to agricultural technology extension and the formation and development of the agricultural industrialization management. Diversity land circulation ensure the farmers land ownership and the rights and interests in the rural tourism development.

Resulting from the comparison of various ways of land transference economic performance, and land circulation patterns which has higher degree of marketization brings greater economic performance than the lower one. However, from the comparison of the results of social performance, the result is completely different. Land circulation patterns which has relatively low degree of marketization may have a greater economic performance than the higher one. Different patterns of rural land transfer bring different transfer performance. Brought a kind of rural land transfer modes of economic performance and social performance and better than other rural land circulation patterns. Economic and social performance of one rural land circulation mode may not be better than other modes. Therefore, in the practice of

rural tourism development, the land transfer mode should select according to the characteristics of their own country, balance the economic and social benefits, select the most appropriate way of circulation, and meet the needs of the scale of operations, farmers' economic benefit and land rights.

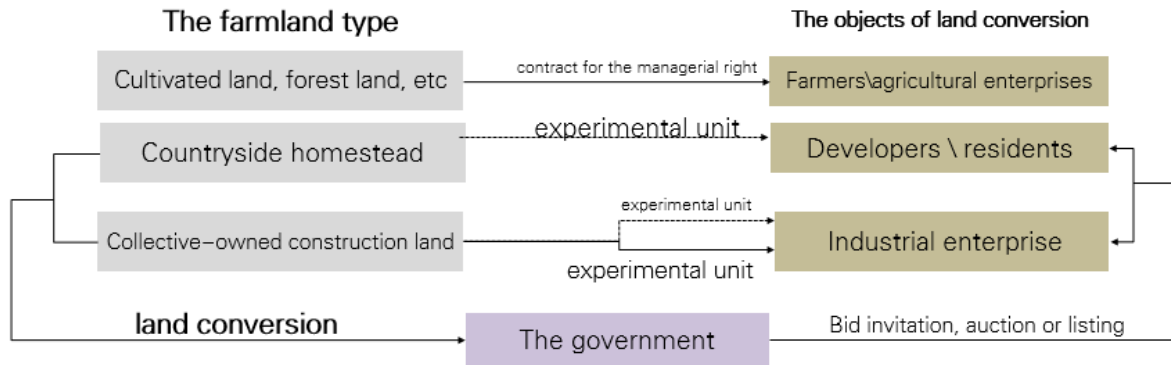


Figure 1. The sketch of land conversion route

4.2 **Build a control system dominated by respecting the original appearance to ensure environmental interests of farmers**

4.2.1 **Low-impact construction of the ecological management and control**

The ecological environment in rural areas is the focus of farmers living environmental protection. Including water, mountains, forests, lakes, farmland, biological, atmospheric resources, etc., all of them are the important elements of the rural ecological base. Firstly, urban planning has a duty on building control system about ecological management, clarifying the control limit, formulating the control regulation. Furthermore, urban planning also need to supervise behaviours of tourists and enterprises in the development of rural tourism. Especially for the enterprises, which should be controlled strictly in environmental protection standard. It is important to control the pollutant emission in countryside. The most significant issue is protecting the farmland strictly, because China's grain production is the basis of urbanization and modernization. Removable architecture can be used in construction to reduce the destruction to the farmland. It will be more flexible and sustainable. On the other hand, special planning of environmental protection is essential for rural tourism development areas. The construction of paths about infrastructure and environmental hygiene facilities should be included. In addition, the overall image in countryside should also be paid attention. For example, the environment of waterfront, lakeside, riverside, hillside, etc. . All in all, low-impact construction of the ecological management and control should be the main principle to achieve the goal which is keeping the rural original appearance and make the construction integrated with nature.

4.2.2 **The rural dwellings protection**

The significance of the rural dwellings protection lies not only in protecting farmer's human settlement, but also protecting the traditional style of rural image and residential architectural culture. It has great social significance. Including the whole village appearance, for rural residential use and transformation. For the whole village appearance as example, urban planning and design should maintain the mutually relationship between the village and natural environment in harmony. Controlling the skyline from far view of villages to emphasize the outline of mountain. Moreover, controlling the rural buildings and public buildings along the street interface, conducting regular inspections of the village environment,

and prohibiting non-standard construction practices to maintain the overall image of village. From the aspect of rural residential using, urban planning can choose the utilization patterns from the whole lease and self-management, etc., which depend on farmers how to participate in Rural Tourism. As for the transformation of rural houses, urban planners must evaluate the rural dwellings to decide to demolish, enhance or protect.

4.3 Guide benign cooperation between farmers and enterprises to ensure the sustainable economic interests of farmers

4.3.1 Cooperation and win-win mechanism

Rural tourism development involves a multi-party including government, enterprises, farmers, etc., so in the development process, development is not the only one goal. It is also significant to protect the interests of farmers in the market behaviour. Therefore, in planning practice, the appropriate business model should be chosen based on the characters of rural tourism development area to achieve the common interests of farmers, businesses and governments. Common cooperative business model including "community + company + farmers" model, "government + company + farmer tourism association + travel agency + farmer" mode, autonomous mode of operation, the overall leasing mode. "Government + corporation + travel agency + tourism association of farmer + farmer" mode, for example, Ping Ba County, An shun City, Gui Zhou Province Tian Longtunbao Cultural Village adopted this business model in sharing of benefits to avoid excessive commercialization. Government is responsible for the planning and construction of infrastructure, and optimizing the development environment. The company responsible for the management and business operation. Rural tourism association is responsible for organizing villagers to participate to opera performances, guided tours, crafts, provide accommodation and catering services, and maintenance and repair of their traditional houses. Travel agencies responsible for market development, organization source, effectively avoid the farmers in the tourism industry may cause excessive commercialization atmosphere to maximize their local cultural authenticity, so that visitors feel real and natural simple folk. The proportion of income allocated as follows: 11% government, 10% of the village committees, 14% of farmers tourism associations, travel agents, 11%, 54% of the company. Because of government intervention and management, and constantly expand the brand effect, so cooperative model has been protection policy, thus greatly ensure the stability and sustainable economic benefits for farmers.

4.3.2 Optimize the revenue structure of farmer

With the flourishing development of rural tourism, the revenue structure of the villagers presents different characteristics under the influence of the "Chinese small-scale peasant economy". It can be divided into three categories: the first category is migrant income based; the second is farming income based; the third is mainly comes from the tertiary industry developed by rural tourism. The planning should respect the existing revenue structure, as well as the living and production style under the "Chinese small-scale peasant economy". And do not break the structure of "semi-cultivated in the intergenerational division of labour based semi workers". Then further enhance and improve them according to their own characteristics. For the first category income structure, on the one hand, we should ensure the creation of the living space for the rural staying residents, especially the children's growing space. On the other hand, try to attract them to participate in the project operation by a variety of ways. Thus to increase the overall income level for them. For the second category, on the one hand, the cooperation mechanism between enterprises and farmers in agriculture can be promoted. On the other hand, the tertiary industry which has bigger degree of relation with agricultural production can be increased properly. This can really maximize the value of agricultural products, increase their income other than traditional

agricultural production, and make the rural development diversified and sustainable. For the third category, the projects of rural tourism development should be guided to form a good win-win cooperation mechanism. We should focus on the management of the market order, and effectively protect the interests of farmers in the market behaviour.

5 Conclusion

This paper researched how the "Chinese-style peasant economy" was impacted by the rapid development of rural tourism, as well as what we can do to mitigate the effects by planning. Since "Chinese-style peasant economy" stands for the Chinese farmers' production and living style, farmers' interests, including the landuse rights, the sustainable economic benefits and the environmental interests, are damaged to a variable extent. Therefore, the paper further studied the contributions of planning in guaranteeing and maximizing farmers' interests by protecting "Chinese-style peasant economy" structure in the development of rural tourism. The conclusion can be divided into three parts. Firstly, large-scale of the development and management is necessary. The point is to clarify the landuse right by diversified land conversion patterns. Secondly, urban planners should control and protect the rural space morphology effectively, including ecological environment and rural dwellings. Thus to guarantee the farmers' environmental rights and inherit the rural traditional culture. Finally, to ensure farmers' sustainable and maximized interests, benign cooperation between farmers and other stakeholders in the development of rural tourism should be guided by planners.

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Reinventing a Philippine City Through Vision 2020 Plan

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1. Introduction: *Bahala Na!*, Serendipity and Candelaria

The western idea or construct of Planning is rather opposed to how Planning is perceived in the Philippines. This iterative process is defined by John Friedman as “primarily a way of thinking about socio economic problems, [principally] oriented toward the future, is deeply concerned with the relation of goals to collective decisions and strives for comprehensiveness in policy and program.”

To some extent, *Bahala na!* defines planning in the Philippines. Literally translated, *Bahala na!* means *come whatever may*, strictly anathema to planning. It leaves the future to fate or some fatalistic view.

Philippine mythology considers “Bathala” the highest-ranking god of ancient indigenous peoples, the creator of all things. The people’s dependence on Bathala for all aspects of their lives, from agriculture, to livelihood, to marriage, to death, to war and peace, may be responsible for the **Bahala na** (also “let whatever happen”) attitude of Filipinos. It is a philosophy construed by many as one of resignation and passiveness, but also of recklessness on one hand, and even bravery, on the other, of brazen forging ahead driven by faith that Bathala will eventually be in charge.

Irony describes the planning narrative of Candelaria, the subject of this paper. It is a premiere municipality/city in a first class province of the Philippines. In essence, it is quite serendipitous that through its updated Comprehensive Land Use Plan (CLUP) – Vision 2020 – Candelaria and its major industry – desiccated coconut processing – raison d’être for its productive city status, inadvertently realize new insights and propositions to reinvent itself. Serendipity is quite a contradiction to planning which is a conscious and deliberate undertaking. Consequently, this planning “accident” or story helps illustrate that an already “working” city can, in fact, still be “reworked.” Indeed, there is always room for improvement.



Chartered in 1878 by the Spanish colonial Queen, Candelaria, relative to most Philippine *pueblos* and *ciudades*, is considered a young local government unit. From its inception, Candelaria was then, and is now, a modest but prosperous town largely defined by its agricultural lands. Eventually, at its half century of existence, its economy is characterized by the steady pace of growth of its major industry. Though young, it has been very fast-growing. It is developing dynamically in the economic sense manifested by commercial entities rising continuously in its central business district. Geographically speaking, it is in the path of

significant growth, not only in the province of Quezon, but in Region IV-A's CALABARZON, as well.

However, its current track in terms of industry growth dates back to the World War II, and is thus considered "aged." From that historical juncture, Candelaria was like a phoenix rising from the ravages of war. It then picked up the pieces and set itself up to become the "dessicated coconut capital" not only of the Philippines, but also of the world. Coconut is called the tree of life with each and every part of the tree containing proven benefits to health. Dessicated coconut is processed coconut that finds its way into a myriad of goods ranging from food to cleaning products and everything else in between. Other coconut industry players in Candelaria manufacture coconut oil.



Candelaria is in the cusp of progress and development. All necessary ingredients in terms of all possible resources -- natural and human -- are present in this landlocked town. Hazards commonly faced by majority of Philippine localities are next to non-existent in Candelaria. Growth is, and had mostly been, incremental. But the decision to make it phenomenal is likewise within easy grasp.

Vision 2020 paves the path to get to real progress and meaningful development. It can now take advantage of the many opportunities currently and widely available. Newly passed laws and innovative arrangements on public-private partnerships provide the structural support for attaining the seemingly abstract translation of the vision embodied in the Plan. Armed with this blueprint for sustainable development, Candelaria is on the right track. However, it still struggles against the prevalent cultural tendency relative to planning and its implementation where *Bahala Na!* looms large as a communal psyche.

2. Problem

Still and all, local government units are required by law to undergo a comprehensive land use planning process. Section 20 (c) of the Local Government Code (Republic Act 7160) and the National Land Use Act (Executive Order No. 72) specifically provide for this. The Local Government Code mandates it from the law's inception in 1991, initially to cover ten (10) years and then subsequent revisions every three (3) years.

Pursuant to the Local Government Code of 1991 and other pertinent laws, it is imperative to reassess the state of Candelaria’s land resources and determine whether they should be reallocated, as many developments have since then taken place that have rendered some assumptions of and policies in the last CLUP insufficient, irrelevant, or obsolete to keep up with the dynamics of the ever-changing space and time, within and outside it. The Plan does not aim to be an all-inclusive document, but rather endeavors to be as comprehensive as time and other resources allow.

For most localities, compliance to the law is wanting. Contributory to this perhaps is the lack of punitive or incentivizing mechanisms. For instance, even sans CLUP, local government units can still access their Internal Revenue Allotments which the national government has control of.

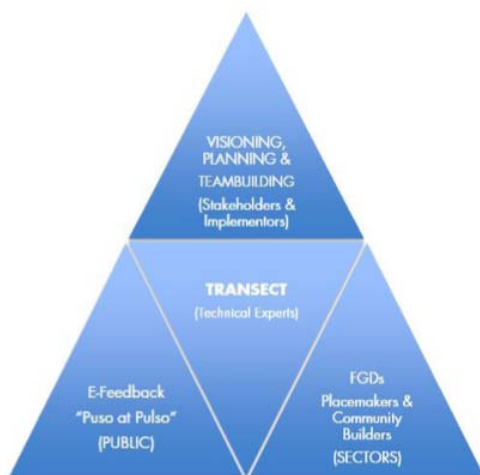
Furthermore, this could probably be due to the complexity of the planning process as prescribed by institutions managing this in the Philippines, whether deliberate or otherwise. (There are several volumes of the “enhanced” manual for the process). This imprimatur impelled Candelaria to rethink its working strategy for a new and enhanced planning policy direction.

With a three-year political term for elected officials – such term is too short for all day-to-day subsistence, operational and maintenance matters of cities and towns. And since Planning is a long and tedious process perceived not to be beneficial to all stakeholders involved and concerned, the logical issue that springs forth is “why undertake such process at all, in the first place?”

3. Background

Vision 2020, Candelaria’s updated five-year plan, endeavored to change this perception and address the challenge. Vision 2020 is Candelaria’s, land use plan. As most land use plans, it has profound effects on diversity as it presents opportunities to tailor traditional land use tools to better address reinvention or reworking requisites of cities as they diversify through multiple temporal and spatial scales and in response to calls for conservation.

With the highly participative, honest-to-goodness, planning process, the program was able to get the “buy-in” of the Local Chief Executive who previously never considered planning a priority. He eventually led the process and endeavored to sustain the gains. (Postscript – the LGU is now implementing the proposed Doables – “government center and pasalubong center”). Furthermore, it brought to fore the stakeholders’ aspirations with hope that these can meaningfully come alive.



Various approaches such as grassroots e-survey, technical transect, sectoral focused group discussions and charrette were conducted as vital components of the planning process. It combined novel, creative and unconventional approaches to maximize resources, effort and time, and to handhold the Planning Office staff and other key local government employees towards capability-building. It elucidates the planning framework, methodologies, review of current prevailing conditions, existing land use and growth trends.

“Beginning with the end in mind,” a one-on-one Visioning and Planning exercise with the local chief executive set the tone and the pace for formulating the indicative planning program.

Planning Framework by Haydee Jacklyn M. Quintana Malubay

Subsequently, the Visioning, Planning and Teambuilding exercise was held for the Executive-Legislative Agenda Team for the purpose of alignment and smooth delivery of outputs expected. This was followed by the same exercise conducted for the *Barangay* (or Village) Development Council to communicate and attain a clear understanding of total Vision and Planning processes. This is purposely intended for the eventual implementation of all programs agreed upon.

To ensure technical viability, the TRANSECT Planning tool was used to determine the feasibility and sustainability of emergent proposals of whole town divided into four locational quadrants (Northern, Southern, Western, Eastern) undertaken by technical experts. These planning specialists include: hydro specialist, geological specialist, geographer, resource management specialist, urban designers/architects and urban planners, with collaboration of Planning Office staff and other offices. The expected output for this was for proposals for general future locations and allocation of categories of land uses.

Another novel planning tool used was E-Feedback: “*Puso at Pulso ng Candelaria*” (Pulse and Heart of Candelaria) for Cross-validation on various issues, namely: (1) Institutional, (2) Social, (3) Industry, and (4) Transport and Communication. Survey tabulation and reports were published in the social media – Facebook – fan page of Candelaria, including charts and interpretation.

Focused Group Discussions engaged the various sectors, namely: (1) Institutional, (2) Social, (3) Industry, and (4) Transport and Communication. Their outputs were presented during the workshops and their reports are made part of the Plan.

Charrette, not often used in Philippine planning, iterated initial processes conducted for cross-validation amongst the different groupings of the total city-zenry. It viewed the challenges not from the vantage point of a specific sector but in its totality.

Interesting alternatives came to fore as this updated Plan embarked on a brave and courageous journey towards 2020. Equipped with participatory approaches that sought to delve into the psyche and sentiments of the cross-section of all stakeholders, and processed through technical eyes, will steer Candelaria more clearly towards what lies beyond the planning timeframe for the benefit of its future generations and rally the current generation into action.

Vision:
Model, Modernizing Municipality

COMPUTATION FOR 20% DEVELOPABLE LAND	
NORTHERN QUADRANT LAND AREA	
Munakutan 1	352.20
Munakutan 2	1,325.81
Munakutan 3	1,329.48
Munakutan 4	777.23
Munakutan 5	652.00
Total	4,436.74
	886.79 hectares or 20% developable
	88.67 hectares 10% mixed use
	87.79 hectares per brigade
COMPUTATION FOR 20% DEVELOPABLE LAND	
EASTERN QUADRANT LAND AREA	
Munakutan	811.04
Mangrove Norte	584.36
Mangrove Sur	94.26
Makabamban Norte	1,613.58
Makabamban Sur	1,121.73
Total	3,880.47
	776.09 hectares or 20% developable
	77.61 hectares 10% mixed use
	76.87 hectares per brigade
COMPUTATION FOR 20% DEVELOPABLE LAND	
WESTERN QUADRANT LAND AREA	
Buhay Norte	893.22
Buhay Sur	411.80
Banaranche West	609.36
Banaranche East	1,644.51
Mason Norte	499.58
Mason Sur	617.72
Palaunan	1,128.64
Palanga Norte	206.27
Total	5,440.08
	1,088.02 hectares or 20% developable
	108.80 hectares 10% mixed use
	107.54 hectares per brigade
COMPUTATION FOR 20% DEVELOPABLE LAND	
SOUTHERN QUADRANT LAND AREA	
Palanga Sur	531.24
San Andres	325.44
Kapuntalan	643.40
Kapuntalan 2	439.11
San Catalina Norte	1,049.05
San Catalina Sur	194.11
San Isidro	1,257.93
Total	5,179.48
	1,035.89 hectares or 20% developable
	103.59 hectares 10% mixed use
	102.78 hectares per brigade
TOTAL CANDELARIA	17,151.74

Vision and values, essentially on conservation and conservatism, philosophically underpin the comprehensive plan that stands to benefit industry, in particular, and the whole of Candelaria, in general. Mount Banahaw, a culturally significant landscape protected by law looms large in the planning process conducted. The exercise opened eyes, minds and hearts of technical participants in collaborative modes with the local stakeholders.

Pioneering concepts of a twenty-percent developable land in industry’s identified locational quadrant point to compact development that speaks loudly of sustainability amidst the cacophony of political and economic pressure to open up “new land” for sprawled growth.



4 Quadrants Division Map with the 20% Developable Land

Mixed Uses allocation for each of the twenty-five (25) barangays within the Quadrant.

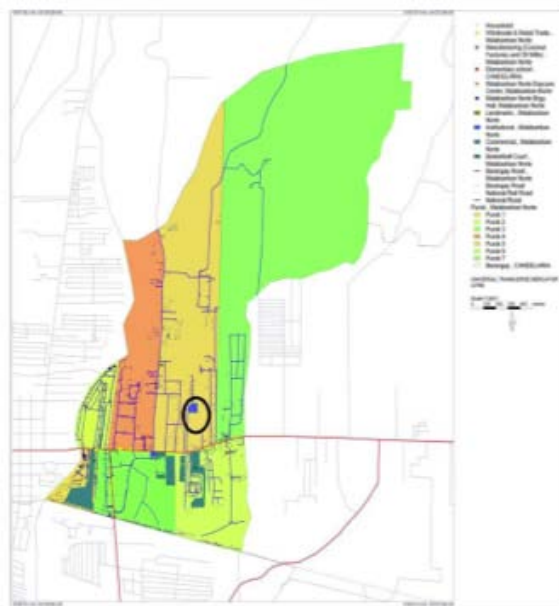
Situated in the Eastern Quadrant are industries and factories. Envisioned eventually are technoparks and cyber parks (that can straddle between Eastern and Western Quadrants), Philippine National Railways (PNR) cargo handling facilities, and employee housing in the mixed-use area of the zone.

Industry location is in the Eastern Quadrant. Barangay Malabanban Norte and Malabanban Sur are villages where the factories are found. For the figure here, the 10% Mixed Use for this Barangay is marked here by a circle where the coordinates are clearly defined.

Through charrette, participatory evaluation of spatial strategies mechanism, Multi-Nodal Urban Form was the most favored spatial strategy that brought to fore the concept of 20% developable land per quadrant and the concomitant 10% Mixed Use component.

The “20% Developable Land” concept was given birth through the value of conservation and conservative planning approach. It, likewise, identifies the 10% Mixed Use areas for every barangay in the locational quadrant. Corresponding maps were drawn to graphically point the coordinates determined through the Barangay Development Council workshop. The determination of the exact location and the computation for the 20% developable land and the 10% Mixed Use area for each quadrant and each Barangay, respectively, are indicated in the Maps and Tables as determined and agreed upon in the technical workshop participated in by all the Barangay Chairpersons.

This new striving towards growth and development branches out from a conservative and conservationist approach, springing forth from a Quezon traditional value of *arimuhan*. It entails harnessing only a small portion of land, i.e. 20% of the Quadrant therein considered “developable”, where there is locator-agglomeration, for the specified use and then reserving the substantive portion of 80% to be “opened up” or released later and much farther into the future. The updated Plan also identifies 10% of the developable 20% for



3. Findings

Candelaria undergoes contending issues familiar to all growing localities in the region and the country. Complex environmental systems are threatened by unchecked sprawl both for the population and for industry, exacerbated by the scramble for needed city revenue. Thus, it is important to put in place a system of checks and balances and oversight. All these contribute to the maturing process of this young and aspiring “model and modernizing” city with its slogan “Can Do,



and modernizing” city with its slogan “Can Do, Candelaria! Kayang-kaya (literally, “easily or very easily”).

Based on 2014 figures from the Philippine Statistics Authority, top five Philippine exports include coconut products worth \$ 1.203 billion; This rose by 19.6 percent from \$ 1.006 billion export receipts in 2013. [2]



For Candelaria, agriculture has been evidently the main source of income for most households where crops are produced for local consumption as well as export commerce.[1] The largest single production facility for desiccated coconut, with a rated capacity of 22,000 metric tons per year and operated by the Peter Paul Philippine Corporation (PPPC), is located in Barangay Pahinga Norte. The PPPC provides a constant supply of fresh premium coconuts year round, maintaining a substantial share in Candelaria’s export products. This company also maintains a coconut plantation. [3]

The level of satisfaction (or could be possibly termed “level of contentment”) had been quite high. Proof of this is that there were no definitive attempts to change what is already a working productive arrangement in terms of dessicated coconut production – this, since the post-World War II incorporation or foundation of the biggest players in the industry.

Peter Paul Philippine Corp. Foundation

On June 29, 1946, a couple of days before the Philippines gained independence from the American rule, and 48 years after freedom from Spanish domination, Peter Paul Philippine Corporation was established in Barrio Pahinga, Candelaria, Quezon Province, making the company one of the corporate forerunners of a then young nation. The plant which was built in 46 days was founded for the purpose of manufacturing desiccated coconut to supply its then parent company, Peter Paul Inc. of Naugatuck, Connecticut, USA, makers of the famous Mounds and Almond Joy chocolate bars. High quality manufacturing standards were established to ensure the reliability and consistent quality of its desiccated coconut supply to the American parent corporation.

Built in the heartland of sprawling coconut plantation in Luzon, which provide the continuous supply of fresh premium coconuts year round, the 13-hectare property is located about 100 kilometers south of the city of Manila.

Peter Paul Philippines Corporation is considered the largest private manufacturing business entity in contributing to the revenues of Candelaria with regard to its gross sales, greatly helping the municipality in their revenues. Thus, more people are engaged in the manufacture of coconut oil and desiccated products due to the increasing demand for such products. [4]

Peter Paul Philippine Corporation History, from the company website

Table 3.16. Existing Industrial Establishments by Manufacturing Process, Raw Material Input, Production & Market, 2010

NAME OF INDUSTRIAL ESTABLISHMENT	PROCESS	RAW MATERIAL		PRODUCTION			PRODUCT MARKET	
		MATERIAL	SOURCE	PRODUCT	VOLUME	VALUE	LOCAL	EXPORT
Tongson Industrial Development Corp.	Food Processing / Extracting	Coconut	Locally-Produced	Copra Cake, Oil	*	*	✓	✓
Pacific Royal Basic Foods Inc.	Food Processing / Extracting	Coconut / Copra	Locally-Produced	Desiccated Products / Soap	*	*	✓	✓
Peter Paul Phil Corp	Food Processing / Packing	Coconut / Copra	Locally-Produced	Desiccated Products / Virgin Coconut Oil / Coco Juice	*	*	✓	✓
Primex Coco Products Inc.	Food Processing	Coconut / Copra	Locally-Produced	Desiccated Products	*	*	✓	✓
Superstar Coconut Products Co. Inc. / Licup Oil Mill	Food Processing / Extracting	Coconut / Copra	Locally-Produced	Desiccated Products / Virgin Coconut Oil	*	*	✓	✓
N.E.P. Co. Inc.	Drying / Extracting	Coconut	Locally-Produced	Dried Coconut Husks	*	*	✓	✓

*No Data
Source: Municipal Planning and Development Office, Primary Survey

Table 3.17. Local Revenue and Employment of Industrial Establishments, 2009-2012

YEAR	REVENUE	EMPLOYMENT
2009	11,754,610.64	5,750
2010	14,646,673.68	6,881
2011	15,169,998.25	7,157
2012	19,423,168.73	7,549

Source: Treasurer's Office / Mayor's Office

[5] Ecoprofile of Candelaria, 2014.

This industry in Candelaria, itself, impacts the whole of Candelaria's population. By

Table 2.1. Total Population by Barangay, 1990-2010

BARANGAY	TOTAL POPULATION				
	1990	1995	2000	2007	2010
1 Buenavista East	1,549	1,511	1,630	1,904	2,206
2 Buenavista West	1,694	2,022	2,304	3,078	3,340
3 Bukal Norte	1,388	1,594	1,851	2,084	2,358
4 Bukal Sur	3,568	4,556	5,869	6,510	6,573
5 Kinatihan I	1,443	1,495	1,481	1,646	1,671
6 Kinatihan II	1,400	1,402	1,561	1,481	1,659
7 Malabanban Norte	7,348	8,586	9,711	10,099	11,446
8 Malabanban Sur	4,304	5,789	6,972	8,620	7,290
9 Mangilag Norte	1,186	1,398	1,580	1,717	2,114
10 Mangilag Sur	3,143	4,099	4,672	5,692	5,881
11 Masalukat I	2,768	3,607	4,786	5,125	6,025
12 Masalukat II	1,776	2,064	2,124	2,209	2,273
13 Masalukat III	1,081	1,079	1,092	917	1,026
14 Masalukat IV	479	586	584	531	603
15 Masalukat V	574	591	554	486	572
16 Masin Norte	3,760	4,841	5,315	5,621	6,357
17 Masin Sur	2,971	3,668	4,139	4,609	5,165
18 Mayabobo	1,148	1,309	1,423	1,802	1,814
19 Pahinga Norte	7,283	7,962	8,617	10,848	12,378
20 Pahinga Sur	1,537	1,591	2,133	1,858	2,517
21 Poblacion	7,578	7,189	6,846	6,225	6,040
22 San Andres	2,119	2,718	3,256	3,920	4,587
23 San Isidro	2,823	3,301	3,953	3,842	4,158
24 Sta. Catalina Norte	3,377	3,580	4,668	5,315	6,135
25 Sta. Catalina Sur	3,672	4,195	5,308	9,858	6,382
CANDELARIA	69,969	72,367	92,429	105,997	110,570

Source: National Statistics Office

process of deduction, Candelaria's latest population census in 2010 yielded a population of roughly 110,000 [6]. There are five (5) major desiccated coconut companies in Candelaria with employees ranging from 2,000 to 2,500.

Conservatively, if the five companies are multiplied to 2,000 employees, this would mean 10,000 multiplied to five (5) which is the average family size. This equals to 50,000. Directly therefore, the desiccated coconut industry in Candelaria impacts on almost half of Candelaria's population. Indirectly, through forward and backward linkages, in agriculture and in industry, conservatively 75% of Candelaria's population is influenced.

Population was not of this magnitude before. Migration from other towns of the province and regions of the country was traced. This is due to the availability of jobs. However, in the Focused Group Discussion (FGD) conducted with Industry, it was determined that spatial location and production processes did not change over the total period of time they were in existence.

Industry had largely located in the Eastern quadrant of Candelaria. Results of the FGD point out to the factors and reasons for this and that is the abundance of water supply

emanating from the watershed in Mount Banahaw.

It is actually serendipitous, that through the Vision 2020 plan, with the comprehensive land use planning process undertaken, Industry was apprised of the gradual depletion of water supply that was critical to their operations. Due to this vital lesson, industry-specific measures are now being undertaken to address these. Proposals to conduct reforestation is already at the program level. Had it not been for the required planning process as mandated by Philippine laws, this serendipitous finding would not have occurred into the strategic corporate processes of Industry in Candelaria.

Given the prioritization extended to this vital Candelaria industry, Vision 2020 Plan seeks to expand Industry but now focusing on those with low-water requirements, namely light industries like business process outsourcing, provision of technical support, and call centers operations. The only concession was extended to proposed bottling or food-processing industries as the backward and forward integration connected to this has a substantive multiplier effect to the remaining segment of the population not directly linked with industry.

Future programs in information technology, business process outsourcing and creative industries can be the next-level focus. The challenges identified above apply to Candelaria's planning environment as these do in most other local government units of the country.

Although most of the current dessicated coconut processing plants cater to the external economy, a balancing focus is now consciously incorporated into the Plan through integrated farming that shall primarily service the local market, the local economy.

One major emergent proposal adopted by Candelaria's *Sangguniang Bayan* (City Council) and the Executive Legislative Agenda was to pursue efforts, initially for cargo transport, for the maximization of the existing and surprisingly still intact Philippine National Railway tracks that traverse Candelaria as a strong support to the needs of Industry.



5. Conclusion

Realizations abound on lessons taught and learned collectively in the oblique and intermeshing roads of the planning process. When shared in a forum such as ISOCARP's, these can truly benefit most practitioners making honest efforts to achieve sustainability for this and the generations to come.

For one, Planning is never done in a vacuum. As the saying goes, “no man is an island.” With increasing globalization and urbanization, everything is now interconnected with everything else. This holds true for framing a comprehensive land use plan. Alignment with higher-level plans is, thus, an ideal that every plan should determine and work for.



Basic to the emergent proposals in this Plan’s agenda is to push for the “DOABLES,” projects that could immediately be launched and deemed to have high impact on revenue and employment generation. Thus, Industry and the Eastern Quadrant play a vital role. This important strategy encourages more interests from other industries as support becomes visible thereby allowing more investments to create more employment opportunities.

Key development opportunities and challenges to regional growth and development were identified during the extensive consultation process. Opportunity areas include: tourism and infrastructure, agribusiness, manufacturing and logistics, information technology, business process outsourcing, and creative industries.

All formal comprehensive land use planning initiatives must apply the “highest and best use” principle. Thus, there is transect and inventory mapping, there is survey before analysis and planning.

The principle of determining the highest and best use of the land requires assessing current uses vis-a-vis potential uses to which land can be subjected. The present use may be the highest and best. The geological viewpoint plays a pivotal role in applying this principle. Moreover, by the very geographical location of the Philippines relative to the “Pacific ring of fire,” disasters and hazards figure prominently in decisions to locate certain uses.

For Candelaria and this Plan’s process, the highest and best use of its land were of fundamental consideration. These were tackled in the key informant interviews, surveys, e-feedback, FGDs, transect, and charrette in coming up with emergent proposals and the adoption of the Plan including the prioritization for the “DOABLES.”

Water resources are also given appropriate attention in this Plan. Their assessment, determination of sufficiency of supply (quantity) and water quality are recommended. Revitalization of dried up water sources were also studied for emergent proposals that include “adoption of waterways” as industry’s manifestation of Corporate Social Responsibility.

In sum, the processes undertaken defined a shared future of the town that will proceed beyond 2020. With the right blending of policies and the appropriate collaboration between planners, policymakers, citizens, stakeholders, industry, public-private partnerships and experts can lead to the establishment of communities better prepared to face the future.

The Plan endeavored hard to stitch together all the components into a coherent ensemble to define the current nature of the Candelaria fabric. All identified factors, issues, concerns, alternatives were equally listened to and considered. The appropriateness of scales in the emergent proposals was treated in all seriousness as the value of conservatism and conservation specifically in pushing for the judicious use of the land and other resources of Candelaria acted as the guiding force.

In undergoing the reiterative processes to formulate the CLUP, all participants, from the e-team (external, i.e. the various technical specialists) and the i-team (internal, i.e. the Mayor, the Executive Legislative Agenda, all participants/stakeholders learned in the two-way processes all throughout. Most important was the cross-validation that took place in every aspect of the Plan formulation.

Despite the myriad and simultaneous developments identified for the Region where Candelaria belongs, this Plan advises to take these at a moderate pace, and not to rush head on, aggressively. In the story of the “turtle and the hare” the one that acts with prudence, and with a PLAN, wins in the end.

Vision 2020 Candelaria CLUP is a very forgiving plan. It endeavors to overlook the misplacement of locators and to make natural shifts and transition towards the ideal state envisioned for the year 2020 and beyond. It recognizes that the town is evolving.

The quadrants, even visually speaking, manifests a strong balancing of the various land use policy purposes, i.e. setting aside for protection, production, settlement and infrastructure zones.

All the processes were undertaken in order to create an urban place that makes sense to the people who will live, learn, work and play in Candelaria.

This “sense of place” is the embodiment of the musings that most people in the e-feedback survey and in the key informant interviews mentioned when they describe a neighborhood or town in which they would like to live.

There is that aspiration for Candelaria to continue to have a desirable, high quality of life; this process was undertaken to make sure that it turns out that way. Without this initiative, this abstract concept of “sense of place” would probably be diminished.

The future is here now, very quickly closing in Candelaria and its people. There is thus the need to work harder on the short-term decisions guided by Vision 2020 to achieve the state envisioned for the long haul - a future that conserves land for balanced development of all of Providence’s creation in the total Candelaria ecosystem.



Endnotes:

[1] Ecoprofile of Candelaria 2014, p.98

[2] Top Five Philippine Exports, 2014, The Philippine Statistics Authority.

[3] Ecoprofile of Candelaria 2014, p.103

[4] Ecoprofile of Candelaria 2014, p.113

[5] Ecoprofile of Candelaria 2014.

[6] Ecoprofile of Candelaria 2014.

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A feasibility study for a Technological Park undertaken in 2011 by the Municipality of Falconara Marittima, province of Ancona-Italy

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1. Introduction

In the past few years, the Marche Regional Authority has been involved in the issue concerning the recovery of abandoned productive sites.

The regional legislation on town planning has developed a series of tools and regulations to promote the renewal and redevelopment of these abandoned sites as part of a strategy for the competitiveness and the local territory.

These sites often have abandoned industrial areas, in other case there are abandoned barracks or railway parks which are rarely used.

These areas are owned by entities which have different needs with respect to a possible re-adaptation and promotion of the property.

The Municipality of Falconara Marittima, based on the most updated legislation of the Marche Regional Authority and on the directives of the Master Plan Piano Regolatore Generale PRG dated 2003, decided to carry out a feasibility study in 2011 focusing on an area of 160 hectares that comprises the small hamlet of Villanova.



Figure 1: Location of the project of a Technological Park near the regional airport Raffaello Sanzio, Municipality of Falconara

This area borders the railway line to Rome eastward, it borders the regional airport Raffaello Sanzio southward, the small hamlet of Fiumesino westward and the API oil refinery as well as the railway station of Italian Railway Network RFI located along the coastline.

2. The area which is subject of study

This area is located at the point where the Adriatic infrastructural strip joins the infrastructural strip which goes from the coast through the Esino valley and the Apennines to reach the Tevere valley and connect to Rome. These two infrastructural strips comprise a national road, a highway and a railway line.

The area shows many different functions which include residential areas in Villanova and Fiumesino, production activities and services together with several infrastructures. In this area there are also two railway parks owned by Italian Railway Network RFI, which have been rarely used in the past few years. It is worth mentioning the presence of a purification plant for waste water of Vallechiara, not far from the former Saracini Barracks.

The central position and strategic importance of the area have contributed to the construction, since the 19th century, of infrastructures and military buildings and production plants. As a consequence, the urban landscape is now very complex.

Among these buildings we mention the airport built in the 1920s and the Saracini Barracks abandoned about fifteen years ago. After the Second World War, the construction of an important private refinery, owned by Anonima Petroli Italiana API, was started together with related maritime infrastructures including a wharf for tankers and then the docking on an offshore platform, which have been connected to risks related to the storage and processing of oil products. The airport, whose landing and take-off strip is above Villanova and the refinery, as well as the current crossing of the refinery by the railway line area are risk factors.

It is clear that this area today cannot fully play its very important role based on its geographic location and infrastructures as well as territorial resources. This is due to several evident factors: the excessive presence of different functions, the age and inadequacy of many infrastructures and public spaces, the critical relations between polluting production activities with a high risk of environmental accidents and other functions.

There are serious problems concerning the presence of some polluted areas that require expensive reclamation works.



Figure 2: Photograph of the area involved in the project of a Technological Park in Falconara Marittima



Figure 3: The former Saracini Barracks
(photo 1)



Figure 4: The hamlet of Villanova and the railway
(photo 2)

3. Policies and objectives set by the Municipal Administration

The approach of the feasibility study made reference to the elements contained in the Resolution of the City Council of Falconara no. 7 dated 3 March 2010 “Politiche, obiettivi generali, specifici e azioni da conseguire mediante Variante Generale al PRG” Policies, general and specific objectives and actions to be implemented through General Modification to the Master Plan PRG.

This document shows that the three “Aree a Progetto Unitario” Single Project Areas named APU1, APU2 and APU3 and identified by the Master Plan PRG in 2003 within the municipal territory could still be considered in 2011 as areas “...having potential to become very important centres of redevelopment and development, which can support the role of the city as a hub...”

The area which is subject of Study includes the area APU2. The Municipal Administration decided to delete the API refinery from this area.

Moreover, the three different Single Project Areas defined by the Master Plan PRG “...represent an important opportunity within the vast area to enhance competitiveness, improve the system framework and promote suitable territorial marketing ...”

It is clear that the Municipal Administration considers these three APU as territorial resources that can play an important role, by taking suitable actions to change them, not only for the Municipality of Falconara but also for a wider area defined as the Lower Esino Valley.

Meaningful infrastructural works that have recently completed or that will be completed in the short term in the Low Esino Valley and near the Municipality of Falconara are elements of a logistic platform at national level that may allow these areas to play a more important role in Central Italy. This evaluation is based on the development prospects outlined by the Ministry of Infrastructures and Transport MIT-DICOTER Dipartimento Programmazione Coordinamento Sviluppo Territorio in 2007.

4. Identified planning solution

The objective of this feasibility study is not related to the category of an urban architecture project mainly focused on the morphological characteristics of the built spaces. The objective is to implement a preliminary project for a complex area, which requires an in-depth analysis of the situation in order to outline a project that can effectively be implemented to re-adapt and promote the existing area.

The analysis of the whole area of focus has outlined a project of urban redevelopment in areas which do not carry out their functions anymore or underused areas. Moreover, they do not show an excessive sub-division of properties.

The four identified areas can promote a redevelopment plan which:

- is able to meet some fundamental objectives for the development of the urban system in Falconara;
- can promote opportunities existing within the Municipality of Falconara. This can be achieved by enhancing infrastructures and increasing external business due to a project of a new railway bypass which will increase the speed of connections between the Esino valley and northern Italy. There will also be a connection with new railway freight station at the new interport in Jesi.

These four areas which cover a total surface of 32.4 hectares are:

- area of the former Saracini Barracks, which does not show any problems in terms of reclamation. It is currently managed by the Public Property Agency and has an extension of 8.7 hectares. Between the former barracks and the residential buildings in Fiumesino hamlet there are small facilities that host bars in front of the Flaminia national road and an abandoned hotel called Hotel Internazionale.
- Seaside railway yard Scalo a mare, which together with the workshops Ex Officine Squadra Rialzo has a surface of 4.6 hectares. The railway area borders the coastline and belongs to the state maritime property but has been abandoned for some years. It has pollution problems which required specific reclamation measures.



Figure 5: The coastline in front of Villanova hamlet, Municipality of Falconara (photo 3)

- area Ex Antonelli located between the old track of the Flaminia national road, Monti e Tognetti street and the hamlet of Villanova. It has a surface of 1.1 hectares and belongs to the Municipality. It has pollution-related problems.
- area between the viaduct of the variant to the Flaminia national road and the route of the old national road. The area covers a surface of 11.8 hectares and has a second railway yard of Italian Railway Network RFI called Scalo Squadra Ponti, which might be no more used when the new railway yard built close to the autoport in Jesi starts to be operative. Near the existing railway yard of Italian Railway Network RFI called Scalo Squadra Ponti one of the two lines of the new railway bypass will pass through. Moreover there are large areas owned by private people that need specific reclamation because of pollution.

The outlined redevelopment project includes the railway bypass and is divided into three fundamental elements: the Technological Park, the Seaside Hamlet and the area called Ex Antonelli which is a municipal property and will be used to offer public services.

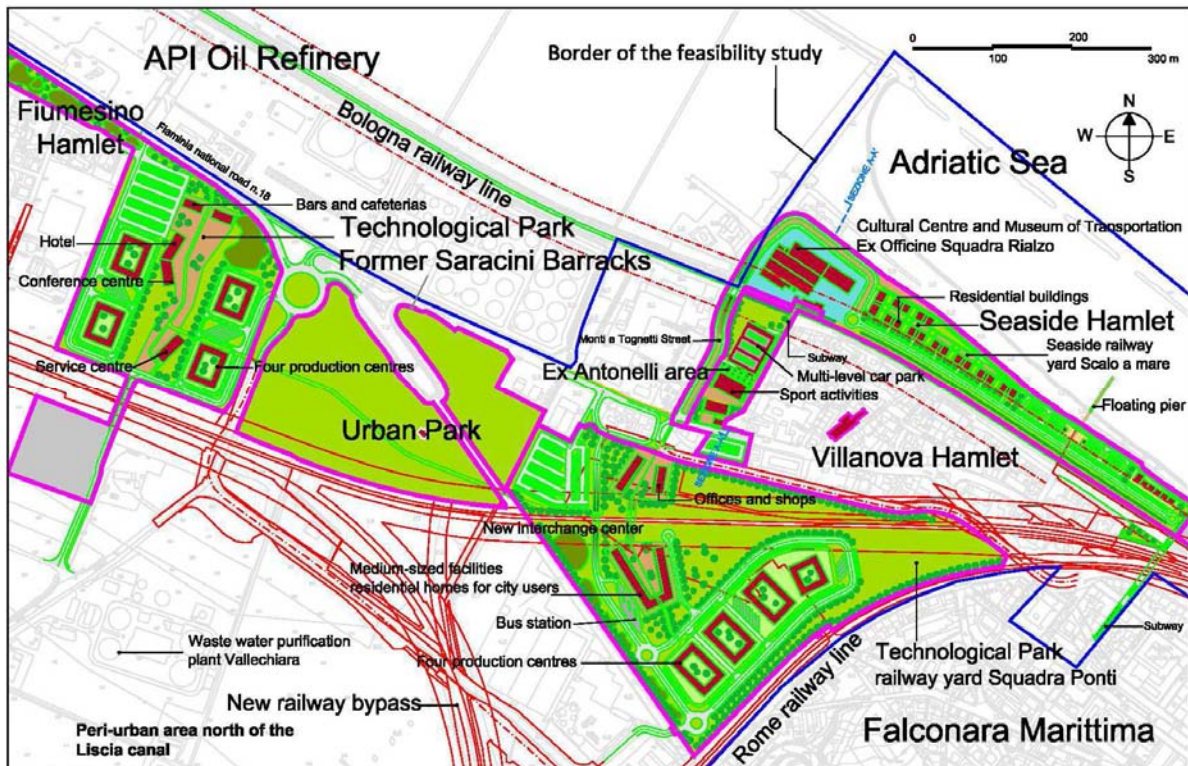
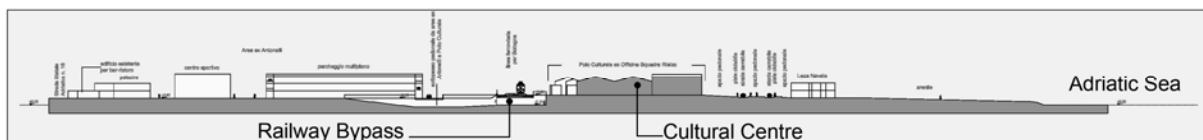


Figure 6: The Project of a Technological Park and highlighted in red the project of railway bypass

These interventions have been divided into two implementation steps:

- first step: implementation of interventions in the area of the former Saracini Barracks, in the City Park and in the area Ex Antonelli as well as in the Scalo a mare belonging to Italian Railway Network RFI;
- second step : implementation of interventions for the area which includes the railway yard owned by the Italian Railway Network RFI Squadra Ponti.



Section A-A'

Figure 7: The Project of a Technological Park. A-A' transversal section: Railway Bypass and Cultural Centre

4.1 The Technological Park

After a careful evaluation, the analysed area has been deemed suitable to host a Technological Park.

Technological Park means an area for small highly-technological businesses, facilities for technological transfer, incubators for new small-sized enterprises.

The reference model is Aree Produttive Ecologicamente Attrezzate APEA Environmentally sustainable and equipped productive areas defined by the Bassanini Law Leg. Dec. no. 11/1998, by the Marche Regional Law no. 20/2003 "Testo unico delle norme in materia industriale, artigianale e di servizio alla produzione" Unified Law concerning plants, handicraft businesses and production services and by the Marche Regional Law no. 16/2005

“Disciplina degli interventi di riqualificazione urbana e indirizzi per le aree produttive ecologicamente attrezzate” Regulations for urban redevelopment and guidelines for environmentally sustainable and equipped productive areas.

To the east of the former Saracini Barracks a large area covering a surface of 6.2 hectares will be reused to host a new Urban Park between the first-step Technological Park that will be built in the former Saracini Barracks and the second-step technological park that will be located in the area of the railway yard Squadra Ponti.

The gross usable built surface in the area of the former Saracini Barracks is 19,140 square meters. The project including the former Saracini Barracks provides for the construction of new buildings and the renovation of existing ones. There will be small facilities hosting bars and company cafeterias, a services centre, four production centres, a hotel and a facility hosting a conference centre and offices.

In the Technological Park Squadra Ponti a new interchange center will be built with a square near the bus station and a park-and-ride with 262 parking spaces. The square will include some medium-sized facilities with three level above ground for distribution businesses, private and public services businesses and, on the third floor, residential homes for city user. In this square will be built a little structure for parking, service and rent of bicycles.

In the Technological Park Squadra Ponti the gross usable surface achieved, according to the project, will be 22,230 square meters.

4.2 The Seaside Hamlet

With reference to a debate among the community of Falconara, the Municipal Administration has considered it useful to design a new area facing the sea near the hamlet of Villanova through a new street network for vehicles, bikes and pedestrians that will be implemented by means of three subways to access the area facing the sea under the Flaminia national road and the railway line. One of the proposals includes the improvement of Monti e Tognetti street, the construction of a subway for pedestrians that connects the multi-level car park in the area Ex Antonelli with the Cultural Centre in the area Ex Officine Squadra Rialzo as well as the construction of a new subway for bikes and pedestrians from Stamura street to the Seaside Hamlet.

The construction of a Seaside Hamlet is provided for in the area Scalo a mare which is owned by Italian Railway Network RFI.

In the seat of the Ex Officine Squadra Rialzo a new important Cultural Centre will be built including a Museum of Transportation, based on the Pre-feasibility Study already approved by the Municipal Administration some years ago.

The Seaside Hamlet will be as follows: a new residential settlement, tourist settlement and commercial area with spaces for free time: a waterfront promenade, equipped green areas, a shelter with two floating piers to host 100 small boats. On the ground, there will be fixed equipment to support fishing activities and activities connected to small pleasure boats. About one hundred underground garage stalls will be built near the residential buildings.

The gross usable surface covers 14,132 square meters including the area Ex Officine Squadra Rialzo.

4.3 The area Ex Antonelli

In this area owned by the Municipality the proposal includes the building of some service facilities that can be play a central role between Villanova, the new Seaside Hamlet and the new Technological Park.

This area, with a surface of 1.1 hectares, will be used for services, hosting three buildings for free time and sport activities, a multi-level car park with 198 parking spaces, besides a community centre to be built in the decommissioned school in Villanova. The total surface services, private car park and community centre will be 10,480 square meters.

4.4 Peri-urban area north of the Liscia canal

The study outlined for the redevelopment project of the whole area has suggested some ideas for environmental regeneration and new use of the territory in the peri-urban area between the track of the railway Bypass and the Liscia canal, bordering the regional airport Raffaello Sanzio.

This area covers a surface of 52 hectares and is characterised by extensive farming of annual crops. The existence of some strict limitations has lowered the attractiveness of building opportunities provided for by the Master Plan PRG. This area nowadays plays a marginal role and the level of maintenance of farming lands is unsatisfactory. As a result social marginality has become widespread in this area.

The first limitation is represented by landing and take-off strip of planes, which restricts the suitability for buildings. These limitations are stricter near the front of the landing track and become less strict far-away from it. Noise pollution here is very high.

The second meaningful limitation is represented by the presence of the consortium waste water purification plant Vallechiara built in the 80s by the Municipalities of Falconara, Chiaravalle, Montemarciano and Ancona.

For this area a consistent redevelopment plan will be implemented according to the Master Plan PRG in force and farming activities. This project may be implemented by the Municipal Administration by using limited funds based on three lines of action.

Area	Intended use established in the Project	Gross usable surface (square meters)	Volume (cubic metres)
Saracini Barracks	Bar –company cafeterias	680	4,352
	Production centres	11,200	56,000
	Hotel	2,280	6,840
	Conference centre -offices	1,200	3,600
	Services centre	980	2,940
	Private firm	2,800	14,000
	<i>Total</i>	<i>19,140</i>	<i>87,732</i>
Railway yard Squadra Ponti	Offices-shops	2,640	9,240
	Offices-shops-residential	7,590	25,300
	Production centres	9,600	48,000
	<i>Total</i>	<i>22,230</i>	<i>94,540</i>
Antonelli	Multi-level car park	7,740	23,220
	Multi-purpose centre	880	8,800
	Gym	900	2,700
	Bar –cafeterias	140	420
	Community centre	820	2,460
	<i>Total</i>	<i>10,480</i>	<i>37,600</i>
Workshops Squadra Rialzo and seaside Railway yard	Cultural centre	4,380	38,106
	Shopping area – residential	8,136	27,120
	Leisure fishing	504	1,512
	Workshops and shops	72	216
	Fishermen Club	240	840
	Restaurants and shops	800	2,800
	<i>Total</i>	<i>14,132</i>	<i>70,594</i>
OVERALL TOTAL		65,982	290,466

Table 1: Intended use and main values of the four areas of intervention

The first line of action concerns ordinary and extraordinary maintenance of public areas such as roads, ditches. These works would increase the opportunity to exploit environmental and landscape values in this area.

The second line of action is based on a systematic intervention by the Municipal Administration to urge private owners to maintain farming lands and farmhouses.

The third line of action includes the implementation of a coordinated network of pedestrian and cycle paths as well as paths for jogging and other sport and free time activities that can coexist with farming activities.

It is thought that a suitable project to promote this area can be consistent with a Technological Park that gives importance to a quality landscape and environment.

5. Town planning procedures

For the studied area the legal and technical framework is typical of complex interventions. This is due to a wide variety of conditions including restrictions, critical aspects and potential of proposed changes in the redevelopment project as well as the heterogeneous range of owners and their expectations, attitudes and capacity to invest.

It is important to identify the most suitable town planning tool in order to implement the initiatives outlined in the feasibility study.

It is hard to work in compliance with the provisions of the General Town Planning 2003, so it is desirable to obtain a partial zoning Variance for the area of the Technological Park. This Variance could be implemented by a Plan Agreement between the Municipality and the Province of Ancona according to the law no. 241/1990.

This procedure can be divided into the following steps.

First of all an Inter-institutional Plan Agreement, which is a typical consultation among institutions, started by the Municipality of Falconara as promoter and open to participation by territorially competent bodies in the field of urban planning, public works, planning, like the Provincial and Regional Authority, as well as local state bodies, i.e. Superintendence and State property. The suppliers of public and private services, like Highways National Agency Anas, Italian Railway Network RFI, Electric Power National Agency Enel and so on could be invited to take part.

The aim of this Plan Agreement is to approve the main aspects related to dimensions and functions of the general reorganisation outline, in its major aspects related to functions and dimensions, indicating performances, expectations, infrastructural invariants, in complexes that will host tertiary activities enjoyed by users resident in the vast area, as well as perimeters of the project areas in compliance with the 2003 Master Plan PRG according to the assessment by the Municipality following the feasibility study.

For each project area Plan Agreements will be added. There can be one or more agreements, based on the opportunities and feasibility depending on the features of the parties involved.

In terms of legal effectiveness, the Plan Agreement approves the urban planning and legal framework of the area, in compliance with the Master Plan PRG or Zoning variance for the feasibility of interventions. In view of the final implementation of interventions, the Plan Agreement identifies individual Sectors where the parties will outline final project solutions.

Following the Agreements, Conferences of Services will be called for by the Municipality. They will deal with the approval of final projects, benefiting from technical flexibility and flexible regulations contained in the Agreements.

6. Implementing parties of the project

In relation to the dimensional scale and the complex interventions, a Company for Urban Transformation Società per la Trasformazione Urbana STU or another joint enterprise with a different legal form could be identified as Implementing Party, where the Municipality of

Falconara can play a leading role in the development and management after private operators have joined the company.

The regulations related to STU sets forth that Metropolitan Cities and Municipalities, with the participation by Provincial and Regional Authorities, can establish joint stock companies to plan and implement measures for urban transformation by applying current town planning regulations.

The companies for urban transformation deal with the prior acquisition of real estates involved in the intervention, the transformation and marketing of the real estates. Acquisitions can be mutually agreed or the Municipality may apply the expropriation procedure. The relations among public bodies as shareholders and the joint stock company for urban transformation are governed by an agreement.

For the management of the Technological Park a suitable company organisation can be identified including private industrialists interested in the promotion and management of the Park, having specific professional skills. The management company may contemplate the participation by the Municipality of Falconara.

7. Financial feasibility

This project has been subject to a feasibility study from an economic and financial point of view based on the four areas analysed by the feasibility study which outlines four potential steps for the implementation of measures in the area. The identified areas are: 1) the area of the Former Saracini Barracks including the westward green area close to the Hotel Internazionale and the area that will be turned into an urban park 2) the area called Squadra Ponti 3) the area Ex Antonelli 4) the area of the seaside railway yard property of the Italian Railway Network RFI.

Since these works and facilities have different intended uses, both public and private, the promoter of this initiative could be a public-private entity, for example a Company for Urban Transformation STU having profitability expectations that are comparable to those of a promoter-real estate investor.

The cost-benefit analysis Analisi Costi Ricavi ACR is based on the implementation that is to say on the determination of the current value of cash flows (cost-benefit) produced by the intervention over time. The cash flows are represented by differences, in each basic period of time, between the revenues obtained from the sale and/or renting of properties and the costs of their construction.

The objective is to find out the economic value of the intervention assessed at the beginning of the investment and defined as Current Net Value Valore Attuale Netto VAN. The feasibility check is achieved when VAN is positive, that is to say when the earnings shown at present value are higher than costs shown at present value.

The second benchmark which takes the invested capital into account, is the Internal Profitability Rate Tasso Interno di Redditività TIR. TIR is the interest rate or discount rate, determined by the profitability of invested capital. In order to calculate its value in percentage, TIR is the rate which cancels VAN, that is to say the rate which equalizes positive and negative financial flows related to the intervention.

For each of the four areas, the cost and benefit analysis was developed based on some development outlooks for the interventions which take into account the different project features and current situation of each area.

To sum up, in the Scenario 0 that will be defined Basic Scenario the following cost items have been taken into account:

- Building of external infrastructures for each area;
- Acquisition of private property areas involved in the implementation of the works according to the project;
- Reclamation of superficial and underground pollution;
- Land conversion costs

Starting from Scenario 0 the values used by indicators of economic and financial feasibility VAN and TIR have been checked. In cases where these indicators do not show economic and financial sustainability of the interventions, other development scenarios have been outlined: Scenario 1, Scenario 2 and so on based on different allocations of costs for some works. This aims at identifying, for each area, the scenario that may ensure a basic economic and financial sustainability for the promoter party.

8. The example of the Scientific Technological Park Kilometro Rosso in Bergamo

A similar experience to the APEA model and the one which is object of the feasibility study is the Scientific Technological Park called Kilometro Rosso created in 2003 in Stezzano, close to Bergamo, based on an idea by Alberto Bombassei, chairman and managing director of Brembo, a leading company in the production of brakes for cars. Other partners among which the Chamber of Commerce and the University of Bergamo were involved. The French architect Jean Nouvel designed the whole complex.

The Scientific Technological Park is hosting buildings on a gross usable surface of 172,000 square meters and is conceived as a park with a total surface of 36.5 hectares located along the highway A4, section Milan-Bergamo.

A red metal curtain with a length of one thousand meters defines the area and is a protection from noise coming from the highway. This metal curtain separates the highway from a large green area where several buildings are located.

In the Park we can find a great number of activities such as research centres, laboratories, institutions, small and big sized companies. Moreover there are also companies in the sector of advanced training, ICT, new materials, biotechnology, mechanics, electronics, automation and so on.

In the Park it is worth mentioning the University of Bergamo which is an official partner of Kilometro Rosso. The objective pursued by the University of to build a Inter-departmental and inter-disciplinary center an ideal meeting place between university and business.

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Should I stay or should I go: The role of Colombian free urban housing projects in IDP return to the countryside

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Synopsis

The new apartments and houses given by the Colombian government for free to the displaced households 'cement' their choice to stay in the cities where they live hence reduces the success of the Land Restitution program, which fosters return of the victim population to rural areas.

Abstract

Over 6 million people were displaced in the ongoing Colombian armed conflict, the majority of them from rural to urban areas. In 2012, the Colombian government launched a large scale social housing program to alleviate the housing deficit caused by conflict and furthermore compensate the IDPs for their losses. The idea of this initiative is in line with the wishes of the majority of the victim families, who prefer to stay in the receptor cities where they settled due to the conflict. The new apartments and houses are given literally for free and are highly demanded. This, however, potentially contributes to the lack of success of another large scale reparation program, Land Restitution, which fosters the return of the displaced households to the countryside.

Basing on empirical data from the field, this paper explains why and how the Free Housing program 'cements' the choice of the displaced families to continue living in cities and further develop their post-conflict urban livelihoods and social networks, as opposed to returning to the depopulated rural areas and reestablishing agricultural activities. However, it is also argued that those housing projects have certain shortcomings and are not the ideal solutions to the problems of housing shortage and the prevailing poverty among the displaced population.

Keywords

Housing, Land Restitution, Reparation, Social Policy, Urbanization, Colombia

Note

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Introduction

The ongoing armed conflict in Colombia¹ has resulted in the forced displacement of up to 6 million people (IDMC, 2015a). As much as 93% of them fled the countryside to urban areas (Albuja and Caballos, 2010), contributing to the rising poverty rate and the uncontrolled growth of informal and squatter settlements in Colombian cities. Although a lasting peace agreement has still not been reached, forced displacements are considerably reduced compared to the peak of the conflict between 1999 and 2002 (Unidad de Víctimas, 2013). There are now several reparation and return programs for the Internally Displaced Persons (IDPs). Colombia is perhaps the only country in the world where such measures are being implemented before an official end of the conflict.

This study examines the relationship between the two largest and most important programs currently being implemented for the IDPs in Colombia. The first one is Free Housing, which provides new homes for the displaced in the cities where they settled after the displacement. The second, Land Restitution, enables the IDPs to get back the rights to properties that were lost or abandoned in the conflict, and facilitates their return to rural areas. It is clear that both reparation initiatives represent very different ways of thinking about the migration processes. The first one accepts that once people move from a rural to urban area, whether forcibly or voluntarily, they are likely to adapt and stay permanently. The second is perhaps a more “romantic” idea of returning to the depopulated countryside and engaging into a rural livelihood as before the conflict. Although providing such distinct alternatives for the same target group of IDP households should be considered a great achievement of the Colombian government, the two programs which are part of the same political agenda of Colombia’s President Juan Miguel Santos might actually undermine the success of each other.

Central to the case of those two reparation initiatives is the question, whether the offer of free urban houses affects the willingness of the IDP population to return to the rural area. Indeed, our study found that, to some extent, the Free Housing program further decreases the already small likelihood of the IDP households to return to the countryside. It is argued that by offering free housing and giving incentives to stay in urban areas, the Colombian government both reduces the IDPs willingness to claim land restitution and return to their places of origin in rural areas.

If that holds true, then why does the government continue investing in both programs and keeps offering them to the IDPs? The answer to this question is more complex. First of all, the coordination between the two programs has always been almost non-existent, as both are implemented by the different state entities and are financed from different sources.² Additionally, both initiatives can be characterized as being populist, as they propose radical interventions based on intentions and principles, which seem hard to disagree with, but not necessary possible to implement in practice (Cuervo, 2012, El Colombiano, 2014, El Espectador, 2012, Gilbert, 2013). The low numbers of finalized land restitution cases indicate that the restitution program they only serve as a political “smokescreen” for preserving the status quo in the countryside.

This paper is based on a fieldwork conducted in the Caribbean Coast of Colombia in the summer of 2014 as part the investigation for a Master’s Thesis (Sliwa, 2015).³ The empirical data was collected using qualitative and quantitative methods, including ethnographic interviews with affected IDP households, semi-structured interviews with informants and stakeholders as well as direct observations. We furthermore apply Respondent Driven Sample (RDS) survey data conducted by our collaborators in Colombia and secondary data from relevant literature and media.

First in this paper is a brief introduction to housing production and the IDP debate in Latin America, followed by a review of similar return and housing policies for IDPs in a few selected countries. The next part explains the context and relation between the main reparation initiatives in Colombia. Then, basing on empirical evidence it is shown that the urban IDPs do not want to return and that the Free Housing program is “in line” with their decision to stay in cities. The last section discusses the results of the study, implications and policy recommendations for urban planning and post-conflict reparation policy in the country.

Housing and IDP debates in Latin America

The high population growth in Latin America led to a high influx of migrants to the cities from about 1940. An estimated 70 percent of all new houses in cities were developed informally through land invasions and self-help construction in squatter and irregular settlements (Ward et al., 2015). Such process is normally the reverse of the conventional housing development, which starts with planning, followed by provision of services and infrastructure, construction of a proper house and ends with occupancy. In informal settlements, the occupants move in first, then build a permanent house, and expand it as needed. Once they are established, they may start lobbying the local government to provide infrastructure and services (Baross, 1990, Hamdi, 2010).

Many of the inhabitants of those settlements are economic migrants from the countryside and IDPs fleeing conflict zones. It is difficult to assess whether a hypothetical situation of no conflict would have had a significant impact on the rural-urban migration process in Colombia, but the comparison with other Latin American countries suggests that rapid urbanization was happening in all states in the region, regardless of their political and economic situation (UNDESA, 2014). In some cases it may be problematic to make a clear distinction between the displaced populations and those who voluntarily migrated into the cities, for example to seek employment or education opportunities. Typically, one of the main differences is that the IDPs usually bring no savings which would enable them to start a new livelihood in the city, while the economic migrants come prepared, with a certain amount of cash that facilitates their survival, at least in the first few weeks or months of their stay. As a result, the IDPs are much more likely to enter into extreme poverty than those who migrated voluntarily.

In terms of formal housing, private-sector developers usually target upper and middle-class households. Government-provided social and affordable housing schemes, targeting low-income and vulnerable population in Latin America, were developed in two ways. The first was a centralized approach where the public sector designs, constructs and delivers housing with or without private companies as sub-contractors. This model was most common between 1940s and 70s, where many new public housing projects were built as part of urban renewal and slum clearance policies.⁴ Many of those projects were later blamed for failing to improve the economic situation of the residents and contributing to socio-spatial segregation in the urban areas (Dwyer, 1975, Gilbert, 2001, Hamdi, 1995, Turner, 1976, UN-HABITAT, 2001, World Bank, 1993).

The second was a more decentralized, corporate-friendly model, where the government subsidizes the poor to buy units in privately designed and constructed housing projects. This approach was first tried in Chile in 1977 and was later supported and promoted by such organizations as the Inter American Development Bank and the World Bank (Gilbert, 2004). At the same time, many governments initiated various initiatives and policies to regularize, formalize and upgrade informal settlements, according to the ideas put forth by Turner (1976) and later De Soto (2000). The general principle of all those housing policies applied in Latin America in the last few decades was to promote home ownership, while issues of rental housing were usually ignored (Gilbert, 2013).

The Free Housing initiative adopted in Colombia was also based on the principles and experiences from Chile, although with some differences. In the Colombian program, the units are handed over to the recipients for free, a novelty in Latin America where other countries require some form of contribution from the beneficiaries. Furthermore, the program mostly targets households that were displaced as a result of the armed conflict and, in some cases, due to natural disasters. The generous conditions probably reflect the need to compensate the IDPs for their former losses.

In general, there are three main policy strategies that the governments apply to compensate and help the IDPs: 1) facilitating return to the areas of origin, 2) providing new housing, which may either be temporary (shelters) or permanent (social housing) or 3) improving existing housing (i.e. upgrading self-built dwellings and providing basic services). As it will be explained later, countries which have large numbers of IDPs usually implement more than one of those strategies. However, the academic literature does not compare the different IDP programs within the same country. As explained by Carrillo (2009) and Crisp et al. (2012), literature on displacement is generally focused on the

transitional stage after being displaced and aspects such as humanitarian aid, refugee camps and initial migration into the city. There is, therefore, a need to investigate the more permanent housing and restitution solutions designated for the IDP population, and study how they impact the relations of the displaced families to the places of origin and the eventual decision where to live. According to Crisp et al. (2012), *“urban planners, demographers, and development specialists have not addressed significantly the relationship between displacement and urbanization.”*

Much of academic research on housing and the built environment in Latin America and the Global South is focused on the emergence and consolidation of self-help informal and squatter urban settlements (Bredenoord and van Lindert, 2010, Davis, 2006, Fernandes, 2011, Hamdi, 1995, Hernández et al., 2012, Robbins, 2008, Turner, 1976, Ward et al., 2015). Literature on the general situation of centrally planned housing in Colombia is focused on emphasizing the qualitative and quantitative shortage of affordable and social housing in urban areas (Ballén Zamora, 2009, Escallon G, 2011, Fariás Monroy, 2014, Insuasty Delgado, 2013, Pecha-Garzón, 2011).

Social Housing and Land Restitution in other contexts

There have been a few countries where housing policies designated for the urban poor and – intentionally or not – the IDPs were implemented alongside property restitution programs.

As the civil war ended in Sri Lanka in 2009, close to 90% of the IDPs were resettled or returned to their places of origin (Saparamadu and Lall, 2014). In most cases, the return was voluntary, although the back-then Sri Lankan government has been very reluctant in launching return and restitution programs to support the IDPs, most of whom are from the Tamil minority (IDMC, 2015b). Prior to 2015, only a few externally-funded initiatives existed, such as reconstruction and repair of close to 43,000 houses sponsored by the government of India (UN-HABITAT, 2015).

The situation started to change after the elections in 2015, as the new government has taken a different approach and began developing comprehensive strategies to facilitate return and resettlement of the remaining IDPs and provide the victims with dignified housing, primarily in the most affected Northern and Eastern Tamil provinces (IDMC, 2015b). Due to the geographical concentration of the IDPs, these initiatives are coordinated through one administrative body, the Ministry of Resettlement. The fact that a vast majority of the displaced already returned to their places of origin before the implementation of those new policies, makes coordination of property restitution and housing programs theoretically easier than in Colombia, where few IDPs returned, while the rest are scattered in different urban and rural areas around the country.

When the Bosnian war was over in 1995, there was no demand for new housing due to the decrease in population, although a significant qualitative shortage caused by the destruction of housing stock was present, especially in Sarajevo and other large cities. Therefore, a massive, government-led reconstruction was chosen as the prioritized post-conflict housing strategy (Hegedüs and Teller, 2008). It was hoped that the property restitution and return programs would complement the efforts to reconstruct the damaged housing stock in a successful post-conflict recovery process. However, due to the lack of financial resources, informal character of ownership and construction, as well as the still present ethnic tensions, which discouraged many IDPs from returning to the places of origin, all of those programs were insufficient in providing dignified living conditions for the victims. Though long time passed after the conflict was resolved, there might be a growing need for new housing schemes for vulnerable and IDP groups, particularly those who do not want to return (Hegedüs and Teller, 2008).

Although not originating in civil war, the abolishment of apartheid and the introduction of a multi-racial democracy in South Africa in 1994 led to a similar process. The ruling African National Congress launched a series of policies targeting the poor and the repressed Black population. One of them was a comprehensive land reform and property restitution program. It applied to communities and individuals who were dispossessed of their properties as a result of *“racially discriminatory laws or*

practice" (Sibanda, 2001). Restitution of land in rural areas usually involved group claims, while requests for restitution of plots in urban areas were submitted by individual households and concerned primarily cases of slum clearance and settlement evictions. As restitution of urban lands was usually impossible due to the new development on the sites, most of the claimants received monetary compensation instead of property rights (Sibanda, 2001).

Another initiative of the South African government that targeted the disadvantaged and marginalized groups was the provision of a remarkable 1,155,300 housing units for over 5,7 million people in only five years (RSA Department of Housing, 2001). These total subsidies were meant to alleviate poverty and promote home ownership among the lowest-income earners, the majority of which are Black Africans who suffered from the apartheid regime (Gilbert, 2004). Similarly to Colombia, new formal housing in this case has been distributed to most of the beneficiaries for free (Chiumia, 2014).⁵ Interestingly though, the beneficiaries of the Land Restitution program received special treatment and are eligible for housing subsidies, as opposed to owners of other residential properties (RSA Department of Human Settlements, 2009). Nevertheless, the housing units were criticized of being small, while their poor location further deepened the racial segregation in the country. Moreover, many residents found it difficult to afford paying for public services and decided to move out of the projects (Gilbert, 2004).

Implementation of those policies had mixed results and was context-dependent, as the rural-urban character of displacements, the share of IDPs willing to return, and the political situation, were different in all the cases mentioned above. What is important here is that the institutional coordination between housing, restitution and return policies in countries mentioned above was definitely not uncommon, and in some countries, significantly stronger than in the Colombian case.

The Victims Law and the Free Housing program

In the initial phase of the Colombian conflict, there was little government intervention to provide temporary or permanent housing solutions for the IDPs. The passiveness of the state was reflected in a quiet acceptance of land invasions and indirect support for informal development. Squatting public lands in urban peripheries became a common practice, as the risk of evictions was relatively low during this chaotic period of conflict (Naranjo, 2004). The responsibility to attend the IDPs who just arrived in urban areas was initially given to local governments. The displaced households were eligible for three months humanitarian aid and assistance with education for children under 15 years old (Ibáñez and Moya, 2010a). In some municipalities, local authorities provided land, construction materials, or financial support for families willing to build a house. There were also a number of income-generating and training programs for the IDPs, although not sufficient to permanently alleviate poverty according to Ibáñez and Moya (2010b).

The first attempt by the federal government to facilitate the return of the IDPs to their lands was the Negotiated Restitution in the Law of Justice and Peace in 2003. The victimizers were expected to voluntarily give back the land or compensate the victims in exchange for "*legal and social benefits*" (García-Godos and Lid, 2010). However, hardly any cases were settled in that voluntary way.

A more comprehensive approaches to reparation and restitution were drafted in 2011 in *The Victims' Law*,⁶ which introduced regulations and policies that are meant to "*reduce the injustice and social inequality through economic and moral reparation for the victims*" (Ministerio de Justicia y del Derecho, 2011).

Besides establishing new restitution policies, The Victims' Law recognized the importance of addressing the housing needs of the victims. It specified that the Ministry of Housing, City and Territory (MinVivienda) has the authority over urban housing subsidy schemes for the displaced population and restitution of properties in urban areas, while the Ministry of Agriculture and Rural Development (MinAgricultura) would coordinate housing programs and the implementation of Land

Restitution in rural areas (Ministerio de Justicia y del Derecho, 2011).⁷ In practice, since most of the property dispossessions took place in the countryside and the majority of the displaced households fled to cities, MinVivienda assumed responsibility of social housing schemes for the urban IDPs, while MinAgricultura focused on implementing Land Restitution policies. From that moment, no further coordination between the two reparation programs was present and both ministries developed their own mechanisms to implement these policies.

In order to facilitate attendance of the displaced households and local enforcement of the restitution program, MinAgricultura established the Land Restitution Unit (URT), which opened a number of regional branches across the country. In the first years, the URT is resolving cases of lands located only in the selected areas that were approved by the military as sufficiently secure. Once the legal procedures are over and the property rights are restored, the URT supports the beneficiary household in their return and reestablishment. The landowner is not allowed to sell the property in the first two years after restitution. Monetary compensation is provided only in special cases, when the full restitution of the property is not possible (Ministerio de Justicia y del Derecho, 2011). Funding for the operation of the program comes primarily from the Colombian government and donations from various international organizations and foreign governments.

The social housing schemes for the IDPs followed the recommendation of The Victims' Law, but developed independently from Land Restitution. After a short time of preparations, MinVivienda announced the inauguration of its 100,000 Free Housing (*100,000 Viviendas Gratis*) program in 2012. Construction of the first projects started shortly after. The success of the first stage of the program led to its extension with an additional 300,000 units. The Free Housing projects are operated according to different financing schemes. Some of them are funded entirely from the federal and local governments, while others are subsidized by the National Savings Fund or built in collaboration with private businesses and donors. Regardless of the arrangement, MinVivienda set a limit for the construction costs to 70 minimum salaries per unit. These are usually two-bedroom units in apartment blocks or single-floor row houses in neighborhoods build for 3,000 to 15,000 people on average.

The majority of the Free Housing projects are built in cities that received large numbers of IDPs. Beneficiaries of the program are usually drawn from waiting lists, which are administered locally by Family Compensation Funds (*Cajas de Compensación Familiar*). In many cases, the waiting lists of IDP households willing to participate in the program were created at the local Unit for the Attention and Integral Reparation of Victims (*Unidad para la Atención y Reparación Integral a las Víctimas*), which is one of the first entities where the IDPs go after their displacement as a starting point. These lists are then supplemented with families classified as being in extreme poverty and victims of natural disasters. It is estimated that the IDPs constitute around 72.5% of all beneficiaries of the Free Housing program (Minvivienda, 2014a).

Unlike in the South African case, the Colombian government does not specify whether the IDPs are eligible to apply for the housing subsidy and the property restitution program at the same time. The lack of such regulation may be interpreted as a permission to participate in both. In practice, few apply for both programs.

IDPs are unwilling to return

Data from various sources makes it evident that the IDPs in Colombia want to stay in urban areas. A survey conducted between 1997 and 2004 by the Catholic Church on 43,587 IDP households in different parts of Colombia showed that not more than 11% of the respondents wanted to return to their place of origin (Arias et al., 2014). According to another national survey conducted in 2008 by the Commission for the Monitoring of the Public Policy on Forced Displacement, only 2.9% of the 8,100 surveyed households claimed they would like to return and up to 78.7% would prefer to stay in the receptor city, while 12,2% considered moving somewhere else (CSPPDF, 2008).

Similar conclusions can be driven from our RDS survey conducted in 2014 in Bogotá and Barranquilla on 499 IDP households who own land in municipalities currently eligible for Land Restitution. Although up to 62.5% of the surveyed households are in the process or expressed their intention to apply for the program, only 28.1% plan to return to their land if restituted. Around 22.6% would rather sell or lease the plot to someone else (Wiig, 2015). The lack of interest in returning and farming might be surprising if we consider that the average monthly income of the surveyed IDP households dropped almost by half, from \$935,000 COP before the displacement to around \$500,000 COP in 2013. However, the current economic situation of a given family does not seem to have an impact, as families which maintained or improved their income from before displacement are as likely to consider returning as those whose income is significantly lower.⁸

Our in-depth interviews with ten IDP households, of which four received free housing in the Villas de San Pablo project (Figure 1)⁹ in Barranquilla, another four in the Nueva Esperanza project (Figure 2)¹⁰ in the neighboring city of Soledad and two who are still on the waiting list, confirm that return to the place of origin is not the preferred alternative. All of the beneficiaries expressed their satisfaction of having received a house or apartment for free and declared their willingness to stay there permanently. Only two of the interviewed households are in process of Land Restitution, although they have no intention to return and they indicate they will sell the restituted property as soon as possible. In other cases, the interviewed IDPs are either not entitled for restitution, because their areas of origin are not yet eligible for restitution, or they do not bother to apply as they do not believe the process truly works in a transparent and timely efficient manner. Still, all the interviewees indicated that they miss some aspects of living in the rural areas, such as the ability to produce their own food. For this reason, two respondents said they would consider moving into the countryside, although not to the same area where they came from, but somewhere else.



Figure 1. Villas de San Pablo housing project



Figure 2. Nueva Esperanza housing project

All ten households report that at least one member receives regular income through employment or pension. Those who worked usually kept the same occupation they had before moving into the Free Housing project. The majority were self-employed, either in formal or informal businesses, such as food vending and workshops. They operated either from the previous houses in the city, or (illegally) from the new houses or apartments in their respective Free Housing projects.

Our interviewees agreed that the opportunities for employment and education for them and their kids are by far greater in urban areas than in the countryside and this is perhaps the main reason why they want to stay close to the city. We came across a number of IDPs, particularly woman who, out of their own initiative, signed up for professional training programs and academic courses. Most households sent their children to local schools or even universities. They have furthermore no intention of passing their farming skills and traditions on to their descendants.

Other most common reasons for not returning were: the perceived insecurity in the place of origin, and bad memories from violence and displacement. The Free Housing projects, on the other hand, are seen as relatively secure places which offer “calmness” and “dignified” living conditions. One person claimed that her previous neighborhood in Barranquilla, where she settled after the displacement, was “too dangerous” and the Free Housing program offered her a way out.

It is also evident that the new social networks that developed after displacement are currently stronger than the pre-conflict networks in rural areas. Several of our respondents believe that the old communities in the villages where they come from no longer exist, and eventual return would imply starting everything from scratch, a perception that is aggravated as time goes on. The relatively slow progress of Land Restitution and the inability to open claim processing in many of the affected areas that have not yet been selected may further discourage the IDP population from returning.

Key informant and household interviews conducted in the primarily rural municipality of El Carmen de Bolívar, which was severely affected by the conflict, indicate that in the rather small group of the displaced persons who decided to return, most were already old, and did so regardless of the Land Restitution initiative. They might have bought another plot in the area or managed to recover their old property if it was still left abandoned. The returned households we spoke to were families, who settled in the main town, as opposed to the farm itself like before the displacement. In a few cases, the returnees engaged in typical urban occupations and their farms served them as a weekend house. Any kind of cultivation or animal breeding was not in form of a large-scale agriculture, but rather a leisure and family gardening activity.



Figure 3. Vacant farm in El Carmen de Bolívar. It was restituted to the original owner, but he did not want to return there and reengage in agriculture.

The conclusion from our interviews is that the Free Housing program has been more popular, as it allows the IDPs to sustain the means of livelihood and social networks they developed in towns and cities where they settled after the displacement. Land Restitution, on the other hand, fails to preserve or improve the current livelihood situation of the IDPs, as the return to the often depopulated rural areas and the reestablishment of agricultural production is generally not seen as an attractive and economically viable alternative.

The advantages in the offer of Free Housing are reflected in the number of IDPs who signed up for the program. It is estimated that up to 900,000 households are on the waiting lists for Free Housing across the country (Minvivienda, 2014b), compared with only around 73,000 claims for Land Restitution that were filed by June 2015 (Valencia, 2015). To date around 100,000 households benefited from the housing program, compared to only 1,368 restitution sentences (Valencia, 2015) for around 4,000 households were given, which is well below expectations and original estimates of the URT, whose plan was to settle 360,000 cases by 2021 (Sabogal Urrego, 2013, Semana, 2015).¹¹ From our interviews and observations it is evident that the number of beneficiaries of Land Restitution who returned and live on their land is relatively low, although the exact figure is unknown.

Discussion

The data presented in the previous section leaves no doubt that the majority of IDPs does not want to return to the places of origin and prefers to stay in receptor cities. This applies not only to those who received housing for free from the government, but to the entire victimized group in general. Therefore, it can be argued that those IDP households would have stayed in the cities anyway, regardless of whether they benefit from the Free Housing program or not.

Following this thought, another question may be asked. Would the Land Restitution program tempt the IDPs from the Free Housing projects to return, if they did not benefit from this initiative? The interview and survey data suggest that Land Restitution would probably not have caused a massive return to the countryside, as the IDPs prefer the employment and education opportunities in the city. The free house or apartment can, therefore, barely be an improvement in housing conditions, particularly for those who lived in precarious dwellings in under-serviced informal settlements.

It is important though to observe that the new housing provided by the government may for many of the IDPs be the first formally owned property that could be revoked if the family does not move into the housing unit within a specific period of time. Coping with this new, formal housing arrangement may require financial stability, which may be easier achieved by remaining in the city and preserving the current source of income.

The 10-year limitation on selling and renting out the new housing unit may further reduce the mobility of the beneficiary IDP households, which would also discourage return. At the same time, the 2-years period that the landowner needs to wait before being able to sell or rent out the restituted rural property combined with a commonly accepted practice of not returning to these lands leaves those who benefit from both programs literary without a choice. For them, staying at the subsidized housing and waiting to sell, rent out, or just keeping the restituted property vacant is the only feasible option. Therefore, it can be argued that although the Free Housing program does not make a significant change to the number of IDPs who do not return, it 'cements' their decision to stay in the city and makes it much less likely and more complicated to return in the future.

The advantages of the Free Housing programs over Land Restitution and return incentives are clear. Not only is the housing program the preferred choice of the IDPs, as it was explained before, but it also is in line with the general migration trend in Colombia from rural to urban areas and the preference for city living. Furthermore, the estimated government spending per beneficiary is just one third in the Free Housing program, compared to Land Restitution (Sliwa, 2015).

However, while the Colombian government takes credit for the intermediate success of the Free Housing program, there are no guarantees that the housing projects will make a lasting change in the quality of life of the IDP population. Some academics questioned the basic idea of providing dwellings for free, even if it was meant as a compensation measure for the victims. They suggest that this kind of welfare leads to lack of sense of ownership of the dwellings, which may result in poor maintenance and deterioration in the future, as it happened in many similar public housing projects in the past (Correra et al., 2014, Gilbert, 2013, Hamdi, 2010). The interviewed new residents themselves, although very happy for having received free housing from the government, reported some shortcomings, including small size of the units and lack of trees and green spaces.

We also learned that for many of the residents, it is the first time they need to pay bills for public services. However, similarly to South Africa, some of the respondents who live in the Free Housing projects report that they are afraid of not being able to afford the bills and maintenance. A couple of them were prohibited from using some parts of their new dwellings for economic uses which, as they say, limits their livelihood and income-generation opportunities.

Other serious complains relate to the poor location (often outside of the built area of the city), overcrowding, use of cheap and prefabricated materials, lack of quality public spaces and commercial uses, as well as inadequate provision of health centers, and police stations (Correra et al., 2014).



Figure 4. Siete de Abril is one of many informal settlements in Barranquilla largely inhabited by the IDPs.



Figure 5. Las Gardenias Free Housing project in Barranquilla.

Insecurity might be a growing problem in the new Free Housing projects in the future, as an increasing number of crime, activity of local street gangs, acts of vandalism, stealing and consumption of drugs in common spaces are being reported (El Heraldó, 2015). Lack of ownership and insufficient funds for housing improvement led to a surprisingly rapid deterioration of private and common areas, which could easily be observed during our field visits. Many of the projects are quickly turning into 'ghettos' and isolated pockets of poverty.

Some of those issues can be mitigated through a number of interventions. First of all, the new housing projects should be better integrated with the city, which can be achieved by creating socially mixed and inclusive communities in better locations close to employment centers, and by improving public transportation accessibility. Introducing flexible, mixed land-use development and providing affordable spaces for commercial and small-scale industrial activities within the social housing projects that may be rented out to residents will also likely widen the livelihood opportunities of the IDP population and contribute to their reintegration in the society.

Is the Free Housing program necessary?

From the three potential types of interventions for the IDPs – facilitating return, providing new housing and improving existing housing – only two are tried in Colombia and none with a greater success. While the Land Restitution program fails to bring masses of IDPs back to rural areas, the Free Housing program resulted in the relocation of thousands of the displaced families within the same city and placing them in new housing projects, some of which may sooner or later become slums.

This discussion raises an important question: if so many of the IDPs choose the Free Housing program over return to the rural area, because they prefer to stay close the city, then why would the government not help them improve their current housing situation so that they would not have to move at all? Perhaps, as suggested by Gilbert (2013), the political payoffs and the popularity of the idea of building new housing for the victims and giving it for free was among the reasons why the Colombian government decided to choose this strategy, as opposed to, for example, a gradual improvement and regularization of the informal neighborhoods in which many of the IDP's live. If large-scale return is not the desired alternative by the IDPs, then perhaps the answer lays in the opposite – a solution that minimizes any relocation, even if it would be within the same city.

Taking the funding from the Free Housing program and using it for house improvement grants and subsidies for water bills, public transportation, education and health services for the poor or even food and paychecks of the low-income earners, as suggested by Gilbert (2013) seems especially valid in this context. Formalization and further investment in public infrastructure in informal and squatter settlements according to the principles described by Turner (1976) and Hamdi (1995) might not only be a less expensive, but probably also a more desired alternative, since it would allow the displaced

households to maintain their current livelihood situations without the necessity of relocation. This strategy will not only allow the IDPs to remain in their (relatively) better location, but also maintain the social network structures of neighbors, relatives and friends who live in the same areas, something that is crucial in their livelihood strategies.

Conclusion

This paper provides another case study that confirms the significance of urbanization as a process that irreversibly changes the way people live. Broadly, the results of this research shows that the success of large-scale land reforms and housing programs depends on whether the principles of these schemes work with or against the general rural-urban migration trends and livelihood choices of the target population. The dynamics of the Colombian situation is somehow different than in other countries in similar situation (Sri Lanka, Bosnia and South Africa), which means that good post-conflict housing and return policies for the victim population need to consider the local context and (as much as possible) the individual preferences and needs of the IDP households.

In the discussed case, the urban IDPs in Colombia are generally unwilling to return to rural areas and would rather take advantage of housing subsidies that allow them to stay in their receptor city, as opposed to applying for initiatives which facilitate land restitution and return to the old property. Our study shows that the livelihoods of the IDPs in Colombia depend on the access to employment centers and income they can produce from home. However, these needs have been poorly addressed by planners and policymakers responsible for the new housing projects. These concerns need to be urgently addressed in order to develop successful initiatives that can truly reintegrate the IDPs with the rest of the society. In addition, there needs to be more coordination between the different reparation programs to ensure that the benefits are delivered fairly, in an efficient and organized way.

The changes we propose to the reparation programs in Colombia imply the improvement or reconsideration of the massive, 100% subsidized housing as a solution to the challenges of urban IDPs. These social housing projects need to be better incorporated with the social and physical fabric of the city in order to combat the process of socio-spatial segregation and ghettoization, which starts to become evident in the Free Housing projects. Alternatively, the Colombian government should support the consolidation and physical upgrading of the peripheral informal settlements in which the majority of the IDP population lives.

Notes

¹ The currently ongoing armed conflict in Colombia began approximately in 1964. The three sides of the conflict are: the Colombian state forces, the left-wing guerrillas, including the Revolutionary Armed Forces of Colombia (FARC) and the right-wing paramilitary groups. Originally, the rebel groups were motivated by their ideological reasons, but eventually the conflict turned into a war on drugs and the control of land for narcotic production and trafficking (Serres, 2000).

² The federal government allocated \$29 million USD for operation of the Land Restitution program for the period between 2011 and 2021. On top of that, the URT received donations from various international organizations and foreign governments, whose estimated contribution may be up to \$200 million USD (El Nuevo Siglo, 2012, Unidad de Víctimas, 2014). The estimated total federal spending for the Free Housing program is around \$9.4 million USD (Sliwa, 2015). Land for construction of housing projects is usually provided by municipal and departmental governments (El Colombiano, 2014). Additional funding is provided as a subsidy from the National Savings Fund (Fonvivienda). The rest is covered by local donors and private enterprises involved in the construction of the Free Housing projects.

³ The thesis was delivered at the Norwegian University of Science and Technology, as part of the Urban Ecological Planning Master's programme. The investigation was conducted in collaboration with the Colombia Land and Gender Project at the Norwegian Institute for Urban and Regional Research and the Land Observatory project at the Universidad del Norte in Barranquilla, Colombia, both of which provided financial support for the research. The fieldwork was performed primarily in two chosen locations: the metropolitan region of Barranquilla and Soledad in Atlántico department and the municipality of El Carmen de Bolívar in Bolívar department.

⁴ *Conjunto Urbano Nonoalco Tlatelolco* built in 1960s in the center of Mexico City is perhaps the most famous example of such a large scale public housing renewal project in Latin America. It was built according to the modernist design principles and today houses close to 55,000 people.

⁵ Except of Colombia and South Africa, other countries which (with limited success) attempt to offer fully subsidized housing schemes are Venezuela, Chile, Brazil and Zimbabwe (Chiumia, 2014).

⁶ *Ley de Víctimas y Restitución de Tierras y sus Decretos Reglamentarios*, Law 1448 of 11. June 2011.

⁷ According to Par. 1 of Art. 66 of The Victims' Law, "*to guarantee effective and integral attention of the returned or relocated population, [the provision of] dignified housing is the responsibility of the Ministry of Environment, Housing and Territorial Development [today the Ministry of Housing, City and Territory] in case of urban housing, and the responsibility of the Ministry of Agriculture and Rural Development in case of rural housing*" (Ministerio de Justicia y del Derecho, 2011).

⁸ In our RDS survey, we asked the respondent households to estimate their monthly incomes before the displacement and last year (that is 2013). This data allowed us to calculate average values and compare the results between the different sub-groups of our respondents.

⁹ Villas de San Pablo is a Free Housing project located about 5 km outside of the built area of Barranquilla. The project was built and is still operated by the landowner, the Mario Santo Domingo Foundation. It consists of two parts: 1) 832 units in apartment blocks that are part of the 100,000 Free Housing project and 2) close to 2,000 single-family houses built as part of other subsidy programs. The planned capacity of the entire project after expansion in the next years is up to 20,000 dwellings.

¹⁰ Nueva Esperanza is located in the southwestern periphery of Soledad, next to a settlement that was established primarily by the IDPs. The project is composed of 1,561 single family, two-bedroom attached houses, each with a patio and a small garden.

¹¹ According to our informants in El Carmen de Bolívar, the local URT office is under pressure to "*prove results*" and in order to meet the quota set by the head office in Bogotá, they often call people who used to own land in the area to encourage them to apply for Land Restitution, even if there was no proven dispossession of the property.

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Industrious Flanders and Brussels – the Northern Area case

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Abstract

For almost two years, Flanders and Brussels are cautiously starting to cooperate on territorial challenges. The cross border northern area, with old industrial estates, the airport, new vacant offices and old villages, is the testing ground.

In the cooperation we will assemble a territorial development program. The first phase consisted of confronting local and regional stakeholders with different types of research by design and student work. This paper will focus on work done by students of CassCities (London Metropolitan University), 1010 architects + urbanists, Artgineering and Studio 014 associato Bernardo Secchi – Paola Viganò. Ideas and concepts can help convince stakeholders to embrace the wonderful life in the Brussels northern area, making sure that industrial and production activities can remain side by side with housing and leisure in mixed industrial estates, along highstreets, or in old villages.

The aim is to show how we can incorporate the urban fringe into the vibrant city of Brussels. This will not happen by demolishing and reconstructing large areas, but through accepting the value of what is there, by nurturing the possible and defining what is missing. Careful looking, embracing lucky finds and stimulating everyone to accept and promote urban production seem to be key to success.

'Industrial areas [...] are not well-understood. Most people have no idea what is made and assembled in their borough, because industrial areas are unwelcoming and do not have a public face. It is difficult to gain an appreciation of their scale and purpose without observing them first hand.'

Scott, Gort, *From Around Here: Tottenham Employment Study* (London: Haringey Council 2013), p. 4

1 a challenge for the Brussels Metropolitan area

“Brussels, like many large metropolises around the world has grown beyond the city’s administrative boundaries. Also like some other major cities, Brussels is a city region, surrounded by another region with different actors, plans, political and economic goals and histories. What makes the case of the Brussels city region special is the existence of different official languages and cultures on both sides of the city’s boundaries. Any attempt to propose a common urban and development plan for the metropolitan region that crosses Brussels’ borders will be challenged by a patchwork of histories, cultures, municipalities, regions, languages and identities. The current search for a vision for the Northern Area, a border-crossing area that includes the Zaventem airport and other national and international institutions and infrastructures therefore poses major challenges to architects, planners, and politicians. Any spatial solution expressed into a planning vision for this area will have to take into account the particular regional and local framework.” (Hein C., 2014)

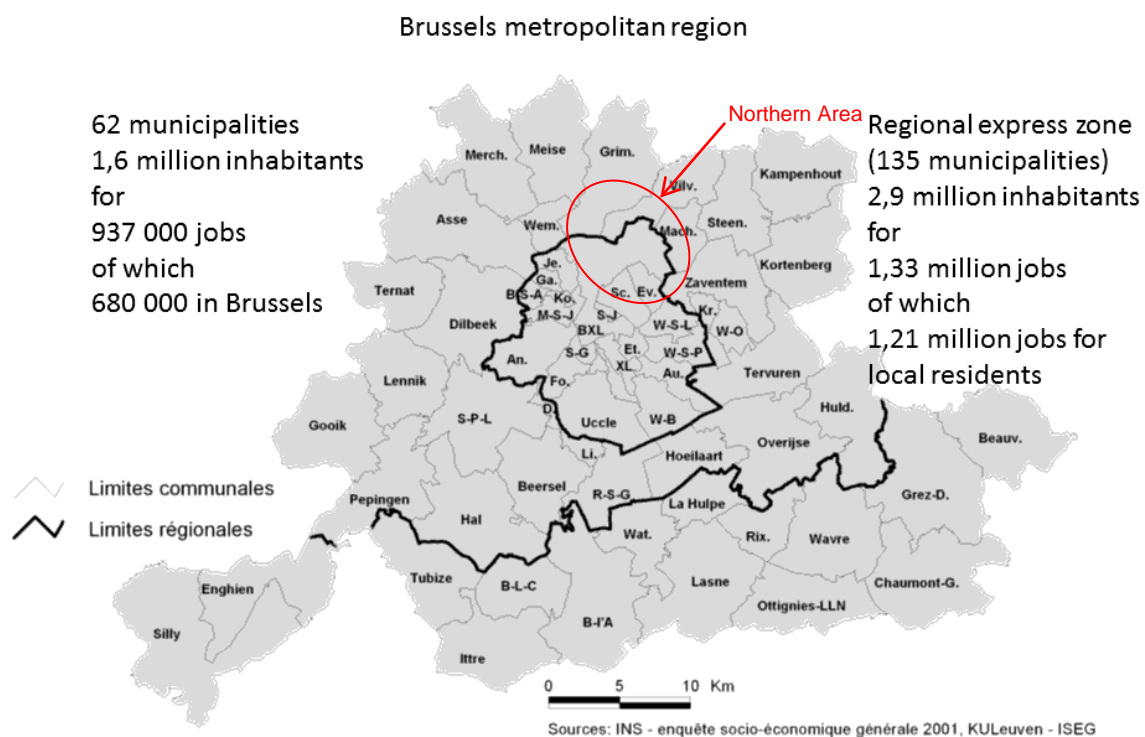


Figure 1: Brussels’ Northern Area situated within the metropolitan region

During the 2014 CassCities/RuimteVlaanderen summer school, Eric Corijn¹ formulated the major challenge for the Brussels metropolitan area as follows: *“to truly understand the*

dynamics of Brussels, one must acknowledge the extremely rapid growth of the population. The downward demographic trend which began from the historical population maximum in 1968 (1.079.181 inhabitants) is turned. ... On January 1, 2013 1,154,635 people were registered in the Brussels-Capital Region (19 municipalities). Between 2010 and 2020, a net growth of over 140,000 people is expected.” Specific for the Brussels situation is that the net growth of the population is associated with an ongoing suburbanisation. The Brussels-Capital Region keeps losing around 5,000 people annually to the other regions. Between 2005 and 2013, the Flemish suburbs gained 25,000 inhabitants to a total of 415,000 people.”

The industrial production based society evolved since the late 1950s to an advanced service economy, while Brussels slowly profiled itself as the capital of the European Union.ⁱⁱ

Unemployment in the industrial working class remains structural, especially among young people and workers with a migration background. One-third to over half of young people in some neighborhoods are unemployed. Nevertheless, the economy continued to grow in Brussels in the service and healthcare sectors and as a result there are more than 710,000 jobs, of which 365,000 are occupied by commuters. 54 percent of commuters living in Flemish or Walloon Brabant. According to Eric Corijn over 105,000 jobs are directly connected to international functions of Brussels. Corijn: "This internationalization of the Brussels economy is also present in the suburbs and the fringe, more specific in the logistics activities and the airport region." Lack of sufficient demand for low-skilled productive work in Brussels results in a strong dualisation of society and poverty. Social and economic integration of the periphery in the dynamic of Brussels-Capital Region will also be visible in the form of urbanization. The new residents of the fringe bring higher densities and social multi-culturalisation. Part of the population moving out to the fringe do so because of upward social mobility from the (impoverished) canal neighborhoods of Brussels. These social developments are at odds with the detached housing trend that dominates the Flemish periphery today. Densification is necessary to strengthen urban functions and services, especially in the existing smaller cities, like Vilvoorde and the old villages.

Production of goods remains a very important element of economy, not least for employment. New Industrial Policy in Flanders (Flanders in Action, Pact 2020) is mend for 'Maintaining prosperity and competitiveness in a changing world by transforming 'industrial activities'. Elements of the strategy are competition in a globalised world, prosperity and safeguarding our environment.

For spatial policy facilitating economy often means providing places, well-equipped locations, where (industrial) production happens. Spatial policy is interested in the concentration of activities and in reducing employee trips by car. We know that cities, towns and smaller settlements have the largest concentration of inhabitants and are therefore the main areas of recruitment for employees. In the structure plan of Flanders (1997), the vision on space, the goal is set that mixed use of space is to be improved. Nevertheless in the years since approval of the structure plan industry seems to get expelled from the settlements.

Traditional spatial policy seems to favour separation of the economic function, and especially production, from dwellings and away from the centres of cities, towns and other settlements.

Flanders has dedicated hundreds of hectares to large business parks in the process of demarcating urban areas. In doing so the space for production activities has been included in the urban area, more or less near the city but almost always on greenfield locations, mostly on land formerly used for agriculture. In strategic port zones, the same kind of development is being planned and equipped for future harbour and logistic activities. Provinces are responsible for the development of a vision on space of the smaller towns and economic nodes. They made the same choices, providing space on greenfield locations for middle-large business parks when demarcating town boundaries. Municipalities are providing space for small business parks next to their main village. Overall, there have been a significant amount of planning initiatives for the separation of production sites from settlements.

In the same period former industrial sites or harbour sites in or nearby city centres were abandoned, because of problems with congestion, size of infrastructure (or size of ships and trucks), delocalisation of activities or industry (Zajac 2015). This economic reality provided the opportunity to rethink the future of those former production sites, called brownfields. Most of those sites were not reconverted into production sites, or even into sites where production sites are mixed in. The redevelopment mainly concerns dwellings, with a rather limited addition with offices, hotels, restaurants, cafés, shops and services: e.g. The Old Dockyards Project in Ghent; The Islet Development in Antwerp etc.), but also inner-city production sites, the large old factories (eg. Vilvorde Renault-site; Mechelen, Lamot and Comet-sites), are locations to create new city neighbourhoods, but without integrating or incorporating production space. These are projects led by the government or institutions commissioned by the government.

It is not only the government which promotes reconversion of production sites into dwellings. Smaller industrial buildings in the urban fabric are often redeveloped into lofts or apartments. In two studies concerning the economic value of a parcel, the findings reveal relevant arguments. For private developers return on investment and profit is without any doubt an essential condition for considering a project.

From a developers' point of view, residential development is far more lucrative (Maring et al. 2015, Pisman et al., 2015, Dugernier 2014) than development of production sites. For an entrepreneur in search of space it is probably easier to buy a ready-to-build plot of land than an old building that needs to be demolished or at least adapted.

2 Planning with stakeholders, researchers, designers and students

The research for this case study is strongly embedded in the Brussels Northern Area project. For the first time since the establishment of the three Belgian regions in 1989, the Brussels Region and Flanders are collaborating on a 'territorial development program'. Previous regional plans hardly even mentioned the existence of other regions. Planning has therefore to be nimble, avoiding stubbornness and obstinacy, and aim for collaboration and consensus building. The Northern Area project explicitly want to leave the old functionalist planning paradigm (shown in chapter 1) behind, for two main reasons:

1. Old recipes that worked perfectly in one region, will only arouse suspicion within the Northern Area project. If Flanders would propose to proceed as they usually do, the Brussels' partners will almost naturally be opposed to the approach and the outcome. A fresh start is needed to emphasize the fact that this is a first attempt to do Belgian cross-border planning projects.
2. For more than 20 years, all spatial planning initiatives resulted in a further suburbanisation of the Brussels Metropolitan Fringe. Industry was pushed out and replaced by either Dutch style residential developments or office parks. Both types of development created build up areas that have no link with a real urban experience, and these monofunctional areas are struggling.

Gibbons' 'Making space for Dalston' project (Gibbons, 2010) could not give a better description of our ambitions with the Brussels Northern Area project: *"Making Space in Dalston is a design led example of deliberative planning; the process of constant feedback between thinking and doing, where partners prefer to get their hands dirty in collaboration with local people rather than spending money on reports or subscribing to conventional top-down approach typical of the masterplanning process. Having been conceived over three years ago the methodology of valuing what's there, nurturing the possible and defining what's missing, from grass roots up, [...] it offers an early insight into the practical and design implications of shifting the balance of power. By involving local people in decision-making, it allowed local partners to take ownership of the projects, discuss governance and evolve together the mechanisms for future sustainability. [...]"*

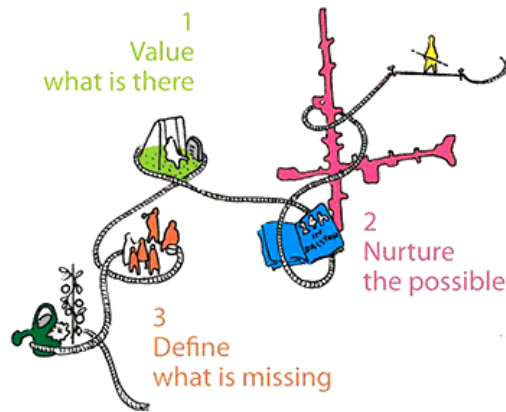


Figure 2: Making space in Dalston: the principles of the study (Gibbons 2010)

[...] The project has promoted the role of an open dialogue in delivering responsive and meaningful change. By building trust and enthusiasm about public space in Dalston, and with a modest spend matched with a significant quantum of sweat equity from stakeholders, the project provides a test case for how the idea of the Big Society will play out at the point of delivery of new urban plans. It demonstrates the possibilities of incremental regeneration in evolving fine-grained deliverable innovations, particularly given an area of natural cultural diversity, and the entrepreneurial approach of the designers. The process forged new alliances, formal and informal, delivering relevant projects within a tight timeframe to composite client groups and interested parties, under a strategic umbrella, with restricted means, not reliant on economic fortune.”(Gibbons, 2010)

Like Dalston, the Northern Area project was initiated as a bottom up process, with no official agenda nor goals. Local stakeholders were asked to join the discussion and to take part in the construction of a real common understanding and vision of the northern fringe of Brussels. As the northern area is significantly larger than Dalston, we chose a more structured approach, involving researchers and design teams to enable an open dialogue.

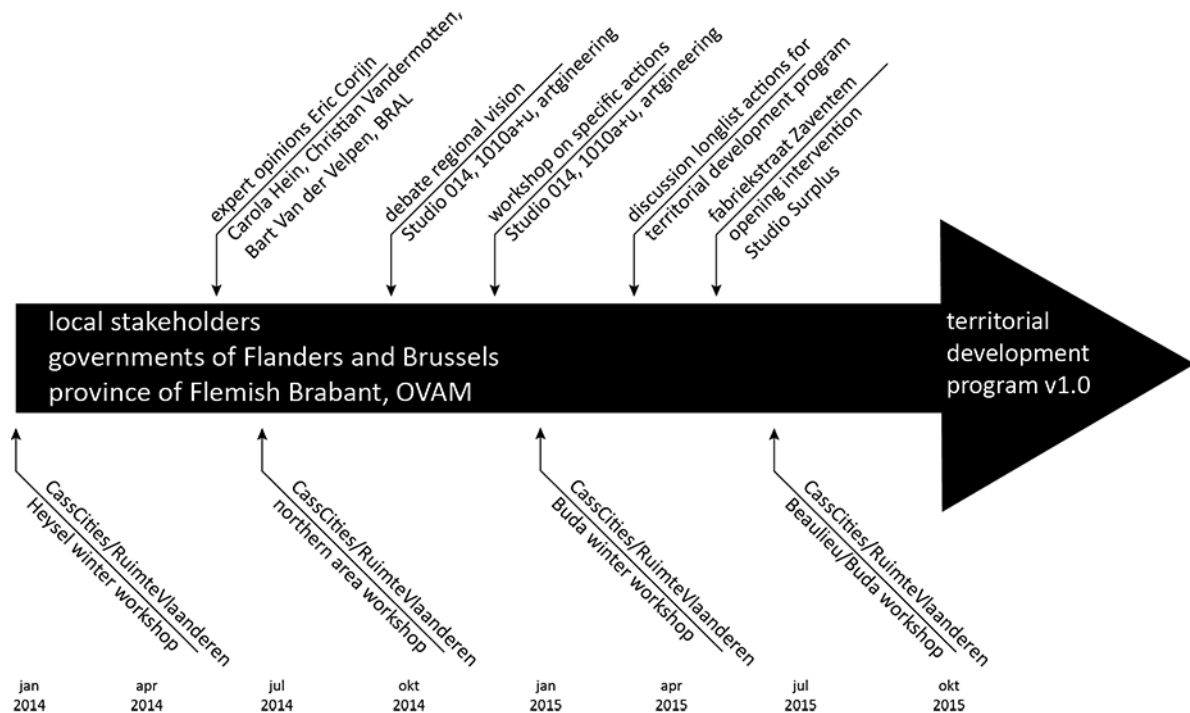


Figure 3: Brussels Northern Area Project scheme 2014-2015

Local stakeholders are at the center of the planning process, and, after some joined fact finding, did propose a first long list of what can become an action program called 'territorial development program'. To help discussion and promote debate, RuimteVlaanderen, the spatial development department Flanders, invested in research and design. Instead of commissioning one big comprehensive study, we asked for different research and design opinions. The divergent research or design statements were used as a starting point for stakeholder workshops and debate. Five well known Brussels' researchers or opinion makers (Eric Corijn, Christian Vandermotten, Bart Vander Velpen, Carola Hein, BRAL) presented their expert opinion on what to do with the Northern Area, and four design teams (Studio 014 associato Bernardo Secchi – Paola Viganò, 1010a+u, Artgineering, Studio Surplus) each focused on a specific area or topic. Both researchers and designers were chosen because their previous work showed that they have a sharp opinion on the development of the Brussels Metropolitan area.

The open planning process is driven by the input of designers and researchers, and continually adjusts the assignment of the design projects. Stakeholders were invited to discuss the research and design proposals and give guidelines to the teams for the next phase. The input (research and design) and the output (development program) are intertwined and cannot be seen separately.

To avoid self centeredness and to open our minds to fresh and different views, a collaboration with teachers and students from Cass Cities (London Metropolitan University) was initiated. Through two winter workshops with Cass Cities students, and two international summer workshops, a vast number of excellent and new ideas were produced and introduced in the planning process.

As the Northern Area project only finishes its first year at full speed, we have mainly been involved in valuing what is there, and started to nurture the possible. During the 2015 summer workshop, we engaged three owners/developpers of different sites to participate in the discussions and debate with students and other stakeholders.

3 Four CassCities/RuimteVlaanderen Workshops

In this paper will limit ourselves to the impact the four student workshops had on the project. The other research and design results will only be discussed if there is a clear link between the workshops and what the research or design teams proposed.

3.1 Heysel Winter Workshop 27-28 January 2014

The imminent debate on the construction of a new national football stadium pushed RuimteVlaanderen to propose Heysel as the site for the first workshop. Students from Cass Citiesⁱⁱⁱ were assigned to look for a good green link, some 20,000 new homes and a place for a new football stadium.

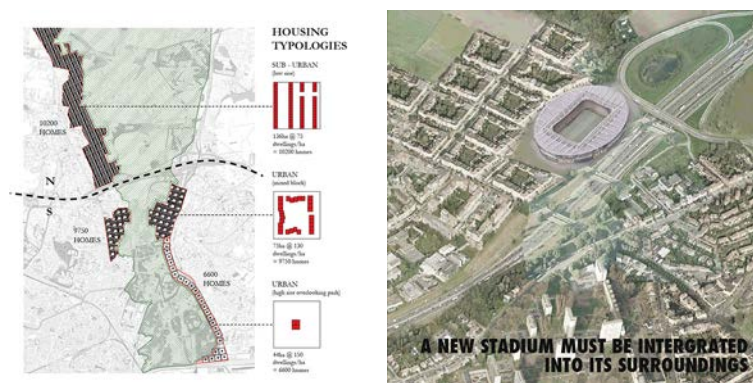


Figure 4: Heysel workshop proposed 26,000 new homes (left) and an urban football stadium (right)

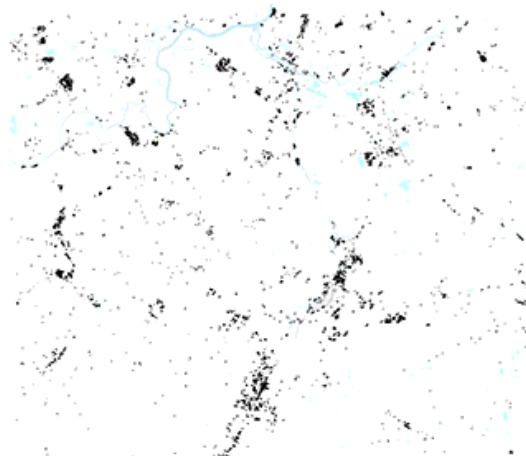
Students questioned territorial assets that everyone in the Belgian or Brussels context is so used to that no one even thinks of challenging it. Every national function, from the inaccessible royal park to the exhibition center was compared with good European examples. Originally conceived as a world expo, the Heysel area was supposed to be a large experience park, but is now taken over by cars and mediocrity. The workshop proposed not 20,000 but 26,000 homes, including building high rise housing on the royal Avenue de Meysse.




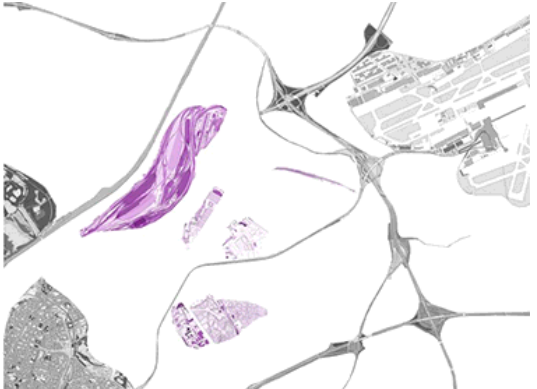
This first workshop was so successful that almost all the concepts and ideas still are part of the territorial development program. Meanwhile, a political decision has been made to construct a new stadium, but without the proposed urban environment. Extension of the public transport network will be part of the new development.

3.2 Northern Area Summer School 30 June – 6 July 2014

The second workshop was open to all international students interested in cities. 20 students^{iv} were accepted to join the complex discussion on the future of a vast part of the Northern area. As the assignment was to look for the future of this part of the metropolis in a context of demographic growth, students focused more on valuing the existing and looking for missed opportunities. Careful looking on a vast territory proved to be difficult, yet it revealed these 7 lucky finds (Fig 5.)

In the approach described by Gibbons (2010), the students and teachers valued what is there, and thus awarded some territorial assets with the 'lucky find' title. Lucky finds are the things everyone takes for granted, but that from a functionalist planning point of view should no longer exist. The lucky finds make the city liveable, vibrant and generally interesting. They make streets nice to walk along, and contribute to the urban look and feel of the place. Lucky finds are a crucial means to communicate to politicians (and other stakeholders) what is really valuable.

1	The galaxy comes to town	
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2	A filigree economy	
3	A good and growable transport network	
4	An eccentricity of residual landscapes	
5	Compounds and blockages	

6	Very European	
7	Old streets	

Figure 5: 7 lucky finds, CassCities/RuimteVlaanderen 2014 Summer School

Though these lucky finds do not seem very spectacular, they helped focusing the process on the essential parts. All 7 lucky finds influenced the choice of main topics in the territorial development program. A good example is Bordet and the ‘Good and growable transport network’.



Figure 6-7: elaborating the Bordet public transport node: left: CassCities/RuimteVlaanderen 2014 Summer School, right: Artgineering 2015

Bordet is on the verge of four lucky finds (very European, transport network, old streets, the galaxy comes to town). One of the student’s proposals (Fig.6) evolved through the work of Artgineering to a full new intermobility hub (Fig. 7) and became a crucial part of the Framework action ‘international boulevard’ (Fig. 8).

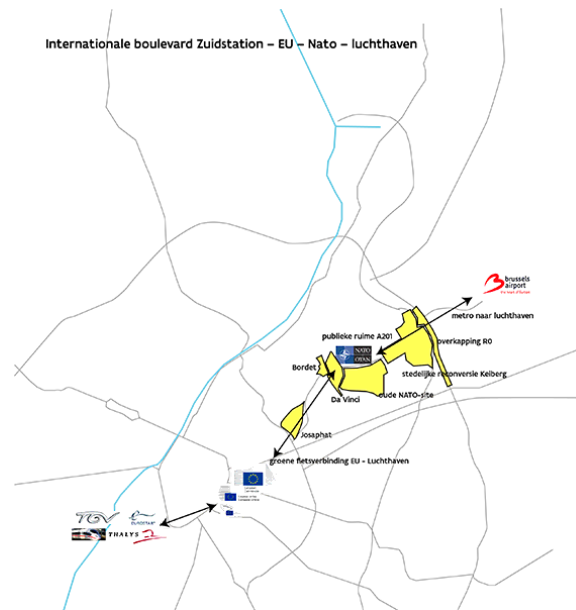


Figure 8: Northern area framework action 'International boulevard'

3.3 Buda Winter Workshop 22-24 January 2015

Both 2015 workshops focused on the area around the Buda train station. The winter workshop with CassCities students^v, mainly worked along the canal and proposed 20 ideas. Most of the work involved 'valuing what is there', showing 'Buda Lucky Finds' and even a postcard. (Fig. 9-10) Other students took it a step further to 'nurturing the possible', where they proposed interventions that could revitalise the area.



Figure 9-10: Buda Lucky Finds (left) and postcard from Buda (right) CassCities/RuimteVlaanderen 2015 Winter Workshop

Examples are the transporter bridge, an inventory of assets of Buda that need upgrading, or creating access to industrial processes and wholesale companies.



Figure 11-12: extrovert plastic flower wholesale (left) and transporter bridge (right)
CassCities/RuimteVlaanderen 2015 Winter Workshop

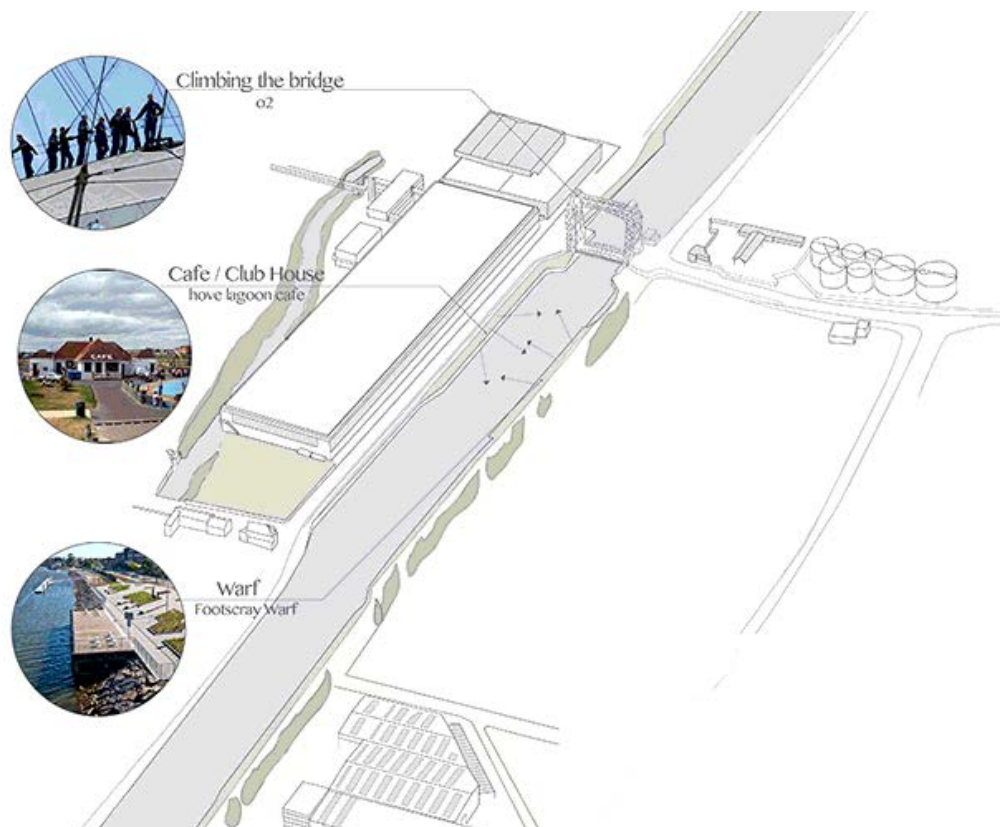


Figure 13: Nurture the possible at Buda Bridge CassCities/RuimteVlaanderen 2015 Winter Workshop

During this 3-day workshop, many great ideas were developed, that showed to RuimteVlaanderen and to other stakeholders the power of this positive approach. Showing the vast array of possibilities, and explaining how you can make them happen, was for most stakeholders the first time they heard someone talk this positive on the Buda Area. One local investor joined the discussions, and is one of the early adaptors. His company is now developing a bar and a shared workshop in a shed that was hardly used.

Thus, the third workshop proved that the valuing and nurturing approach could activate inspired action. This also convinced partners in the Northern Area project to get investors involved in the planning process and in the 2015 Summer School.

3.4 Beaulieu/Buda Summer School 6-10 July 2015

As we proposed to work on four smaller sites within the Buda area, the 27 international students^{vi} took the big step from *valuing* and *nurturing* to *'define what is missing'*. The owners/developpers of three sites were actively involved in the *'defining'* ideas and proposals during the workshop.



Figure 14: Four sites in Buda

Students started with careful looking to the assigned area, and did first steps to inventarisation (eg Fig 15: catalogue of vacant space), and truly understanding the place through interviewing residents, owners and workers. The focus on a smaller areas brought discussions closer to reality, and resulted in proposals that took advantage of dead end streets and remote or enclosed spaces. The Bruulstraat backyard roller coaster shows that you can do amazing, creative things in an invisible secluded space.

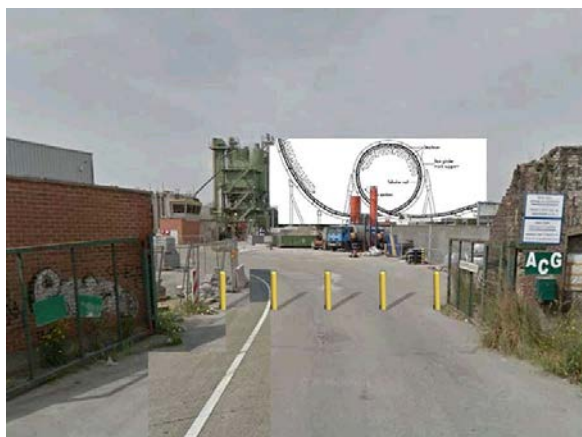
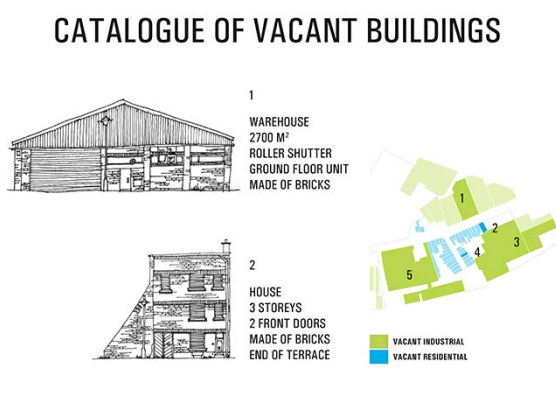


Figure 15-16: Catalogue of vacant buildings (left) and Backyard roller coaster (right)
CassCities/RuimteVlaanderen 2015 Summer School

One group worked on the area surrounding a new giant shopping mall. Not everyone is in favour of such a big building, focused on its interior space, but the group managed to show

how the surrounding areas could benefit from this multi million investment. They made two sets of postcards for Buda One set showed the existing assets, another the possibilities of the area. In one final proposal they wanted to show the investor what a real urban dialogue with the surrounding industrial area would mean, and even how he could make additional profit.

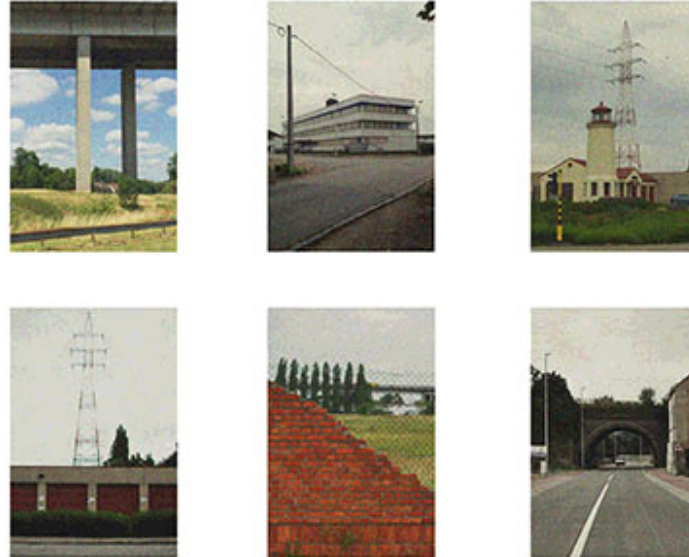


Figure 17: six postcards of the existing fabric CassCities/RuimteVlaanderen 2015 Summer School

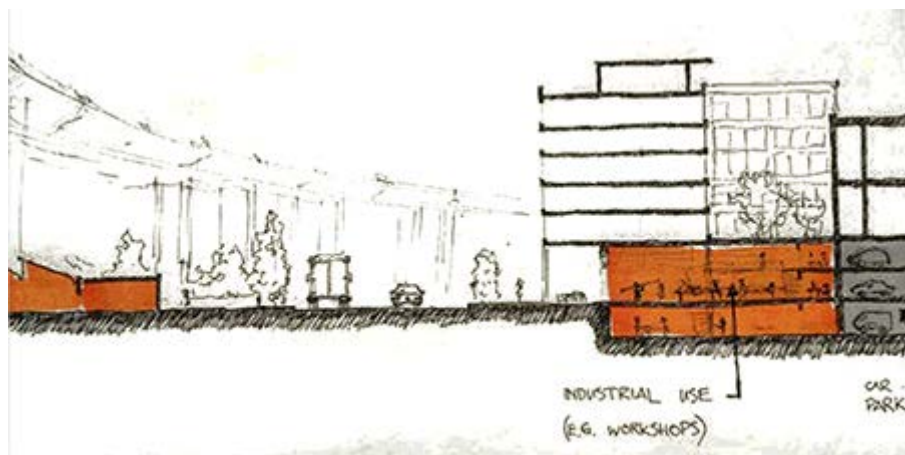


Figure 18: Proposal for integrating the planned shopping mall in the industrial area CassCities/RuimteVlaanderen 2015 Summer School

On the adjacent IRET development site, others went as far as giving architectural proposals for the “Kerklaan” street. In collaboration with the developer, the proposed different versions for his site, and showed how he could incorporate contemporary industrial use into a housing project. The idea evolved into a promising final debate where the developer engaged himself to study the proposals. He then asked RuimteVlaanderen to support him in discussions with local and other administrations to bring good ideas and concepts in realization.

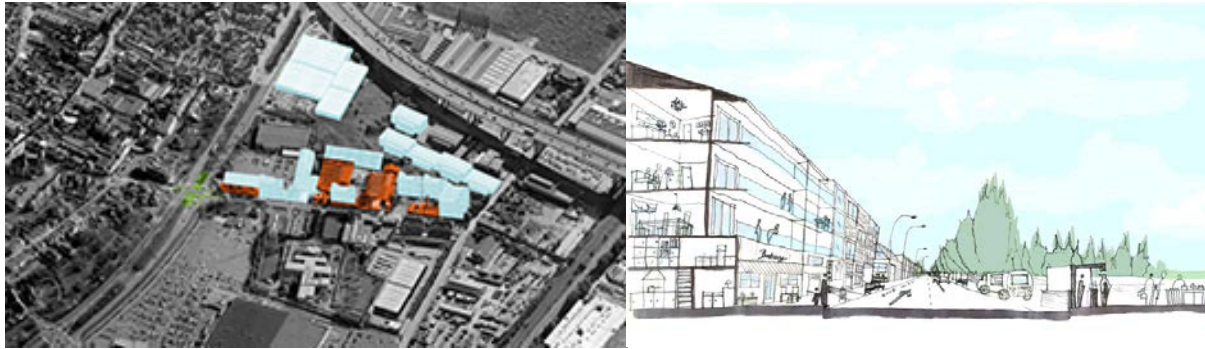


Figure 19-20: new development along Kerklaan (left, in blue and green) and proposed new street front Kerklaan (right) CassCities/RuimteVlaanderen 2015 Summer School

4 discussion

The Buda workshops show the importance and fragility of ‘old’ industrial areas. One important element is to make them visible and enjoyable as an urban experience. Celebrating industrial production by staging events, such as the Brussels’ Festival Canal seems a crucial step if we want to move away from functionalist planning methods.



Figure 21-22: Workers’ giants parade in Lokeren (left) and proposal for a Buda giants event (right) CassCities/RuimteVlaanderen 2015 Summer School

Organising a Buda-fest where local companies make giants, following an old tradition from medieval processions, and 19th century workers’ traditions (Fig 21). Creating urban legends, or even just recent traditions (eg Zinneke parade in Brussels) will prove necessary to regain an urban pride of old industrial areas. If we want to have a chance changing the urge to sweep everything away. We have to move from sweeping change and transform it into planting seeds for next generations.



For the Northern Area project, the challenge to come is to deliver real change on the field. To assure that the first attempts are reasonably successful, and that the enthuse other investors to start working on a larger scale.

However, the pragmatism of the ideas we are developing also needs some sort of economic or commercial dimension that begins to explore the feasibility of taking advantage of the developable areas the analysis is revealing. Some sort of research that begins to demonstrate the economic value that we are potentially unlocking for the city, for the community and other stakeholders could provide some very interesting headline figures and make people pay attention.

This would begin to demonstrate the financial value of the whole project and help spur the authorities' and the market's interest in the project.

It's real! It's worth a lot of money!

This work is very valuable to Brussels and to the regions, and could transform the economic future of Brussels. Ways of measuring this might include attaching a notional value based on current real estate values to the land uses contemplated. This could then be measured against costs of creating the opportunities.

“And here is my article (book introduction for a never published book) advocating an extrovert economy:

An extrovert economy.

A few months ago I visited a big Dutch new town. It's one that's doing reasonably well, and it's all very green and neat. But there's something odd about the place, in a way we've all seen before. Something seems to be missing, because it's hidden away. It's the economy that's tucked away beyond the trees, out of view. The office blocks and the industry are off on their own, landscaped and screened. The schools, colleges and the healthcare buildings are lurking around the back on quiet suburban roads. The shops and community centres, and the places to get a meal or a drink, are in little precincts that you go to when you need to, and only then. It feels like that town turned out the way it did because people had in mind an idea that the economy is something others do for you, or do to you, that it is okay for it to be over there, not here, that there is no need for it to be exposed.”

Mark Brearley, as cited in Snow (2015)

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ⁱ Corijn E. (2014)

ⁱⁱ Hein C (2014)

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^{iv} Students 2014 Summer School: Jennifer O'riordan, Aoife Marnane, Tuong Vi Phon Le, Jacob Neville, Eleanor Figueiredo, Molly Judge, Simeon Shrebunae, Holly Harrington, Lorenzo Santosuosso, Eimear Egan, Alix

Denercy, Cigdem Hacioglu, Iulia Galinescu, Elise Candry, Jan Ackenhausen, Alberto Innocenti, Anneloes Van Noordt. Teachers: Mark Brearley, Adam Towle, Francesca Benedetto, Sarah Considine, Dann Jessen, Merritt Bucholz, Peter Carroll, Jan Zaman.

^v Students 2015 Winter Workshop: Amanda Impey, Leon Donald, Jennifer Monaghan, Dan Sweeting, Adam Isaaks, Helmi Valkola, Nikolai Almeida, Charlotte Savage/Calver, Andrew Catcheside, Jon-Scott Kohli, Laura Lamont, Joseph Henry, Alex Spicer, Kaiyil Gnanakumaran, Eleanor Pedley. Teachers: Mark Brearley, Adam Towle, Sarah Considine, Finn Williams, Lara Kinneir, Jan Zaman.

^{vi} Students 2015 Summer School: Katie McClure, Alexander Sarafian, Kato Allaert, Colm macAoidh, Andrew Catcheside, Kyra Galjee, Matt Bloomfield, Alpa Depan, Irene Kali, Emilio Mossa, Rob Brink, Diede Onzia, Jana Culek, Piergianna Mazzocca, Hugo Corbett, Lea Soret, Anke De Smet, Els Vernimmen, Lorenzo Alaimo, Pamela Snow, Eoghan Hurley, Alex Griffin, Sarah Mannion, Cigdem Hacioglu, Alessio Minto, Elena Borghese. Teachers: Mark Brearley, Dann Jessen, Adam Towle, Francesca Benedetto, Annette Kuhk, Jan Zaman.



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Comparative Analysis of Green Areas in Different Shiraz Residential to Define a New Criteria for Studying Urban Greening

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1. Abstract

Since ancient times Shiraz is known for having beautiful gardens, worldwide famous as Persian Gardens. Its gardens mostly remain in two forms of large and small scale gardens. The large scale gardens are those typically known in the world as Persian Gardens, which are listed in UNESCO's world heritage sites. The small ones are those located within heart of small buildings, namely courtyard houses.

Today, public and private sectors and their strategic plans are mostly focused on large scale gardens. However in this paper we would like to change the focus from large-scale to small-scale Gardens. This is mostly done to retain and increase green space area not only in the form of large Garden but also to distribute them within each private building. To do so we try to study and compare three areas of Shiraz with three different characters and different public green per capita (GPC). One is in Shiraz traditional texture famous for its small courtyard houses. The second is one in Grid-based detached houses and finally modern high-rise buildings.

Their attitudes toward urban vegetation have been studied via interference of two criteria of capitation and mental imagination of their resident. To do so we have applied two quantitative and qualitative methods, via Interpolation method using GIS and questioner.

Our result show that the Grid-based detached texture that are experiencing drastic shift in recent years, though having higher GPC compare with the traditional case, have drastically less satisfied its inhabitants. We suggest method as a useful tool to encompass both quantitative (GPC) and qualitative (inhabitation image) figures to save the new approaches in development of greening new areas of Shiraz.

Key words: small-scale gardens, private GPC, building density, residents' mental imagery

2. Introduction

During last century, world's population had a rapid growth. It has been 10 folded, from 1900 to 2000 and by the end of 2008 half of world's population live in urban areas (United Nations, 2008). This process is still on the run till the present day. According to a United Nations prediction, world population will reach 9.6 billion by 2050 and more than 60 per cent of the whole will live in cities. It highlights that growth will be mainly in developing countries (United Nations, 2008). Inevitably, this entails huge challenges especially in large cities, such as biodiversity loss, climate change, over development, urban population densification, public health and social inequality and the effects of economic recession.

Iran's cities aren't except. The destruction of natural ecosystems of Iran began from large resident of population in urban areas, in late of Qajar epoch (Bahram soltani, 2005: 3). Although most cities of Iran located in valuable environmental context, and gardens and trees played prominent role in urban residents, unfortunately in this century lots of green lands have been converted to industrial and residential zones so there is nothing left from their ecological richness (Movahed, 2005: 95). Green areas reduction is more visible in cities such as Kashan, Tehran, Kerman and Shiraz. (Bahram soltani, 2005: 4-5)

This trend has led to the emergence of many environmental movements in the world. That started from prominent figures of the planning world Geddes, Howard and his 'Garden City' Movement and Mumford with his analysis of the 'Rise and Fall of Megalopolis' (Moughtin and Shirley, 2005: 2-3). To that we can add 'Silent Spring' by Rachel Carson (1962), 'Design with Nature' by Ian McHarg (1969), 'Small is Beautiful' by Schumacher (1974) and 'The Tragedy of the Commons' by Hardin (1977) as studies and theories in the causes of current environmental problems which led to the theory of sustainability. Also new urban design movements such as traditional neighborhood development (TND), transit-oriented development (TOD), Urban Village, Regionalism, Environmentalism, and Smart Growth have been proposed to make balance in the built and natural environments.

In Iran some considerable strategies have been suggested or even executed too. "Cultivation in Vacation" is a strategy pominated in Shiraz to encourage mid class citizen to buy lands in Shiraz nearby areas to enjoy their leisure times by gardening, with the scope converting wastelands into gardens. In raising many debates among scholars regarding, its impacts ecological, social and economic issues specially that of reduction of water resources for their nearby agriculture farms. Some other new strategies remained on the table; such as proposing a mandatory rule, to supply at least one tree per residential units in each apartment of Shiraz.

Shiraz with 1.460.000 inhabitants, is the most populous city in the south of Iran (Bazregar, 2012). This city considered by many Iranians to be the city of gardens. It's mainly because of its fertile plains, enclosing between mountains, and it specific weather conditions (Arian pour, 1986: 108). However nowadays, due to urban area expansion, most of gardens and green lands of this city have been disappeared. According to current statistics, area of the urban districts has changed, from about 900 ha, in 1956 to 24000 ha, in 2015, which means it multiples by 27 times. In the meantime this gardens area has been increased from 1565 ha in 1956 to 5962 ha in 1985 but in recent years it lost 3623 ha (Barzegar, 2012).

Table 1: Changing land use of Shiraz districts

2015	2006	2001	1996	1986	1976	1966	1956	year
24000	19074	16574	13880	9098	3540	1609	894	urban area (ha)
1400	2975	4530	5023	5962	5042	3547	1565	gardens area (ha)
TBD	17726	19023	21463	22366	30603	33420	35714	agricultures area (ha)

Source: (Barzegar, 2012) and (Shiraz Municipality's Department of Parks and Green Spaces, 2015)

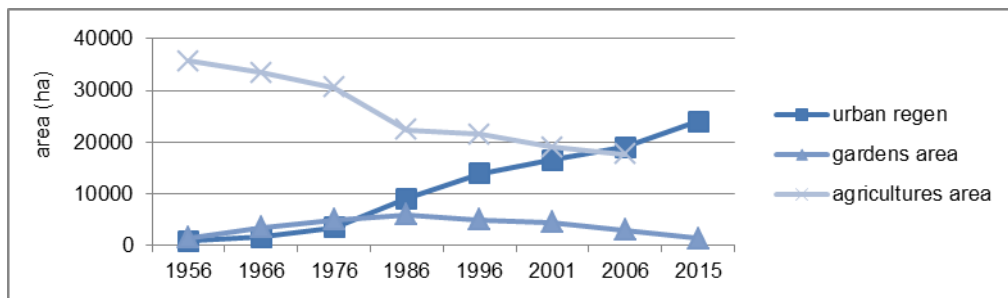


Figure 1: Shiraz land use changes in time

As figure 2 shows Shiraz green spaces per capita is 20.4. Though it is more than the world standard of 20 square meters per capita but considering its history of being a Garden city and vegetation reduction (figure1), Shiraz green areas should be considered seriously.

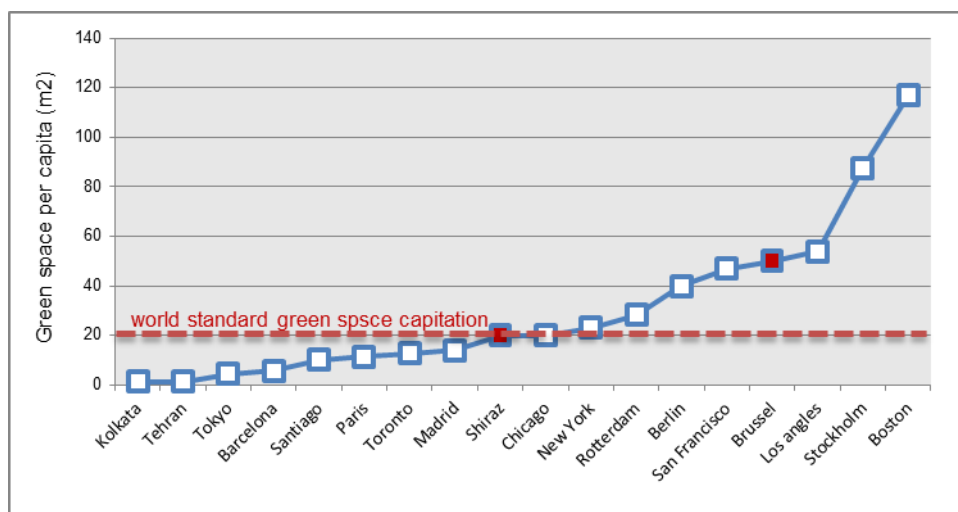


Figure 2: Green Space per capita in cities of the world (Source: Ziari et al, 2009: 302; Majnunian, 1995; Vázquez, 2011; Shiraz Municipality's Department of Parks and Green Spaces, 2015)

Many scholar don't believe in method of assess cities vegetation. Due to standard green space per capita in various part of the world and even in various cities of a country is different, related to its spatial ecology, climate, social, cultural and technical factors. Bahram soltani believes that "each green element in urban environment should be evaluated according to its performance. For example, the green area of traffic network might be having environmental impacts, but its performance is for traffic flow. We couldn't mix various green elements with different performance just due to they are plant and eventually reach to false number called green space per capita" (Bahram Soltani, 2005: 192). As well, Glason believes that, standards are a general guide, not clear instruction (Ziari et al, 2009: 301).therefore it isn't fair to concentrate on quantities factors and put qualitative factors aside.

To calculate green area per capita statistics, parks and public gardens areas and main streets boulevards and crofts areas with width more than 24 meters are be considered. Without taking into account the various residential, educational, administrative and public bodies green areas (Shiraz Municipality's Department of Parks and Green Spaces, 2015). Residential green spaces areas, making large amount of urban vegetation, and they play critical role in people's life. Therefore, it seems that, it's essential to legalize private green space per capita in addition to public green space per capita, and improves urban vegetation through small scale gardens.

Recently many small-scale environmental projects have been considered in different part of the world. Most of them concentrate on leading and supporting project of energy and

environment to protect limited resources. Furthermore this view has been mentioned in some part of diverse urban plans. For example, "The new Vision for Sydney 2030" contains three main visions of a Green, Global and Connected City. In part of green city, planners considered large-scale plans such as integrated and connected network, distribution of public green space as well as small private space. In the vision report mention that "Sydney will be internationally recognized as an environmental leader with outstanding environmental performance and new 'green' industries driving economic growth. The City will reduce its greenhouse gas emissions, with a network of green infrastructure to reduce energy, water and waste demands, led by major renewal sites. The City will help contain the Sydney Region's urban footprint by planning for new housing opportunities integrated with vital transport, facilities, infrastructure and open space. The City will protect native flora, fauna and ecologies." (Bonakdar et al, 2010)

During 2012/13, the City of Sydney continued to work towards the targets outlined in Sustainable Sydney 2030 program. According to this, there are 51 green roofs and 26 green walls on buildings across the local government area. Totalling 89,287m², these installations deliver environmental and community benefits including improved air quality, biodiversity, insulation and visual amenity. (Sustainable Sydney 2030 Snapshot, 2013)

Therefore, in this study we want to compare three different cases in Shiraz with diverse green space per capita, first located in historic center of city (8th municipality) with 4.31 public square meter per capita green spaces. Second and third in new texture of city (6th municipality) with 28.7 public square meter per capita green spaces. this is interesting for us to know is quality of green spaces in new part of city, 7 times more than historic center? Therefore we seek to answer to two main questions:

1. How is the private green space capitation in these three different residential areas of Shiraz in comparison with public green space per capita?
2. How is the residents' mental imagery and performance of green spaces in these three different characters in compare with public and private green space per capita?

3. Research Method

To do so we limited our studies to a parcel of each selected residential areas that include more than 90% residential buildings coverage and approximately 6 hectares private or semi-private green area. Therefore the special parcels are:

1. Organic Historical Texture, located in historical center of city. The selected area is about 500m*400m, with approximately 4000 residents.
2. Grid base separated texture, located in new district. The selected area is about 500m*350m, with around 3000 residents.
3. High density islands, located in high-rise apartment complex in new district. The selected area is approximately 400m*300m, with about 5000 residents.

To acquire optimum results and provide an appropriate response to the questions, in this research process we have used combination of quantitative and qualitative methods. Evaluate quantitative data, contain green private space capitation and building density, mostly performed by GIS.

In order to attain integrate and comparable map from these three different texture, we used Spatial Analyst in Arc GIS. In this method a set of sample points representing changes in landscape, population, or environment can be used to visualize the continuity and variability of observed data across a surface through the use of interpolation tools. Interpolation is a procedure used to predict the values of cells at locations that lack sampled points. It is based on the principle of spatial autocorrelation or spatial dependence, which measures degree of relationship/dependence between near and distant objects (Childs, 2004: 32). There are two categories of interpolation techniques: deterministic and geostatistical. Deterministic interpolation techniques create surfaces based on measured points or mathematical formulas. Methods such as inverse distance weight (IDW) are based on the extent of similarity of cells. (Childs, 2004: 33) It seems essential to say that, in this study for calculating

private green spaces we consider courtyard areas of each parcel. For apartments it include area of all large enclosure garden areas for each block without including little green parts of paths and parking lots.

In the other hand, to assess qualitative data, we used questionnaire. Qualitative analyze in this study seek to understand the residents' mental imagery and performance of green spaces. The statistical population is inhabitants of these three cases. To achieve reliable result, 20 questionnaires randomly distributed between residents.

4. Case Studies

4.1 Shiraz and Its Gardens

Shiraz is center of Fars province and located in south east of Iran. Basically Shiraz soil has great talent for cultivation and growing garden and tree, hence it simply possible to establish garden in the city. It has also countless Kariz (canals) that provide required water (Aryanpour, 1986: 108). In the Achaemenid era, Pars district gardens were worldwide famous, known as the Persian Gardens. Motifs cypress trees carved on the steps of Persepolis represents the gardens and green land of this district in that time (Aryanpour, 1986: 110).

Historians and tourists, who have seen Shiraz in the previous century, quote that, The Shiraz city has always formed by continuous gardens and most of the people lived in these gardens. Chardin, a French traveler, in his travelogue mention that, "What is most remarkable in Shiraz is its Gardens which twenty of them is really unique and has beautiful trees that you never find anything like them. Shiraz at that time surrounded by walls. Beyond these walls gardens were continuing (Figure 3). Tavernier in his travelogue wrote, vast lands of north and west of Shiraz, from hillside to cities walls, covered by gardens and green areas (Aryanpour, 1986: 119-112).

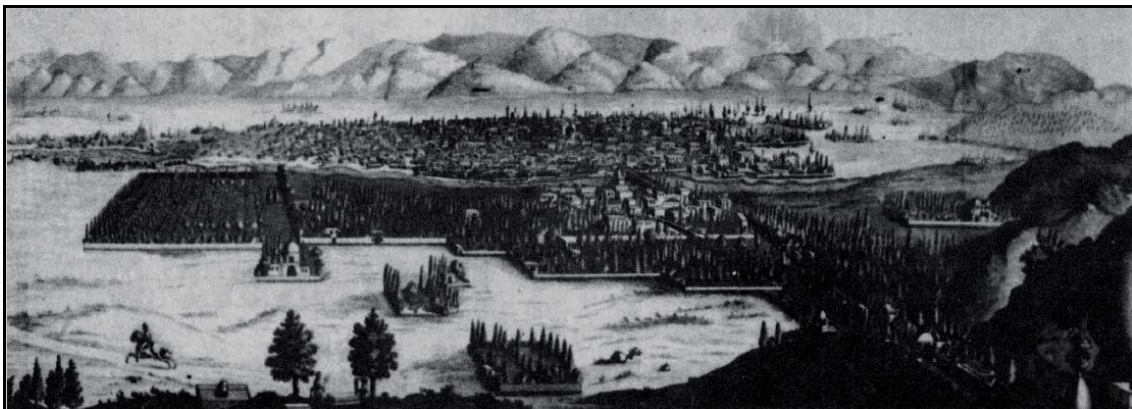


Figure 3: View of Shiraz from the north (Source: travelogue Chardin)

In recent decades, due to the city populating growth, development limits, lack of suitable land for construction, economic issues, the new trends of high-rise buildings, land speculation and particularly reducing, a large number of gardens in and around the city have been deliberately destroyed. Remained gardens mostly are in tow forms of large and small scale Gardens. The large scale gardens are those typically known in the world as Persian Gardens, which are listed and nominated in UNECO's world heritage sites. In addition small part of the Ghasroddasht gardens and wide parks recently constructed. The small ones are those located within heart of small buildings, known as courtyard houses. Herbert and Barabrt Shirley said: "In Shiraz few house didn't have a garden and the garden is liked the forest of tall sycamore and cypress (Aryanpour, 1986: 112).



Figure 4: From left, Tomb of Hafez (Zolfaghari, 2008); Naranjestan_e Qavam Yard; view of ghasroddasht gardens (Farrokhmanesh, 2011)

4.2 Three Residential Areas

In this study we want to analysis three different residential green areas with three different characters (Figure 5 and 6). First is in historical center of Shiraz city, with congested and organic urban texture. Areas of public green space in this texture possess a low footprint. green per capita of public space have been reported 4.3 square meter, however, Within these organic textures, exist courtyards, which can be considered as an urban green texture. Courtyard is the main principle and hart of ancient Shiraz residence (Memarian, 1994: 159). The courtyard houses have a very old history; many cities in the Middle East used this type of housing. Durability of these houses till present represents their functional desirability. These courtyards mostly contain elements such as basins and gardens with trees of sour orange, orange and tangerine. Form of these courtyards provides suitable light and air for residents (Memarian, 1994: 161).

Second case located in northwest of Shiraz in modern and new texture of Maaliabad, with grid base separated texture. These regular houses have independent private yards; contain 40 percent of each parcel areas in one side. Due to elevation policy proposed by the municipal authorities, house of this regen evolving from 1 and 2 stories to apartments with 4 and 5 floors.

Third case is a high rise apartment complex with semi-private green areas. Located also in northwest of Shiraz in modern and new texture of Maaliabad, with equal green public space precipitation as second case.



Figure 5: From left; 1) courtyard houses in historical center; 2) houses with private yard in grid base separated texture; 3) semi-private green areas in high rise apartment complex



Figure 6: From left; 1) courtyard houses in historical texture; 3) semi-private green areas in new texture

5. Result and Discussion

At this stage, we try to analyze private per capita green space, building density and mental imagery of residents about their environments in three samples based on the methodology described above.

To analyze the private per capita green space and building density, we use a system of mapping called Interpolate Map system, using Arc Map software. To do so we need to convert each plot's data including- parcels areas, building areas, yard areas, number of floors, parcels population, private green space per capita and building density- to a specific point within the plot. Then through Spatial Analyst and via IDW method, from various models of interpolation, set private green space per capita as input variables and create green private capitation map (Figure 7). A similar approach applied to calculate the building density (Figure 8). The resulting maps provide set of contour lines that illustrate integrated analysis of the private green spaces per capita and building density distribution in each sample.

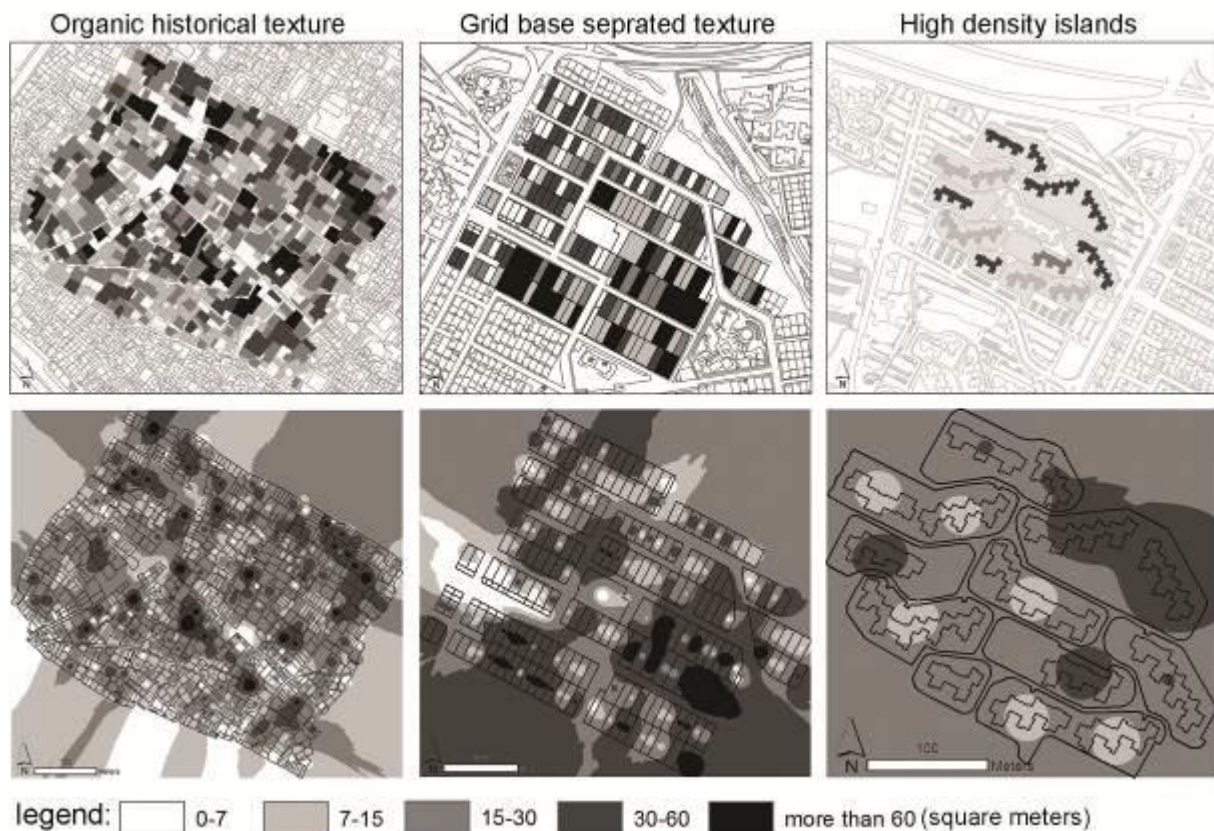


Figure 7: green private and semi-private capitation in three different samples

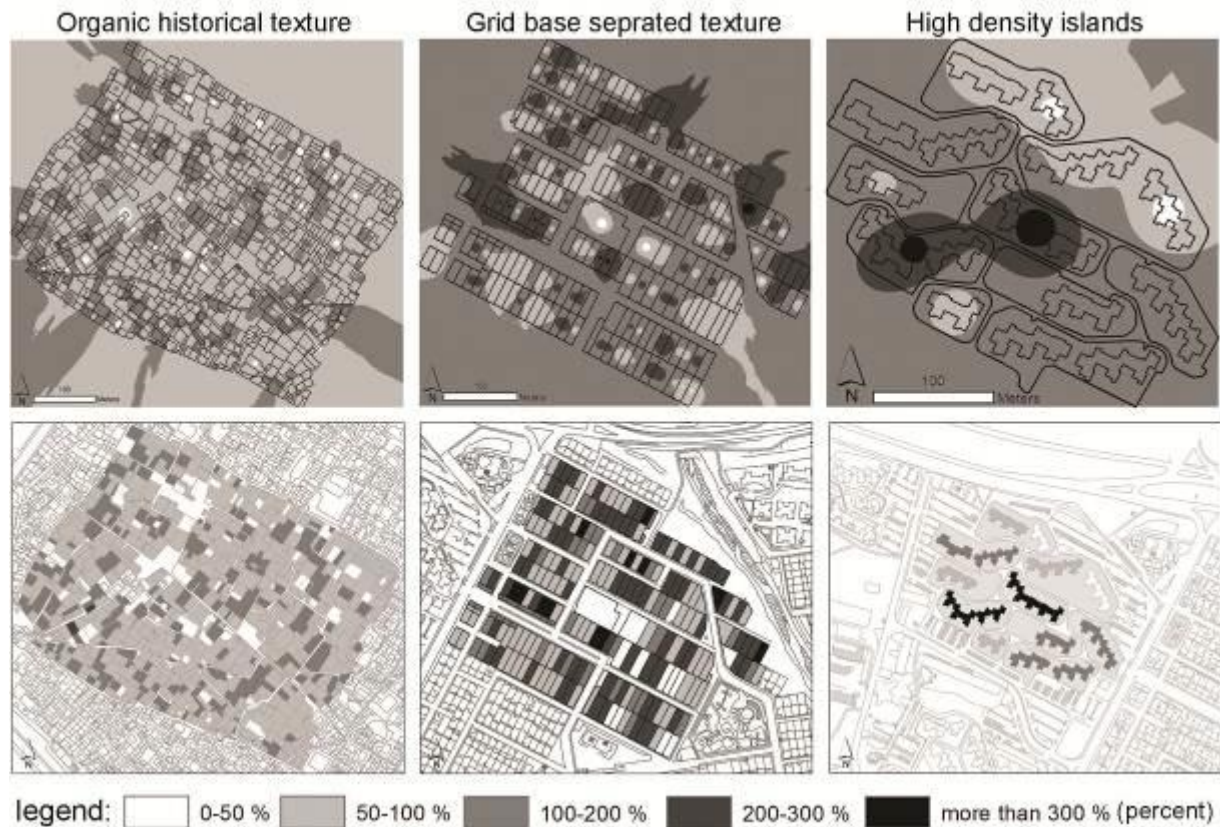


Figure 8: building density in three different samples

Public green space and private gardens capitation show an opposing pattern of occurrence in different cases. Capitation of private gardens in three characters shows that, generally it has highest amount in grid base separated texture, about 20.6 square meters. Historical texture with 15.4 square meters per capita is more than apartments with 11.8 square meters. In general comparing, public green space per capita of new district, obtained by official calculations, is 7 times more than historical district; While private gardens capitation in these two cases is almost equal, and approximately it's higher in historical texture. (Private gardens capitation historical district=15.4 Private gardens capitation new district = 14.8)

Distribution of private gardens capitation in modern district confirms that, it contains concentrate and large zones of the same capitation which irregular pattern. Although in historic district, it contains small zones which change in more harmonious.

The interesting item in comparing building density and green private space capitation is that, building density of modern district has direct impact on private green space per capita. There is approximately an overall reduction in building density while moving from low gardens precipitation to high. However, the building density in the historical district doesn't have specific relationship with private garden per capita. This comparison indicates that in new district by increasing building density and the ratio of growth in population, providing private green space for residents have been neglected (Figure 9 and 10).

In addition, this issue is obvious in compare distribution of building density and green private space capitation in figure 7 and 8.

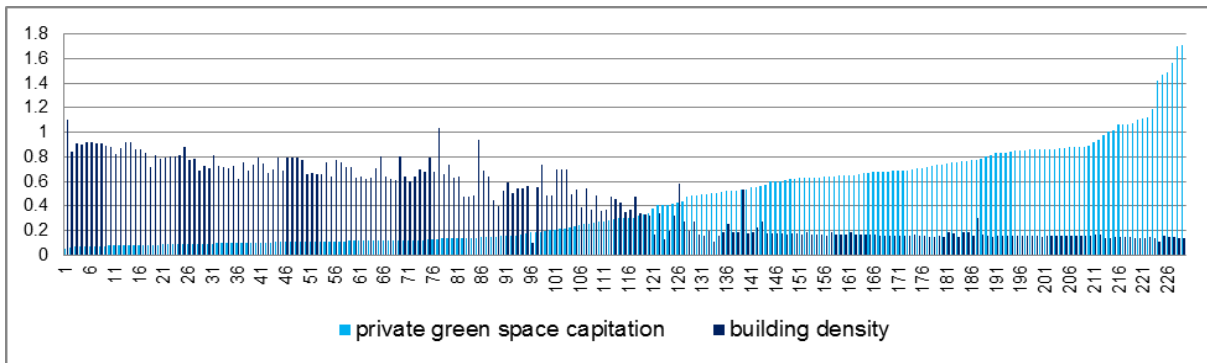


Figure 9: private green space capitation and building density in modern and new texture

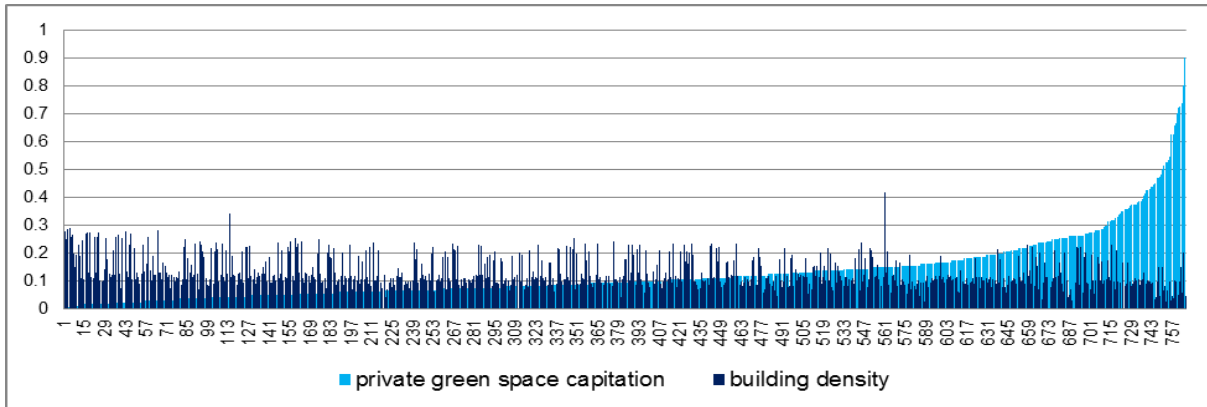


Figure 10: private green space capitation and building density in historical texture

To analyze residents’ mental imagery and performance of green space usage, from these three cases, we discuss about two main questions. The first question is about the amount of private and public green spaces usage, and second is about satisfaction rate allocated to private gardens. Due to, grid base separated texture is in the middle of huge change, from single-unit to apartment type, for better analyze, we have separated the questionnaire results in two individual parts. (Table 2)

Questionnaire results indicate that, the use of private gardens in single-units houses are more than apartments. As well this amount in traditional houses is more than new homes and in the apartment complexes is more than separated apartment. It determined that, although private green space per capita in grid base separated texture have maximum range, form the view of residents private garden performance in the apartment form of this texture is minimum. Due to the specific condition and character of the historical district, there are few public green spaces in that district, so usage of public green space in the modern texture is more and the apartment’s type is further.

While historical district and apartment complexes have near statistical rate of private green space capitation, residents’ satisfaction in historical houses are approximately 2 times more than apartment complexes. Generally the residents of new region often believe that traditional courtyard houses have superior performance than their private and semi-private gardens.

Table 2: result of questionnaire

	public usage		private usage		Rate of satisfaction
	score	percent	score	percent	
historical texture	40	32.26	84	67.74	60
New texture (single-unit)	58	43.94	74	56.06	68
new texture (apartment)	74	71.15	30	28.85	44
Apartment complex	70	62.50	42	37.50	32

6. Conclusion and Recommendation

Issue of green space development considered as an important in sustaining cities. Shiraz green spaces, in addition to enhancing the quality of residents' life by environmental, psychological and aesthetic benefits play an identification role for citizens.

Due to our analysis and assessments carried out and regarding to our research questions finds out that:

GPC of public spaces within new district is about 7 times more than this variable in historical texture, while GPC of private spaces in these two districts are almost equal. Therefore, considering private GPC in addition public capitation, bring more acceptable condition from urban vegetation. We believe to have a better image of GPC in a district we should get credit to private green area, too and current system of calculations GPC dose not reflect the real condition.

Private green space Distribution in new district has a significant relation with building density, while in historical texture, there is not such correlation between these two variables. This proves that, in recent constructions of new district, providing private green spaces has been neglected. While the green areas spaces should be adopted with the area's inhabitants. Our results show that despite increasing in number of building floors, green spaces area has not increased.

Although private GPC in new district and historical district is almost equal, satisfaction rate and performance of gardens in historical district is substantially higher than new district, spatially in compare with high-rise buildings.

In addition, grid base separated texture is in the middle of huge change, from single-unit to apartment type. Satisfaction rate and performance of green private space, in these two types are completely different. While this case has the highest per capita of private and public green space, satisfaction rate of these apartment type is less than half of single-units. In addition to the prior explanations performance of single-units' garden, in this new type has been reduced to parking spaces and skylights. So apartment type of separated texture has the least satisfaction rate and performance of green private space. It seems that by continuing this trend, the quality of this residential environment will be deteriorate substantially.

Residential zones encompass main parts of cites' area and they are growing continuously. Our studies show that crediting private green spaces could have significant impacts on distribution of urban vegetation and hence increasing inhabitants' image of greening.

Finally as grid base separated texture have much more problems comparing with the other two cases to improve the situation we recommend to reduce the buildings occupation ratio to provide following sufficient green space for residents.

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Are Cities in Nigeria Keeping up with Challenges for Global Competition?

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Abstract

Cities all over are regarded as beacons of development due to their immense contributions to national economies. Cities in Nigeria have been growing very rapidly with no commensurate improvements in the rate at which social services and infrastructure are provided; the result is a gradual decline in the quality of life and of the environment. In view of the poor performance of Nigeria and its cities it is pertinent to inquire if cities in the country are keeping up with or are capable of changes that can make them compete globally. It is also germane to explore what role planning can play in the development of cities with authentic Nigerian identity given their peculiar business environment and challenges. This study uses published data to examine impediments to city performance in Nigeria. Where applicable, Nigeria's cities were compared to that elsewhere as to shed light on future opportunities for improvement. Additional insight on the character of urbanization and important militating factors were gathered through interviews with city and local government officials in the country. The top cities where it is most conducive to do business and the least business friendly cities in Nigeria were highlighted. Other findings show 34 improvements when compared to previous surveys of which 13 focused on starting a business, 8 on dealing with construction permits, 10 on registering property, and 3 on enforcing contracts. The major factors militating against competitiveness in Nigeria were listed as infrastructure deficit, corruption, access to finance, policy inconsistency and red tape. Nigeria as Africa's largest market and economy should lead by making its cities more competitive to put the country on a sustainable path to long-run growth. It is advised that institutions, infrastructure, health and primary education need to be prioritised and the predominantly young population's productive capacity leveraged with the necessary skills to engage in higher value-added employment. Cities in Nigeria should imbibe economic strategies in all their activities to foster investment, and city managers should begin to think in global perspective, even where their statutory duties are local.

Key words: Nigerian cities, city investment plan, role of planning.

1.0 Introduction

The litany of issues dogging Nigerian cities presented in Onibokun and Faniran (1995) has hardly changed 20 years on. These are general human and environmental poverty, declining quality of life and the underutilised and absence of some quality of human resources. Housing and associated facilities (such as water, electricity and waste disposal) are grossly inadequate. Millions live in substandard environments such as slums, plagued by squalor and grossly inadequate social services; as a consequence, shortage of schools, poor health facilities and lack of opportunities for recreation among others is experienced. Delinquency and crime thrive due to the gradual decline of traditional social values and the breakdown of family cohesiveness and community spirit. Moreover, the capacity of law enforcement institutions to prevent crime is

increasingly hampered by technological and resource limitations. In many Nigerian cities, the city centres are decaying without programmes of rehabilitation while new urban peripheries develop without planning or the necessary infrastructure. Intra-city mobility is greatly hampered by poor planning and inefficient land use. The urban economy is characterized by low and marginal productivity and high rates of unemployment and underemployment. The low capacity utilization in the industrial sector also continuously worsens the employment-generating capacity of the urban economy. For the small firms it was worse; about 25 per cent of their total value was committed to electricity generation at several times the cost in developed countries. The Manufacturers Association of Nigeria (MAN) in a 2014 study estimated energy cost of manufacturing production as 40 per cent (Adekoya, 2015). The high cost of producing power individually and other infrastructural services are passed on to the consumers in the form of higher prices.

Nigeria is a large and diverse country with contrasts in physical, ethnic and social mix. These complexities are challenges to investment decisions as sub-national differences in business environment, income, education and culture must be considered. As a result of globalisation however cities tend to resemble or imitate one another across regional lines as much as within national milieus. The benefit of this assumption is that cities can be compared with one another without much regard to regional nuances; after all, urbanization flourishes because people seek the security, opportunities and wider economic prospects that cities provide. Lagos is ranked as one of the largest cities in the world and along with Kano is ranked by KPMG (2012) among the 10 largest in Africa. In addition to the two cities, Abuja, Ibadan, Kaduna and Port Harcourt are listed by Hedrick-Wong and Angelopulo (2014) as cities in Nigeria with a population of over 1 million. In contemporary perception of a city's worth, large population alone is inadequate; nevertheless, in most analysis only Lagos among Nigeria's cities features in the international platform. The 2013 Economist magazine ranking included Alexandria, Cairo, Cape Town, Durban, Johannesburg Lagos and Nairobi in its Hot Spots 2025: benchmarking the future competitiveness of cities in Africa. According to The Economist Intelligence Unit (2013), the 120 cities world-wide included in the study were selected based on regional diversity, economic importance and size of population, and Lagos was placed 119 just above the least ranked city. This raises a question on whether Lagos and other cities in Nigeria have any prospects to keep up with challenges for global competition.

Presently there is an academic resurgence in cities because leading cities in the world outperform the country in which they are situated in most economic indices; as a consequence, they play important role in driving regional and national growth. The observations imply that cities need to optimize their resources as they grow. A world in which half of human population live in cities, over 70 per cent of economic outputs and 80 per cent of energy consumption are attributed to cities has prompted ARCADIS (2015) to describe the 21st century as the 'age of the city'. In view of the dismal image of Nigeria and its cities it is pertinent to ask if cities in Nigeria are keeping up with or are capable of changes that can make them compete globally. It is also appropriate to explore the development of cities with authentic Nigerian identity given the peculiar business environment and challenges. What this study espouses is the experience of urbanization in Nigeria in an increasingly global context and the role planning can play to raise its cities profile.

1.1 Study Objectives

Urban hierarchy theories attribute cities with primacy, industry, services and innovation. According to these theories, city size and designation are concomitant to comparative standing within urban hierarchies. The reality is that people are pulled to cities because of the greater

chances cities afford them to fulfil life's dreams. Naturally, those cities that confer better economic and general wellbeing will as well attract the best migrants, be they investors, innovators, leisure seekers or other reasons from within and outside the region. Africa is predicted to claim seven of the world's 10 fastest growing economies by 2015, yet cities in Africa and indeed Nigeria perform poorly in most rankings of world cities. The goal of this study is to review published rankings of Nigeria's city with a view to appraise their performance and outline how planning can be applied to attract investment to them.

The specific objectives of the study are:

- a) To determine the status of Nigerian cities and adduce explanation for their present state as well as what can be implemented to change their fortunes.
- b) Explore outside of city rankings the arguments and perceptions that may impinge on their global reach.
- c) Outline what role planning can play in the development of cities with authentic Nigerian identity given their peculiar business environment and challenges.

2.0 Methodology

This study relies on published information on cities in Nigeria, supplemented with interviews with city and local government officials. The broad data provided by various surveys on cities in Nigeria were used to characterize their prospects. Ultimately, the purpose is to compare Nigerian cities across indices in order to determine their national and regional rankings as well as what they are doing to improve themselves. The World Bank's (2014) publication by far presents the most extensive sub-national data as it covers major business cities in 35 of the 36 states in Nigeria and the Federal Capital Territory (FCT) of Abuja. The data from this document form the principal source relied on to examine cities in Nigeria as to their preparedness not only to do business, but what improvements they are embracing when compared to previous publications on the subject and rankings by other organizations that may be applicable. The 2014 version of the document compares federal and state business regulations that affect four stages in the life of a small to medium-size domestic firm: starting a business, dealing with construction permits, registering property, and enforcing contracts. The report also compares gender-specific employment data from the main public agencies in charge of administering the benchmarked areas: land registries, building authorities and Corporate Affairs Commission branches in each state. The purpose of the World Bank (2014) study was not to literally rank Nigeria's cities but compare them among themselves and with other leading cities across the world. In this study the World Bank scores have been aggregated for each of the territories of Nigeria; samples from each of the leading commercial city of the state was used to produce a grading of business friendly order.

3.0 Results and Discussion

The top ten cities where it is most conducive to do business in Nigeria were Aba, Owerri, Onitsha, Abakaliki, Uyo, Lagos, Enugu, Port-Harcourt, Yola and Warri. The scores for each of these cities ranged between the highest – Aba (127) to Warri (93). Ten least business friendly cities in Nigeria from bottom are Katsina, Bauchi, Dutse, Gusau, Birnin Kebbi, Minna, Gombe, Damaturu, Lokoja and Ilorin (see Figure 1). Politically, Nigeria is divided into six geo-political zones or region and a region may comprise between five to seven states (Figure 2). Every state in the South-east of Nigeria had a city among the top ten places and the best four cities in which

to do business in the country were in the zone. The next region with the most cities in the top ten was the South-south with 3 cities. The South-west and the entire north (of 3 geo-political zones) had only one city each in the top ten. The key findings of World Bank (2014) report recorded 34 improvements, of which 13 focused on starting a business, 8 on dealing with construction permits, 10 on registering property, and 3 on enforcing contracts. The cities of Calabar, Ado Ekiti, Minna, Abeokuta, and Port Harcourt made the biggest strides towards the national frontier of good practices since 2010 (Capaul and Papahagi, 2014). While most reform efforts focused on reducing the complexity and cost of regulatory processes, several cities also focused on longer-term judicial reforms to strengthen the legal institutions for contract enforcement.

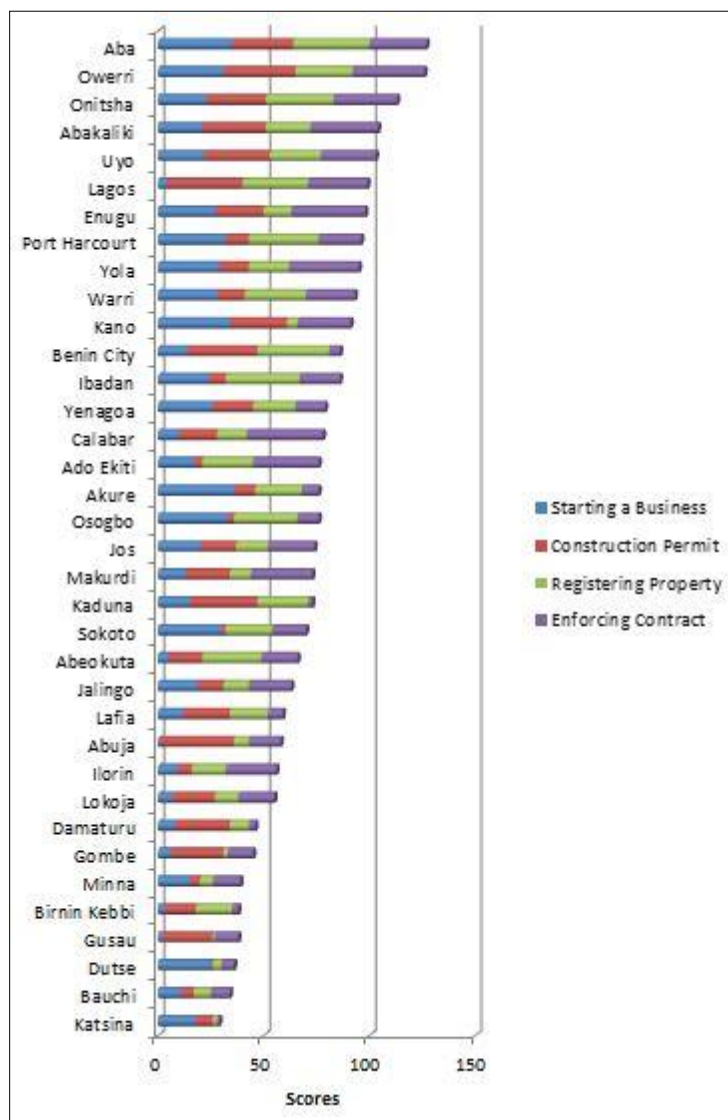


Figure 1: City Ranking on Ease of Doing Business (Data: World Bank, 2014)

Despite improvements, the World Bank (2014) notes that challenges persist: no single state or city ranks at the top in all the areas monitored. Sharing local best practices and coordinating better between federal and state governments are critical to improving the business environment for all Nigerians. The 2014 Doing Business in Nigeria compared to four years earlier recorded reforms that make it easier to start a business: 13 states introduced reforms improving the internal processes of federal or state agencies, such as the Corporate Affairs Commission and state ministries of commerce. Less burdensome requirements and faster approvals of construction permits, as in Yola and Dutse, would make Nigeria one of the best performers in this area, which is more efficient than the OECD average of 13 procedures and 147 days. Uneven implementation of federal legislation and differences in state fees drive the large variation in the cost to register property from 7 per cent of the property value in Damaturu to 26.4 per cent in Benin City. Katsina remains the easiest place to enforce a contract within Nigeria: resolving a standardised commercial dispute takes 314 days and 41 procedures and costs 26 per cent of the claim value. Overall, it is easier to deal with construction permits in Jigawa and Sokoto; register property in Zamfara and Gombe; enforce a contract in Katsina and Kaduna and start a business in Abuja, FCT and Zamfara.

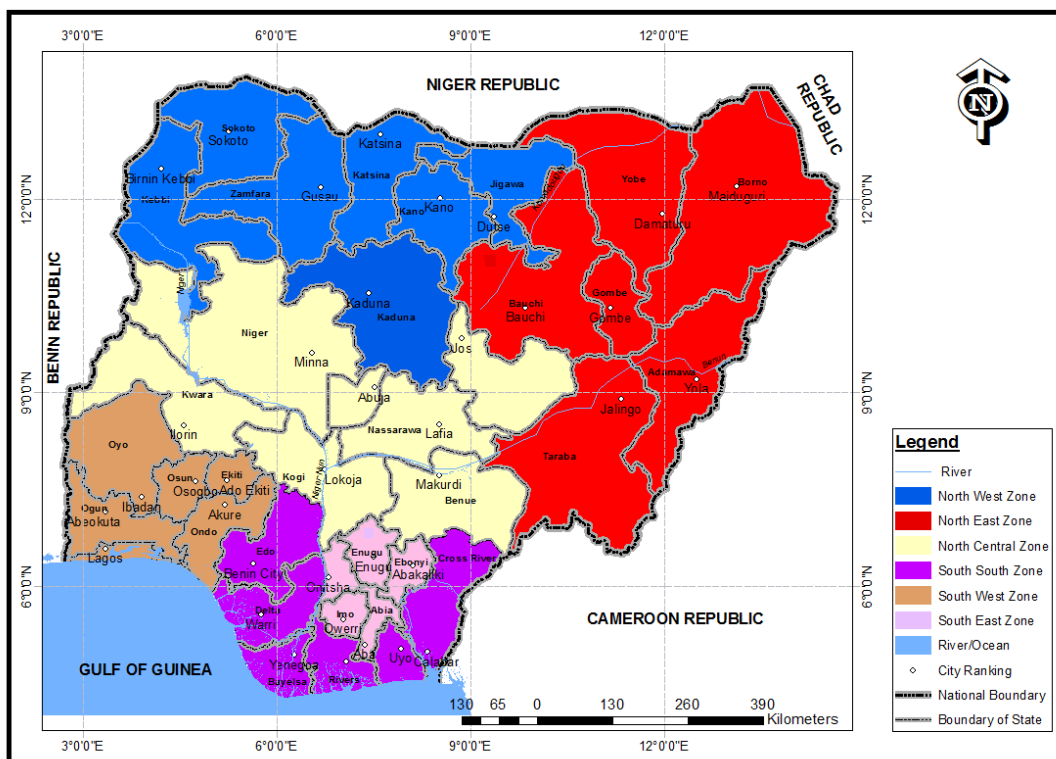


Figure 2: Nigeria's Geo-political Zones and Cities in the Study

4.0 Cities' Ranking and the Implications

In the last ten years many organizations have ranked cities and national economies according to an assortment of criteria like GDP per capita, infrastructure and productivity. Florida (2015) synthesised five of these rankings to collate a table of 25 most economically powerful cities in the world, but no African city made the list. Florida's list was dominated by cities in North America, Europe, East Asia and Australia. While regions like Latin America, Africa, Middle East

and South Asia were conspicuously absent. The outcome of Florida's synthesis of the world's most economically powerful cities raises some questions because cities in those economies that did not make the list, such as, Mexico City, Sao Paulo, Buenos Aries, Lagos, Cairo, Johannesburg, Dubai, Mumbai and Delhi have clear visibility. Some of these cities are ostensibly destinations of foreign direct investment (FDI) (see World Bank (2014a) and therefore difficult to ignore as economic powerhouses among cities of the world. In spite of these reservations, there is a lure to narrow Florida's approach to Africa and Nigeria, because available data affords us the opportunity to do so. Nigerian cities featured in other city rankings such as those by MasterCard and AT Kearney (2014) for Africa includes Lagos, Abuja, Port Harcourt, Kaduna, Kano and Ibadan. Only Lagos (6) and Port Harcourt (8) are among the top ten; the position of the others were: Kano (11), Ibadan (13), Kaduna (21) and Abuja (26). Nigerian cities' relative position in the Africa City Growth Index (ACGI) published by MasterCard (Hedrick-Wong and Angelopulo, 2014) is presented in Table 1.

Table 1: Ranking of Nigeria's Cities in MasterCard's ACGI

<i>City</i>	<i>Rank in Africa</i>	<i>Category</i>
Lagos	6	Medium high growth
Abuja	9	Medium low growth
Port Harcourt	16	"
Ibadan	25	"
Kaduna	26	"
Kano	31	"

Source: Hedrick-Wong Angelopulo (2014).

The ACGI assesses the growth potential of Africa's most important cities. It provides internal and external perspective of current and future growth. This is indicative of potential profitability of investment for African cities.

Although in one of the variables used by FDI (2015) Nigeria ranked 10th under mega cities cost effectiveness due largely to low wage bill, taxation and energy cost; Nigerian cities rank among the most expensive in the world, and in Africa Abuja ranks second and Lagos 4th (The Economist Intelligent Unit, 2013). One of the reasons for the situation is infrastructure deficit, particularly power supply. Assuaging the power supply needs of Nigeria alone can improve economic output and livelihood in the short-term. At the present, power supply from the national grid last for only a few hours daily in all cities, and even this epileptic rate is not guaranteed. Despite these drawbacks, Nigerian cities especially Lagos and Abuja according to the Economist are among African cities with the best opportunities for growth in the near future. In recent years, annual economic growth for the country hovered around 7 per cent, although low crude oil prices is expected to ditch growth to 5 per cent in 2015. If this GDP scorecard was achieved under deplorable infrastructure, improvements will portend even better growth. In this scenario, two factors will help in revitalising Nigerian cities: rising income per capita and lower cost of doing business.

Urban ranking processes do not pretend to practice urban economics, therefore only a deliberate infusion of physical planning can leverage the process to grow a city. Urban master plans in Nigeria do not emphasize significant economic variables; for instance, the four volumes that comprise the Greater Port Harcourt Master Plan, 2008 have titles on transportation, water management, social infrastructure and energy, but nothing on economic plan. No city among

those surveyed in this study has an economic unit and none too regularly stages tradeshows. Cities like Lagos, Abuja, Port Harcourt and Kaduna host annual trade fairs, but these are at the discretion of firms, jointly under the various chambers of commerce and industry. No city consciously participates in the fairs with the intension of promoting itself among participating businesses. City administrations ought to take advantage of these expos to lure investors by initially establishing commercial desks within the proposed economic units linked to investment agencies and firms. Unequivocal assurances should be given to institutional investors for both green-field and brown-field developments – long-term infrastructure for sectors such as transportation and water supply. Through appropriate pricing of land and land rights, consolidation of revenue channels to eliminate multiple taxation and outright tax breaks in the early years of a business are perfect economic incentives that cities in Nigeria can use to attract investment. If city planners realise this and incorporate incentives for investors, potentially such a city will be positioned to reap bountifully. It is therefore in the interest of urban and regional planning process to set the stage and mobilise innate endowments for business growth. This can be achieved by concurrently adapting national policies on FDI at the city level. Exploiting this same window, cities enhance their special attributes based on the specific needs of prospective investors and by identifying local assets that promote investment, the process is brought within the ambit of city planning. City investment plans and portfolios should be a prerequisite of urban master plans in Nigeria if it has to attain positive city ratings.

There are no overt FDI plans in most of the leading cities identified by 2014 Doing Business in Nigeria. In this study we argue that firms and cities in Nigeria should begin to develop frameworks for external exposure, which is the best way to achieve long-time survival and global competitiveness. Physical planning in Nigeria has to include the needs of industrial parks, agglomeration economic principles, and specific comparative and locational advantages into the various plan categories. The instrumentality of planning can also be used to galvanize assets and local capacities to showcase on a common platform provided by city plans. For the benefit of the firm, a copious strategy should be devised in city plans to foster investment. When cities package their viability through planning; investors will take notice and do business in them. Cost of doing business, such as wages, taxes, industrial relations and security though not easy to incorporate into physical planning can become legislative agenda for municipal authorities. Notwithstanding, some studies found no correlation between cost of doing business and FDI (PSRC, 2009). City plans with existing clusters of services and industrial parks, such as Port Harcourt (Trans Amadi), Lagos (Oshodi), Enugu (Emene), Calabar (Tinapa) and Agbara in Ogun are examples in Nigeria where FDI can latch onto should they be upgraded. In one of the critical areas, The Economist Intelligence Unit (2015) cited how Lagos State has established a security trust fund thereby shifting the focus from policing to a broader community response. In addition, a public-private partnership is being used to mobilize resources to fund and manage urban infrastructure in Lagos.

So what makes business tick in Aba more than other cities in Nigeria and what factors besides ease of starting business, getting permits, property registration and enforcing contract are culpable? The common denominator in the responses was that there is minimal government intervention in the affairs of small and medium enterprises in that city. Regulations and renewal of relevant and operational permits and taxes are not rigorously enforced as a result revenues accruing to government from the city do not match expectations. In a rather malicious twist, urban infrastructure is neglected by government, even though everywhere, businesses seek perpetual tax break. In very large cities like Lagos what is observed in Aba is seen in sectors of the city where informal businesses subsist – those areas of the city lack basic amenities compared to the main business districts for many reasons; in addition, such areas lack critical

political and economic muscle to effect change. On the positive side, apprenticeship, mentorship and improvisation are very strong in Nigerian cities ranked highly and that reduces business mortality. Aba which was ranked 1st by the World Bank (2014) has a very good business reputation, but it lags in many other indices like crime, infrastructure, environment and liveability. Even the businesses carried on in Aba are predominantly informal, micro-scale and are difficult to monitor and measure. Aba does not merely suffer from poor infrastructure, but also from long neglect of whatever little infrastructure that existed and failure by successive state and local governments to initiate new ones. This description though applicable to some other cities in Nigeria, irrespective of ranking is stark for Aba, hence, the disengagement between published rankings and reality.

4.1 Urban Governance Issues

Urban management in Nigeria is conducted under the local government system and the governance issues inherent are rooted in statutes that impede business development. The earliest urban planning law in Nigeria was the 1917 Township Ordinance. The objective of the law was to classify Nigeria's cities into first, second and third class order based mainly on their national, regional and district administrative roles. The 1917 law distorted the pre-colonial hierarchy because it contrasted with other attributes such as prior commercial status, cultural and traditional standing among existing cities. In 1946 the Town and Country Planning Ordinance was promulgated, but it only emphasised development control and sanitation. These colonial laws were superseded in 1992 by the Urban and Regional Planning Act repudiated by the courts because by the structure of the Nigerian state; the federal cannot constitutionally legislate on residual matters. The 1946 law with all its shortcomings is the basis of city planning in the country. The superimposition of the local government administration on Nigeria's urban centres created a multiplicity of jurisdictions within large urban areas, especially those with over one million people. The only city in the country that is spared of this debilitating structure is the Federal Capital territory of Abuja, whose special municipal status was guaranteed in the constitution. Lacking in single municipal system of government, large cities in Nigeria are weakened and cannot galvanise citywide effort for resource mobilisation and planning. The jurisdictional gap has prompted state governments to intervene in the provision of critical infrastructure and services, such as roads and sanitation.

Issues of fragmented administrative units within municipalities can be tackled with the example of Greater Port Harcourt. Port Harcourt's municipal plan of 2008 span eight local government areas and is being implemented by a Greater Port Harcourt City Development Authority, under the auspices of the Rivers State government. In the absence of adequate legal structure for urban governance, the example of Port Harcourt is advisable as a model to other cities in Nigeria. With some framework in place, cities should begin to promote local economic plans at the level of municipal administration. It is however observed that if the leading business city in a state is not the state capital, as in the case of Onitsha (Anambra State) and Aba (Abia State), they suffer neglect due to resource constraints of the state or distance from the capital.

4.2 Authentic Nigerian Cities

Historically, urbanization in Nigeria predates the advent of Europeans, equated with colonial periods because cities like Bonny, Benin City, Ibadan, Kano and Zaria had prior international exposure across the Atlantic and the Sahara, which colonialism from the 19th century did much to curtail. These pre-colonial cities grew on trade and commerce and their spatial layout had rudiments of planning with measures for development control (Metz, 1991; NITP, 2014). Principles such as "competiveness" and "doing business", contained in recent city rankings are

therefore not alien to the character of cities in Nigeria. In fact, cities like Aba, Onitsha and Lagos that are currently ranked highly within Nigeria have visible competitive spirit among businesses.

In this study, we have identified how cities in Nigeria can attract FDI, but the process may increase inequality. Watson (2014) warns that African cities that concertedly promote business risk unduly imitating cities elsewhere, while ignoring the overwhelming poverty of majority of its population. An authentic Nigerian city should look beyond improving investment climate by addressing the needs of the residents, especially those likely to be side-lined by the influx of FDI because of their lack of skills and expropriation of existing jobs through mechanization and digitization. All over Africa there are proposals for tech savvy neighbourhood developments called smart cities, but such developments will further alienate the urban poor, isolate traditional sectors of the city and engender polarisation instead of inclusiveness. According to (Adepetun, 2015) such smart cities have been proposed for Lagos and Abuja, ostensibly to anchor local technology firms to smartly invest and position for global competition. The UN-HABITAT (2012) advises that it is proper to organise a city in such a way that economic growth benefits a greater number of people; else those deprived become a nuisance. The case for social progress measurement has already been made by Porter *et al.* (2014) as a way for countries to assess the proportion of their population that benefit from changes in economic fortunes, such as gross domestic product (GDP). Nigerian cities focusing on attracting FDI as an option for growth should include social and environmentally desirable goals at local levels in their framework as well. Urban growth in Nigeria leap-frog while planners dare to catch-up, a process well exemplified in the study by Owei *et al.* (2008) for Abuja and Port Harcourt in what was termed "Scatterization". Nigeria's city planners will have to be proactive in order to make their input in a rapidly evolving cityscape meaningful.

6.0 Conclusions

The major factors militating against competitiveness in Nigeria were listed by Schwab (2014) as infrastructure deficit, corruption, access to finance, policy instability and red tape. Nollen (2011) outlines the most frequently occurring features of the most competitive cities as good human capital, well-functioning markets and institutions, good infrastructure, and good government. Nigeria as Africa's largest market and economy should lead by making its cities more competitive to place the country on a sustainable path to long-run growth and competitiveness. The predominantly young population's productive capacity must be harnessed with necessary skills to engage in higher value-added employment. Until amicable resolution is found for issues of fragmented administrative units within municipalities, the example of Greater Port Harcourt may serve other cities in Nigeria. A firm scanning for a city in which to locate has to examine the positive features of a city in relation to the firm's goal, brand disposition and costs. In this sense a city's relationship with the firms it host and the potential to attract more businesses is synergistic and amenable to planning. Just as firms nurture values, cities should cultivate brands around themselves and plan to grow their brand values as well; that way cities create niches that stand them out. It is in the interest of urban and regional planning process to set the stage and mobilise innate endowments for business growth. This can be achieved by concurrently adapting national policies on FDI at the city level. Exploiting this same window, cities enhance their special attributes based on the specific needs of prospective investors and by identifying local assets that promote investment, the process is brought within the ambit of city planning. City investment plans and portfolios should be a prerequisite of urban master plans in Nigeria if it has to attain positive city ratings.

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Dimensions of urban waterfront regeneration: Case study of Halic / The Golden Horn

- an assessment of obstacles and opportunities for inclusiveness

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1. Introduction: a concern about heterodox socio-spatial configurations in global cities

The spread of neo-liberal political and economic ideology and the proliferation of global capital have created new opportunities and challenges for cities everywhere, especially in the so called "global cities". Over the last decades, many cities worldwide have promoted urban waterfront regeneration for a variety of reasons building on the particular scenery of these sites. The success of the first well known urban waterfront regeneration project, Baltimore Inner Harbor regeneration (1960), has served as a prototype for cities around the world with the desire to position themselves in the race to become Global Cities (Harvey 1989) by providing strategically located high-quality investment opportunities to attract global capital, or by constructing attractive spaces to promote tourism and leisure. Nowadays, almost every city at water's edge is engaged in regeneration projects with strong political impetuses and interest from various parties: authorities, developers and neighboring communities (Hoyle 2001). These developments have been critically examined by many scholars, many of which share the belief that urban waterfront regeneration is often not addressing the underlying, deep-rooted problems of the cities and furthermore, ignoring the socially and economically unstable landscapes in which they often occur, veritably contributing to the escalation of inequality, polarization and deprivation in the city (Harvey 1989; 2005; Brownill 1990; Gordon 1997b; Hoyle 2000; Saarinen and Kumpulainen 2005; Butler 2007; Healey 1997; Gordon 1997a, 1997b; Feldman 1999; Fainstein 2001; Granath 2005; Butler 2007).

It is generally assumed that globalization leads to the same type of transformations and urban development trends everywhere in the world. However, it cannot create a certain prototype for spatial development or a new spatial order for cities. Rather, it gives a variety of spatial patterns, also called "global urban forms". This standardization (or 'nothingization', as Ritzer calls it) takes place in many aspects of urban life of global cities everywhere and destroys what is there most alive, the identity and socio-economical constructions of the place. Furthermore, what Relph (1976) and Augé (1995) advice within the popular terminologies of non-places and settings of placelessness is about the construction of spaces which are produced and have their identity extremely embedded in the market dynamics. Places on where the lack of authenticity with community non-involvement in the construction of the setting has become a normal issue.

The article is studying urban waterfront regeneration as a complex urban intervention, specifically its special governance, resistance and impacts on the neighboring tissue, which could be considered a prism through which broader societal transformation processes and related planning challenges can be understood. The case brought forward is the recent

urban waterfront regeneration along Halic/ The Golden Horn, in Istanbul, Turkey. For the scope of this study, the empirical research gathered both primary and secondary data through: literature review, review of laws, review of official documents and land-use plans, articles from media, 31 interviews with stakeholders, 91 questionnaires (with the community and planning practitioners), participatory- observation, workshops, observation and photographs and an internship made by the author at Istanbul Metropolitan Planning office during the field-research in Istanbul.

2. Urban waterfront regeneration in Istanbul: Halic/ The Golden Horn

2.1 Context: planning in global Istanbul and dynamics of urban regeneration

Since the 1980s in Turkey's milieu, national policy intended to make Istanbul the focal point of a neo-liberal strategy approach to integrate the Turkish economy with global markets. This was visible also in the accelerating transformation of urban space, making it the showcase of the country's new era of internationalism (Enlil 2011; Uzun 2010, Çınar, C et al, 2006; İnalÇekiç and Gezici, 2005; Keyder, 2005; Karadag, 2010).

Under this context, during the last thirty five years, investments have been located within the city in order to change the local landscape pushing it towards the global city image. Therefore, the city has been expanding with multiple mega-projects and naturally, a strong representative symbol of the global, emerged: *waterfront regenerations* in the valuable "soft" space of inner city usually modifying natural coast profiles.

These territorial changes have been not only modifying natural structures, they have generated such a special urban form by the transformation or even replacement of the original communities and their identities. Behind the consolidation of new waterfronts, local populations are experiencing struggles and contradictory emigrational patterns in the inner city; dynamics that have been usually explained by secondary data, statics and within many articles uniquely pointing on the production of *geçekondus*. However, it is still not evaluated what happened in those spaces where is a coexistence of new migrants moving to the developments and local populations that are being affected by market dynamics.

In order to understand the planning processes of the regeneration of Halic's waterfront, a reflection is done upon the peculiarities of Istanbul's urban regeneration policies and the institutional framework at city and national level that have facilitated it. Urban regeneration is steered as a tool for development within a special legal framework (Law of Conservation-Law No. 2863) and while the purpose of the projects seem to be in the name of upgrading the built environment and improving the living conditions of the poor, the top-down approach, reduce the projects to just transformation of physical space and neglecting the social, economic and environmental dimensions, which along with the unwillingness of government to allow grassroots participation in the planning process become the focus of discontent and protest.

2.2 Halic/ The Golden Horn: a fragmented waterfront

Halic, a 7,5 km bay of the Bosphorus strait and the cradle of settlement since the birth of the city, is heavily industrialized and contaminated in the 1970s and since then experiences a long process of transformation along its waterfront.

In line with popular North- Western examples of urban waterfront regeneration at that time, this process is triggered by Mayor Dalan in 1983, who famously stated his mission: „*The water of the Halic will be as blue as my eyes*” (*Radikal Newspaper*). The project is sponsored by World Bank and the industrial waterfront is transformed into a huge vacant land which becomes large green park areas (Enlil 2011). Behind the environmental concerns, there was also an economic motivation to bring Istanbul between the competitive global cities with a vision of a "Cultural Valley". The following forced de-industrialization process of the 1980s is impressive and did indeed improve Halic from an environmental perspective, but the clearing process was pursued with a heavy-handed, top-down governmental approach to planning and the legacy of mayor Dalan is contested among academia, civil society, non-governmental organization and experts in planning: The project created an approximately 50m wide strip of vacant land– a great opportunity in terms of offering open green spaces for the city- but destroyed 100 Ottoman-era buildings and an additional 30,000 structures, displaced neighborhoods within 50-100 m along the shoreline (Köksal 1996, 2005; Yerliyurt 2008; Bezmez 2008) and most importantly brought mass unemployment and poverty in the backstage neighborhoods populated by former dock and shipyard workers (Köksal 2005; Bezmez 2008; Yeliyurt 2008; Enlil 2011).

The following initiatives to regenerate Halic's waterfront showed no intention of resolving the social and economic burning issues of the neighboring communities. Within the same top-down planning approach, as in the 80's clearance intervention, urban waterfront regeneration projects are ad-hoc initiative of different bodies of the government depending on ownership and planning rights over the land. Therefore within privileged legal means facilitated by different governmental bodies and by a national policy on urban, developments for middle-high income citizens are created: "*With empty convention centers in the middle of poor neighborhoods, a few art galleries right beside demolished historic buildings, and newly built museums next to squatter housing*". (Bezmez 2008 pp. 817).

Although the attempts to transform Halic with the vision of a "Cultural Valley Project" are not different from other urban waterfront regeneration projects around the world, in terms of process, they can't be explained through just one clear framework of public-private partnerships, intense processes of urban entrepreneurialism or gentrification as other classical North-Western examples. As a response to this regime of urban regeneration (Dincer 2011a; Dincer 2011b) urban social movements are formalized in Neighbourhood Associations or non-governmental organization taking an active role in the planning process.(Kerimoglu and Gezici 2010; Dincer- 2011b;Bezmez 2008)

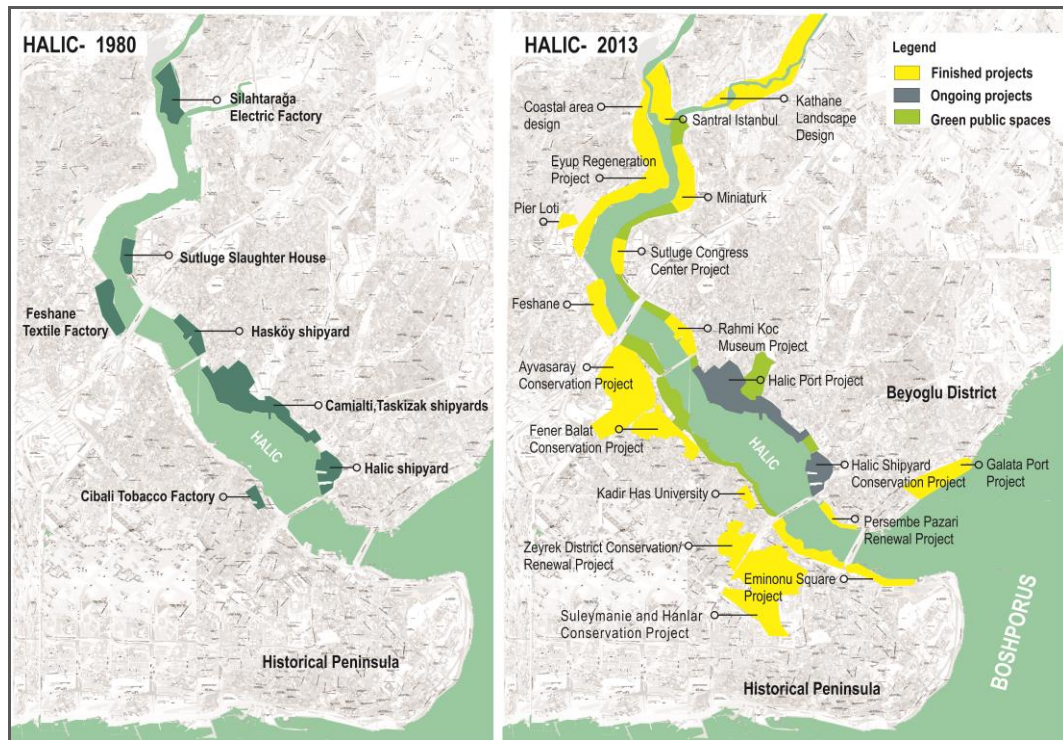


Figure 1: Change of Halic's waterfront from 1980s until 2013

2.3 Decision making process: latest urban waterfront development along Halic/ The Golden Horn

Social justice has the dimension of a process rather than an outcome and therefore the planning process is of a particular importance to portray "governance of place" (Healey 2003). "The extent to which opportunities for participation are picked up in reality is an important indicator of balancing interests, even though is primarily the privileged, most articulate and directly concerned elements of society that attempt to participate in public decision-making processes". (Heinrich and Nuisl 2011)

This sub-chapter is an overview on the decision-making process for the urban waterfront regeneration of Halic Shipyards (Tersane-i Amire Arsenal), the latest urban waterfront regeneration development along Halic.: a first attempt in regenerating Halic Shipyards is presented, followed by the current state, two urban waterfront regeneration projects in on-going process of transformation. These urban waterfront regeneration projects are: Halic Shipyard Conservation Project (Haliç Tersanesi Rölöve, Restitüsyon, Restorasyon, Yeni Kullanım ve Peyzaj Projesi) in the area of Halic shipyard and Halic Port Project (Halic Yat Limani Projesi) in the area of Camialti and Taskizak shipyards.

The first attempt to officially create a plan to regenerate the area of Halic, Camialti and Taskizak shipyards is in 2011, when all three shipyards come under the authority of Istanbul Metropolitan Municipality (IMM). The final goal is to create a comprehensive urban regeneration project and reconnect Beyoglu district with its waterfront along the Halic.

Being declared as a Conservation Area, the development is managed by the Department of Historic Environment Protection (DHEP, in Turkish Tarihi Çevre Koruma Mudurlugu is the representative body of Istanbul Metropolitan Municipality in the areas declared for conservation. It is empowered by the Decision No. 313 in 04/06/1999 and has a management

role within the project, making sure that the project it is accomplished in line with the requirements of the Law of Conservation), which focuses on the restoration of the historical buildings on the site and change of the current functions in new ones according to the needs of the citizens. DHEP designates through a bid the task of making and designing the plans to Istanbul Metropolitan Planning (IMP- Bimtas S.A., is a semi-private company and also a research center for Istanbul Metropolitan Municipality. It has long lasting collaborations with academia, neighborhood associations and wide experience in planning in Istanbul, being also it is the company that made the last Master plan of Istanbul 2009 and many other important development projects).

In line with the requirements of the Law of Conservation, the Conservation Board No. II is added to the decision-making process. This Board is linked directly and represents the interest of the Ministry of Culture and Tourism, has great power on the project's outcomes, evaluating the plans and being able to cancel them.

The plans done for a preliminary project (in Turkish "avan proje") start on January 2011 and finish in June 2011, but without any request for participation from the citizens side and no reflection on the surrounding neighborhoods. The proposed functions for the area are: cultural, recreational, social services and commerce functions and are approved by the Conservation Board No. II in July 2012. The next step in planning process after the preliminary project, according to Main Law of Construction (Law No.3194), is the implementation project (in Turkish: "uygulama projesi") which did not continue with all three shipyards. Here a shift in the governance forms of the project changes the planning process along with rising concern on the project's future outcomes: just one of the shipyards went further to the implementation phase under the name of Halic Shipyard Conservation Project, when the area of the other two shipyards is being privatized. Holding the ownership of the land of Camialti and Taskizak shipyards, the Ministry of Transport Maritime Affairs and Communications (MTMAC) decides to withdraw the project from the authority of IMM.

In 2013, a new urban waterfront regeneration project is declared for privatization and classified by the Prime-minister Tayyip Erdoğan as: "*miraculous project*" ("muhteşem proje") which appears with the name: Halic Port Project. The urban waterfront regeneration project is initiated by the MTMAC, under the Law of Privatization, known as Built Operate and Transfer (Yap Islet Devret- Law. No. 3996) and is approved by Higher Council of Privatization (HCP); this also being possible because, according to the Law of Privatization, since 1994, the authority to make and approve plans concerning estates included in the privatization program was transferred from local authorities to the HCP.

The area is given to auction and is announced in the Official Paper (Resmi Gazete, page 28646) on 13 May 2013. The tender is taken on 2 July 2013 by "Sembol International Investment", "Ekopark Tourism" and "Fine Otelcilik Girişim Group"(Sembol Uluslararası Yatırım-Ekopark Turizm-Fine Otelcilik Girişim Grubu) for 49 years: 4 years for building and 45 years for usage. The requirements of the project are given beforehand to the investors, being decided by the MTMAC and approved by the HPC. These are: "*two yacht ports, two five stars hotels, small shops, offices, museums, culture and a congress center*" Taking into account these foreseen outcomes of the project, it can be argued that this development is not designed for the interest of all citizens of Istanbul or the neighboring community, but rather for tourists and high-middle income class. The promised outcomes of the project are presented in the media through the political discourse as the only information channel for citizens and therefore raised a big wave of criticism from academia and other expert's side, questioning the way decision is being taken.

Therefore, the planning process is lacking transparency and the Privatization Law gives central government power to privatize public land without any consideration of the civil society. Also local municipality has been taken out from the planning process and also the

1/1.000 plans that should be done for the Camialti and Taskizak shipyards are developed by the private investor, this raising questions concerning the conservation of the shipyards.: The only actor from the government side having decision power over the outcomes of this project remains the Conservation Board No.II.

In contrast, the area of Halic shipyard is developed further by IMM within the Halic Shipyard Conservation Project. Major actors in the planning process here are: IMM, the initiator of the project, owner of the land and also the provider of the finance in realizing it; the DHEP managing the project, having mainly the responsibility to assure the conservation and restoration of the historical monuments in the area; the Conservation Board No. II, representative of Ministry of Culture and Tourism, having also the main responsibility to assure the conservation and restoration of the monuments; IMP in charge of the plans and design of the project and also IDO (Sehir Hatlari) - a private company of public transport on water, having currently the tender over the area of Halic shipyard.

In the interviews with representatives from the planning department of IMP, the team planning Halic Shipyard Conservation Project, it is revealed that the outcomes of the project will take into consideration the previous suggestions and that the project will respect the 1/1000 Plans of Beyoglu in terms of conservation of the shipyards, along with the recommendations of implementing cultural and recreational activities. Moreover creation of green spaces is emphasized, the vision being to open the waterfront for the broad public, the citizens of Istanbul. Proposed strategies concerning the development are: *"conservation of the buildings, enhancing the transportation in the area, introduction of recreational and exposition areas, bringing the city to the waterfront, protection of green spaces and ensure the participation of the local people of the area."*

However, the project contains no analysis of impact assessment such as: environmental, economic or social, this showing the physical focus of urban waterfront regeneration in planning, putting in doubt the success and purpose of this project. There is also no information provided for the broader public about the project or the request for any collaboration from the citizen's side. The chance to challenge decision making is possible at the end of the project. As all projects made by municipality, also this one is presented to the community at the end of the planning process, plans are hanged in the Istanbul Metropolitan Municipality building and within 30 days the interested parties have the right to contest the project through court. This leads to questioning the outcomes of the project because of this type of non-transparent planning process that leaves no input from the citizen's perspective.

Therefore, as seen and criticized in other examples of projects along the Halic, the project could also potentially enhance existing socio-economic problems, a matter that will be presented in the following part of the article, by analyzing the neighboring community in rapport to the project.

Looking at the current state of the transformation of the three shipyards, there are two urban waterfront regeneration projects with different governance forms. The area of Camialti and Taskizak shipyards is under the authority of a private investor and it can be argued if the project will benefit the broader public of Istanbul. The area of Halic shipyard remained under the authority of the government, but the planning process is un-transparent and the project is not shared or questioned within the interested public. In an attempt to compare the projects from the perspective of the information available, paradoxically, the Halic Port Project is much more known by the public than the project made by the municipality because of the exposure in the media. However there is a major gap of good quality information for citizens regarding both projects.

This was reflected in the questioners conducted with the neighboring community, academia, planners from Istanbul Metropolitan Planning and citizens participating to forums organized

by the representatives of the resistance to the regeneration of the shipyards. An urban social movement appeared on 23 August 2013 under the name of Halic Resistance (Halic Dayansimasi). Other opposing parties are: Bedrettin Neighborhood Association, Chamber of Architects, Chamber of Urban Planners, Assembly of Architects and Engineers, Chamber of Shipbuilding Engineers, Academia and other urban social movements.

2.4 The struggle of the neighboring community: Bedrettin Neighborhood

This part presents the evaluation of the urban waterfront regeneration projects, considering the impact on the neighboring community. Bedrettin Neighborhood is chosen for analysis because it is one of the closest communities next to the shipyards, also being the first group of actors impacted or that could benefit from the transformation.

Bedrettin Neighborhood is a low income neighborhood (according to median monthly household income 2010) at the shores of Halic, in Beyoglu District. It was strongly connected to Halic, Camialti and Taskizak shipyards, being occupied by blue collar workers. Therefore, the neighborhood was much affected by the clearance process done by mayor Dalan in 1983, the first regeneration along Halic, its current problematic economic condition being outcome of the forced deindustrialization process of that time. Today, approximately 1500 people live in Bedrettin Neighborhood and are mostly divided as retired workers from the shipyards, people coming from Anatolian side of Turkey during the industrialization period and a considerable group of roma minorities.

Based on the interviews with the "muhtar" (mayor of neighborhood) of Bedrettin Neighborhood, the questioners realized with the community and the personal observations on site, is found that the neighborhood is in on-going transformation due to several reasons. First, Bedrettin Neighborhood was declared as Renewal Area in 2005 and, according to Law of Renewal, the neighborhood will go under a process of regeneration which will put in danger of displacement the poor citizens. Although 80% of the citizens living there, own their land, the houses built are not in good condition, being classified as "gecekonu", squatter housing, and have to be renewed and improved for their safety, this being a hard task for the majority of the community which is poor. Second, the increasing prices of land in the area are the proof of the process of gentrification remarked also along the whole waterfront of Halic.

These changes bring a strong opposition from the community, who is against this renewal project and in fear of deposition. Together with their muhtar, the community found a neighborhood association named Bedrettin Neighborhood Association. This type of associations provide information and support to the community by organizing meetings, being in touch with other Neighborhood Associations concerning collective interest and fight in legal means against urban regeneration projects, which were clearly understood by the Istanbulites as equal to a degree of displacement for them: "*We want to defend the place where we live, the place where we worked so much for. We took our water from the polluted Halic and we survived Dalan's demolitions. We don't want to go from here and we will fight against this neoliberal agenda.*" says Suleyman Songur, representative of Bedrettin Neighborhood. The association has the purpose to fight in court, as the only way of challenging decision-making, against the regeneration of their neighborhood and all other regeneration projects that could affect them. This is also the reason why Bedrettin Neighborhood is engaging in opposition towards Halic Shipyard Conservation Project. All citizens of Bedrettin Neighborhood signed a list opposing this intervention and the municipality's project was given to court. However, the results were not positive ones and this created mistrust between the community of Bedrettin Neighborhood and municipality along with loss of hope towards the actions of the government. In this context, although the purpose of the urban renewal project seems to be in the name of upgrading the built environment and improving the living conditions of this poor community, the top-down

approach along with the unwillingness of government to allow any participation from the citizen's side can be questioned.

The reason for opposition, from the citizen's perspective was not only the fear of displacement, but also the difference between the new proposed plans and their actual needs. As reason for this are the un-transparent processes of planning with no collaboration or participation from the community's side. Public planning policy in Turkey gives rights of involvement in planning process just to the owners of the land and welcomes participation from the citizen's perspective at the end of the planning process. Therefore, the lack of information regarding the project makes the community come closer to Chamber of Architects, Neighborhood Associations and Halic Resistance urban social movement, the actors currently engaged in a fight against the waterfront regeneration of the shipyards. In the questioners conducted during the meetings of Halic Resistance, besides the fear of displacement answers also as: "to learn the truth", "because this project is being used strategically against us" were given.

Looking to Bedrettin Neighborhood, one could see a condensed living environment, trapped between wide boulevards and with a great view towards the shore of Halic. Analyzing the built environment, it can be seen through the narrow streets and lack of public spaces, that it evolved organically and unplanned. The lack of public space and also green areas is a main loss for this neighborhood, but also one of the main aspects that Halic Shipyard Conservation Project could improve.

Although, as previously mentioned, the citizens of Bedrettin Neighborhood are against the Halic Shipyard Conservation Project, outcomes of the questioners regarding what they would need in the future development were: green spaces, culture and education facilities, keeping the working shipyards, health facilities. In the discussions with the community, especially with the group of mothers, mostly staying home and taking care of their children, the need of closer public space and green areas was emphasized. It was found that families go to other parks along the Halic and make barbeques or just bring their children to play, this being the only recreational activity for these families. An intriguing vision of the children is the one of the "fisherman", a symbol of the waterfront of Istanbul which should not be blurred in the landscape of waterfront development for global economic gain given by projects in name of tourism and consumption.

Taking into account the vulnerable position of the neighborhood in terms of economic situation, the on-going gentrification process at Halic's waterfront and the renewal project in the agenda of the government, it can be argued that Halic Shipyard Conservation Project will contribute to this picture considerably, creating social and economic impacts on the community.

The community of Bedrettin Neighborhood is an important actor being the most affected by the project, but also by its potential to give inputs to the project. Due to the lack of consideration of this neighborhood in the planning process the true benefiting outcomes of the project will not be achieved. Opportunities for more inclusive and transparent processes in planning can be found after analyzing the neighboring community as the openness and interest of the community in participatory planning methods and in expressing their need. The community is not only in need of public green space which can be created with the Halic Shipyard Conservation Project, but also in need of programs and solutions for its vulnerable economical condition. Halic Shipyard Conservation Project, if planned carefully, might satisfy and resolve some of the problems faced by the community, but this is possible only if the community is involved in the planning process.

2.5 Governance dynamics

With the new more entrepreneurial forms of governance, also new arrangements articulating state - civil society relationship come forward (Swyngedow 2005). In urban waterfront regeneration, urban social movements formalized as community groups or non-governmental organizations, coming often from the neighboring communities and other interested or affected parties become a source of ideas and influence the pace and pattern of development. They encourage, restrain, warn and provide qualitative overviews. (Krausse 1995; Cau 1996).

These new actors engaged in opposition, observed and identified within the period of this research, are social movements representing partly defined groups of civil society, chambers of experts in field of planning and community organizations: Halic Resistance, Academia, Bedrettin Neighborhood Association, Chamber of Architects, Chamber of Urban Planners, Chambers of Mechanical Engineers, The Lawyers Association, Union of Chambers of Turkish Engineers and Architects, Neighborhood Associations and also political parties, such as CHP. However, three main groups of actors in this opposition are chosen to present their interests and roles as they have been most active since the beginning of the planning process: Chamber of Architects, Bedrettin Neighborhood Associations and the platform where all and others meet, the social movement- Halic Resistance.

Chamber of Architects is the first actor which opposed to the regeneration of the shipyards and gave support to others that came along during the planning process. According to the 6235 Act of Union of Chambers of Turkish Engineers and Architects, the Chamber has the right to sue development projects which are not benefiting the rights of the society. The main reason to be against this regeneration, from their perspective, is that it will create displacement in the neighboring community, the shipyards will not be conserved and moreover the project will not benefit the needs of the citizens. Although the Chamber of Architects is practicing advocacy planning, it is still a centralized institution that evaluates projects from its expert perspective and has a focus on the concern of conservation of heritage, the monuments existing on the site of the shipyards. The Chamber is also stigmatized as being against all development projects and not seeking solutions, being in conflict with the government, outcome of many law suits against this type of projects. It's the discourse tended to focus towards the cancelation of the projects, but not militating for inclusion, transparency and information, outcome of the mistrust towards " *the neo-liberal agenda of the government and all the mega-projects triggered by it.*"

So non-governmental organizations funded in 2005 in order to fight with legal means against urban regeneration project for the community of Bedrettin Neighborhood, is Bedrettin Neighborhood Association. As Mr. Cem Tuzun, the representative of Beyoglu Neighborhood Associations, explains: " *to defend the rights of the citizens against a neoliberal agenda of the government*" ; " *to keep surviving in our neighborhoods*". The aim is to fight in court against any regeneration project that could put in danger of displacement the community. " *We want to defend the place where we live, the place where we worked so much for. We took our water from the polluted Halic and we survived Dalan's demolitions. We don't want to go from here and we will fight against this neoliberal agenda.*" says Suleyman Songur, representative of Bedrettin Neighborhood.

Halic Resistance urban social movement is the platform where all interested parties meet and militate against the regeneration of the shipyards. This social movement militates for: *the importance of the shipyards from the conservation point of view* and also its *production potential*. Moreover it is against the " *clear neo-liberal transformation of the shipyards*". One of the initiators of the movement, Dr. Arh. Gul Koksall calls these urban regeneration projects as: " *the hegemony of the government*". As a core, a board was created from representatives of: academia, Chamber of Architects, Chambers of Mechanical Engineers, Bedrettin

Neighborhood Association and former workers at the shipyards. Decisions are taken during meetings or in innovative ways through social media and mail groups. On 19.11.2013 a petition to Conservation Board regarding the clearance of Taskizak and Camialti shipyards was given as a violation of the Law of Conservation. This event builds on the efficiency of the movement in monitoring the development of the shipyards, report any violation of the law and call responsible bodies to action. However it also depends on the Chamber of Architects for its legal fight, being the institution with the right to sue the urban regeneration projects. In addition to the aforementioned, because of the informal means in which the resistance is reaching the information, false beliefs can be spread to wide public, fact revealed also in the interviews with the participants at the meeting of the movement. Also 45% of the participants come to the meetings not only to support the resistance, but also to inform themselves about the regeneration projects. Therefore, the need of information is underlined regarding these projects and here is the point where this kind of movements gain popularity for being open to participation and sharing knowledge.

The new actors engaging in resistance have no power in decision making over the projects, but they have influence on the planning process due to their actions. The collaborative networks and their innovative ways of decision taking makes them strong actors that have to be taken into account. These collaborations can challenge or conceivably stop the project. Opposition can be seen as an opportunity in increasing democracy, challenging the projects by creating debate and trying to reach a broader public, being always in contact with the media. Still, their demands in the project cannot be taken as indicator for the needs of the all citizens of Istanbul, rather they can be used as an indicator to the need of change in the planning process towards more transparent and inclusive one and can be used to improve the project.

2.6 Relationships and positions of the actors

Relationships of the actors are "*crucial in understanding the direction of the planning processes.*" (Nuisl and Heinrichs 2010). The relationships were established as outcome of the interviews conducted by the researcher and through participatory observation. When mapping the relationships, there are two clusters of actors that do not come together, this situations are reflected on the clash of interests and gap between civil society representatives and the government. One group represents the actors involved directly in the planning process and the other represents the strong opposition. The first ones has hierarchical vertical relationships by territorial responsibility of different governmental bodies and market based relationships by contractual agreements. The other group in opposition to the project is represented by collaborative and horizontal relationships of the non-governmental organizations, social movements and other civil society representatives.

Analyzing the actors in opposition and the horizontal network-like relations, overlapping interconnections among them can be observed. The boundaries between these actors are hard to be defined as they cooperate and interconnect with each other rapidly, using innovative means of communication in exchanging of opinions and in deciding common action. When the main actors from opposition, and ones involved in the planning process are considered for their relationship, there is a long lasting conflict between them which resulted from the interviews conducted with representatives of both sides, this making also harder for the two groups to come together. It can be argued that even though the resistance is engaging with the community into a fight against the urban regeneration agenda of the government, undertaking an advocacy planning role, it is also creating a barrier between state and citizens.

A stakeholder analysis has been developed as an outcome of the questionnaires and interviews realized with representative of the institutions involved in the planning process, but

also with the representatives of the social movements, civil society, neighboring community, non-governmental organizations, planning experts and academia- mostly all 91 total participants to the interviews and questionnaires in this research. The methodology was taken from the study: Governance and Multi stakeholder Processes by Nancy Vallejo and Pierre Hauselmann (2004)- a product of the Sustainable Commodity Initiative, a joint venture of the United Nations Conference on Trade and Development and IISD. The purpose was to find first the most interested and most powerful actors in the planning process. Than recommendations are given according to the methodology and the results from the questioners are represented in the matrix below.

RELATIONSHIPS OF ACTORS IN HALIC SHIPYARD CONSERVATION PROJECT

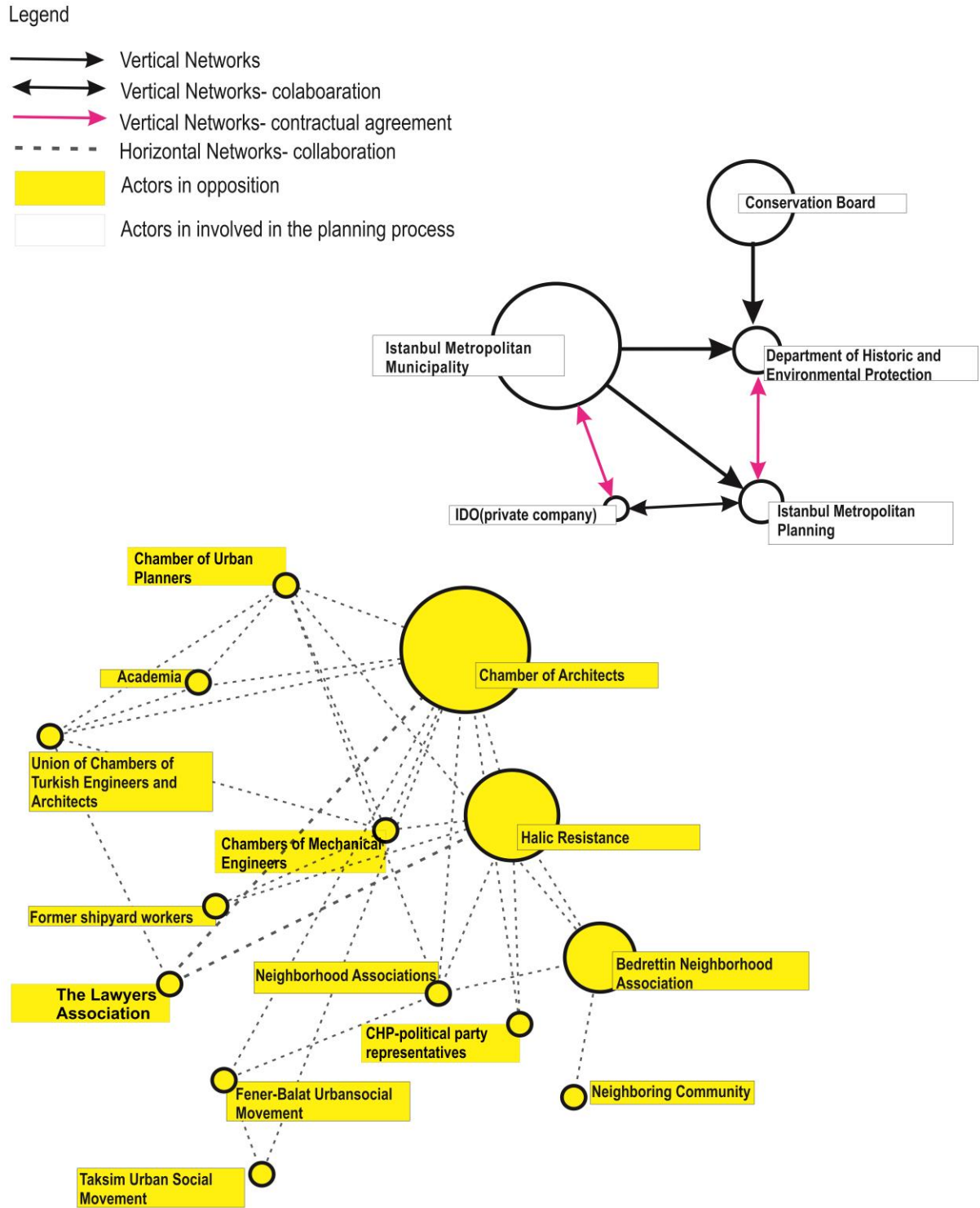


Figure 2: Relations among actors in Halic Shipyard Conservation Project; Source: author (adapted after computer mapping with graphcommons: <http://graphcommons.com/graphs/1417>)

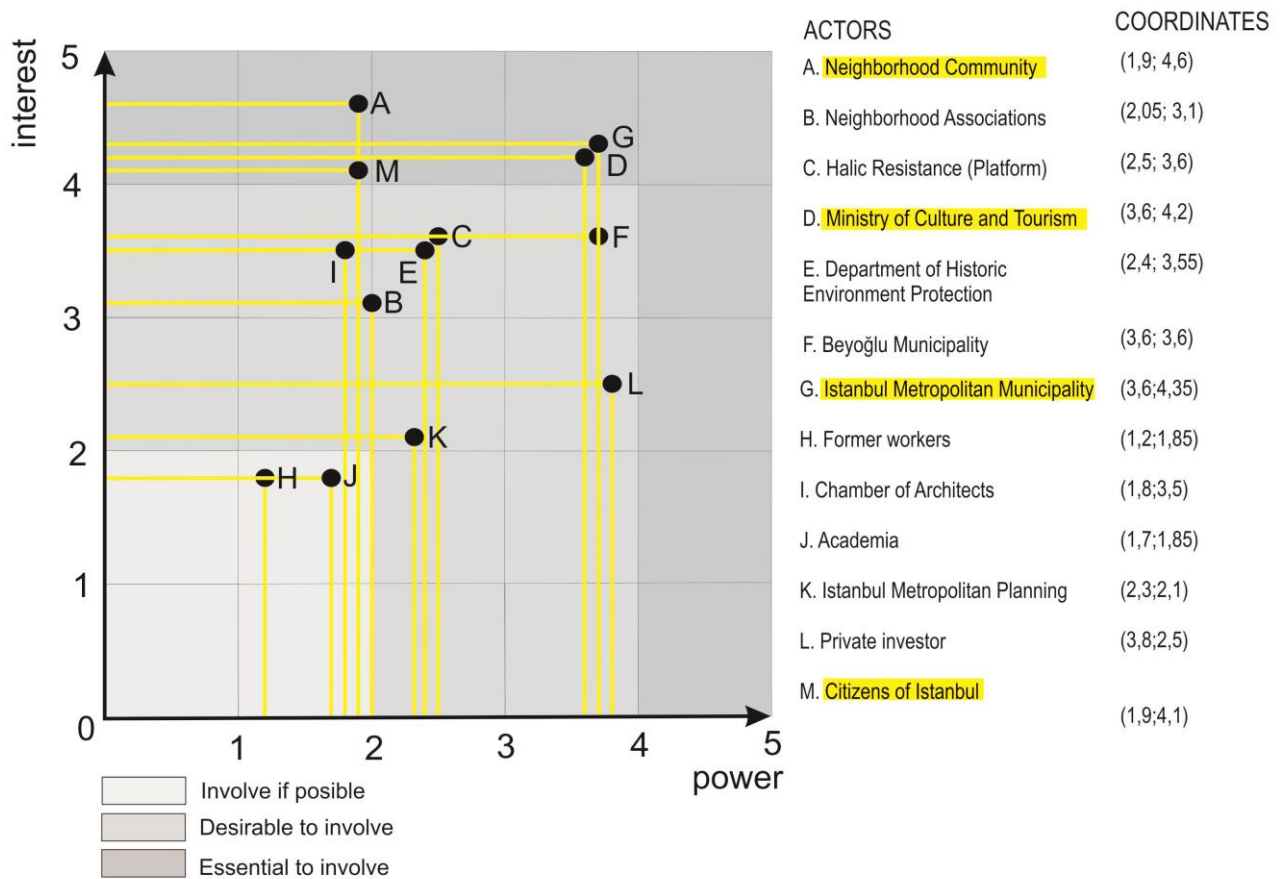


Figure 3: Stakeholder analysis made with the help of civil society

3. Conclusions

3.1 Evaluating the planning process:

Halic Shipyard Conservation project is initiated and subsidized by IMM, but the central government has regulatory power over the project outcomes, due to the special national laws designated for urban regeneration. Private sector is added to the decision-making process by IMM, but local government, Beyoğlu Municipality, the district in which the project is done, is missing from the planning process. Although the project is made for the public interest, it was found that there is no consideration of giving information or chance for participation to the most interested parties: the neighboring communities or the citizens of Istanbul. Looking at the decision-making process, the first attempt to officially create a plan for regenerating the area of Halic shipyard was together with Camialti and Taskizak shipyards, but as a result of the deficiencies in legal framework giving total rights to owners of land and central government, the latter ones were privatized.

The lack of information and broadly-based rights of influence are manifested by this opposition that is part of a broader fight against the "neo-liberal agenda of the government". The neighboring community's need of information and the lack of trust towards projects initiated by the government brings it closer to the actors in resistance. The collaborative networks and their innovative ways of decision taking can challenge and even conceivably hazard the project.

The planning process of this particular urban waterfront regeneration was found therefore as not inclusive, not transparent and not giving opportunity to challenge decision-making in the planning process. Therefore, it can be argued that what could be a good project creating public space and reconnecting the urban tissue of Beyoglu district with its waterfront, will fail to reach its true potential in benefiting the neighboring community and also the broad public of Istanbul. This due to its exclusive governance, the top down approach to planning and the legal framework given by the national policy on urban regeneration.

At the first glance, urban waterfront regeneration in the context of Istanbul reveals the same features of the popular contested cases of North and Western examples .The privileged governance structures identified in the literature review of urban waterfront regeneration projects aiming economical gain over the conception of a new city image and planning focusing on mostly physical transformation, ignoring the social problems of the neighboring sites and not taking the opportunity to resolve them can be seen also in the case study.

However, the form in which these outcomes reveal themselves, are different. Much of the literature on urban waterfront regeneration warns about the entrepreneurial governance forms, the private-public partnerships and the active role of private sector in the development of the projects, which lead to displacement of the communities, gentrification and other negative impacts. In the context of Istanbul, the leading factors are an entrepreneurial government and also a national policy on urban regeneration designated by the central government. In contrast with other urban waterfront regeneration projects around the world, which reveal citizens struggle with displacement, job opportunities, social housing opportunities and public space at waterfront as reasons for opposition, the case study presents also other encompassing motivations. The strong and constantly growing opposition is also part of a leading strategy of the citizens of Istanbul to get back the rights to the city. This is owed to long term accumulation of tensions facing the current urban planning practices in Istanbul, Turkey. The resistance, therefore, is not outcome of the particular regeneration of Halic shipyard or the privatization of the other two shipyards, Camialti and Taskizak shipyards (part of Halic Shipyards- Tersane-i Amire Arsenal), but rather of a bigger picture of urban regeneration projects done in Istanbul.

Hence, there is a waterfront regeneration project made for public interest, but the rights of the future users of the space, of the neighboring community and mostly of the citizens of Istanbul are in this way lost behind a neo-liberal agenda of the central and local government, un-transparent planning processes and the fight of the strong opposition parties gaining ground of governance landscape.

3.2 Recommendations

In term of urban waterfront regeneration there is a clear need for success not only by those at the top. Levine suggests equity in planning and democratized redevelopment agenda process that target residents in greatest need and policies that better link this regeneration to neighborhood's economic needs. (Levine 1987b) Unfortunately there is no necessary linkage between economic growth and social equity.

One may argue that only through a change towards a more inclusive planning approach, along with clear targets for the improvement of the quality of life for the neighboring community, the studied urban waterfront regeneration projects will be able to escape the current deadlocks and collisions between government, investors, resistance and local community and might have a chance to actually set an urgently needed precedent of a new planning culture in Istanbul.

The top down-governance forms have to combine with the bottom-up governance forms in order to achieve a physically and socially successful development. The citizens of Istanbul must be informed and included in the decision-making process in the planning process. The Municipality of Beyoglu has to be incorporated into the planning process, defining the link with the citizens from the district in which the project is done.

Taking into account the importance of the area by its location and accessibility, but also its cultural and historical value at local, national and international level there is a need in having a broader voice of influence and expertise into decision-making from various planning experts and academia. The management bodies in urban waterfront regeneration were found of great importance, scholars designating them as the reason for success of these interventions. The narrow approach to urban regeneration focusing on physical transformation given by the national policy, verified by Conservation Boar No.II and managed by the DHEP has to be enlarged and has to take into consideration more factors through impact assessment studies of social and environmental aspects.

Lastly, the project has to include the neighboring community in the planning process and its needs considered. By including the community in the planning process, the project can also resolve old social and economic problems left heritage since the forced deindustrialization of the area, thus, creating more heterogeneous environments in the city. The project can help to improve the quality of life for the neighboring community with creation of: public green spaces, culture and education facilities, health facilities and also playgrounds for children. Also job creation is proposed, but this only by keeping production going at the shipyard. It has been proved in other waterfront regeneration projects around the world that the jobs from cultural, tourism and other retail activities were absorbed by middle income population. All these points can be achieved only by involving directly the community in the planning process and in the implementation phase. It was found that the neighboring community is open to communication, and is willing to give input that will enrich the projects outcomes and therefore it can be engaged into participatory planning methods in the further planning process.

Considering the bigger picture of urban regeneration; will the citizenship struggle of Istanbulities will overcome and change the current approach to planning of an entrepreneurial government and the market forces is a question that we should pursue. However, what we are facing in the case of Istanbul can be resolved just by democratic mechanisms within the planning process, by understanding the territory as political and social construction. We have to focus on change and how to make it happen because as one of the respondents explained, we want to "keep *surviving in our neighborhoods*".

Under current conditions, urban waterfront regeneration in the context of Istanbul presents a different picture from a number of similar interventions of this type studied in the existing literature. In order to come with a comprehensive theoretical framework that explains present-day urban waterfront regeneration and how these kinds of mega-projects shape urban spaces, it necessitates the analysis of different localities in distinct geographical settings.

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Research on Landscape Promotion Strategy of the Grand Canal (Hangzhou Section) based on Landscape Visual Evaluation

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Abstract

Canal construction in China has a long history. The Beijing-Hangzhou Grand Canal is longest canal in the world. The Canal landscape shares large scale and continuous viewing features. After the Grand Canal has been placed in the World Heritage List, the governments and citizens started to focus more on its landscape function. The vision is the main way for people to perceive and experience landscape. But one viewer would get different experience from the same landscape when he was set in different viewing system. During the process of city renewal along the canal, how to propose effective landscape improvement strategy based on the landscape visual evaluation from tourists and citizens in different viewing systems are an actual question. Based on our former research, which has already established a subjective quantitative visual evaluation system under the influence of multi-factor interactive model, in this paper, we deepen the research and analysis at the characteristics of the canal landscape visual in different viewing systems. Then, we constructed and optimized dynamic viewing system for the Grand Canal Hangzhou section and overlook system. In addition, we also made the landscape control guideline for establishing area and landscape improvement method for built-up area. Finally, we proposed promotion strategy on urban spatial form, landscape improving and tour routes optimization, thus improving the canal landscape visual perception and image entirely. The proposed methods have good operability and universality, we believe that they will contribute to the scientific and more precise research of the future canal landscape.

Keywords: visual evaluation; the Grand Canal; landscape improvement strategy; viewing system

1. Introduction

The Grand Canal is one of the most ancient canals, which has the longest mileage and largest engineering quantity of the world. It is also a symbol of Chinese culture and has still been used till now. The Grand Canal is 1797 km in length which flows from Beijing in north to Hangzhou in south, passes through four provinces and two municipalities and connects five major river systems. It is also an important ancient transport routes that plays great role in the development and exchanges of economy and culture between south and north region of China, especially the development of industrial and agricultural economy in the area along the canal. After the Grand Canal was made World Heritage in 2014, its function as landscape has attracted more and more attention from both government and citizens. As a large scale, continuous linear urban open public space, landscape along the canal is closely linked with people's life and tour experience. The Grand Canal landscape, *i.e.*, the city space landscape of its two sides and surrounding, has

the characteristics of both historicity and sightseeing. It is the center of the future city life, urban tourism and urban industrial development. Therefore, the improvement of landscape along the canal is an important part of the city renewal and promotes mutually with urban space development.

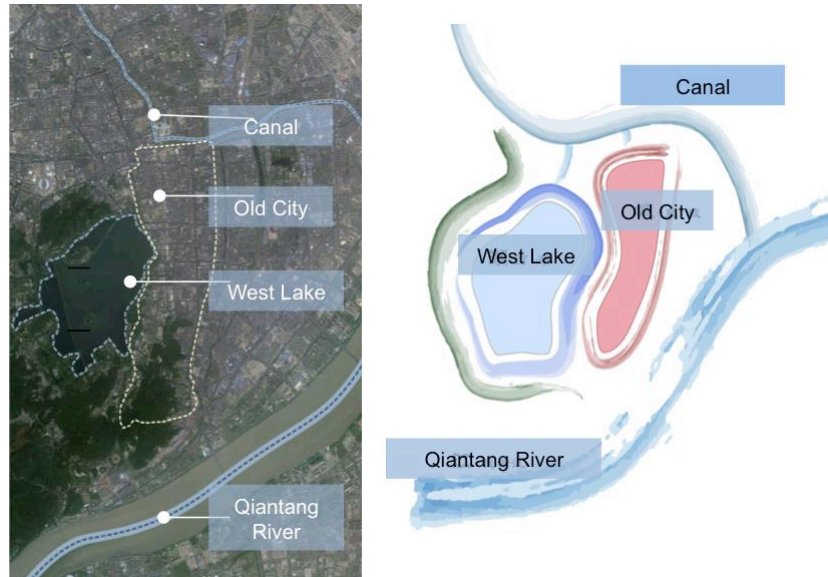


Figure 1: The Grand Canal location map.

The vision is the main way for people to perceive and experience landscape. But one viewer would get different experience from the same landscape when he was set in different viewing system. Landscape visual evaluation is quantized evaluation of landscape visual perception. In the case of canal landscape, in the same physical space of the city environment and viewing viewers in different viewing systems may get different landscape visual evaluation even in the same city space environment. Our research focus on the question “During the process of city renewal along the canal, how to propose effective landscape improvement strategy based on the actual landscape visual evaluation from tourists and citizens in different viewing system”.

The research scope of this paper is the Grand Canal Hangzhou section as shown in Fig. 1, which traverses the main urban area of Hangzhou city. It is 54 km long and about 45 to 150 meters wide. The region we studied in this paper is 500-1000 meters wide on both sides of the Grand Canal which covers about 94 square kilometers. Hangzhou, as the south end and east end of the Great Canal, plays an important role in the cities along the canal. It is also the confluence of the Grand Canal and other 5 main horizontal river systems. In addition, Hangzhou is the only city, which is both ancient “canal four big city” and provincial capital now. It ranks third in the cities along the canal both in GDP and the amount of heritage places, outstands in both city development and historical remains. It seems like the epitome of the Grand Canal with similar complexity and diversity as the characteristic of sections. Therefore, the research of landscape improvement strategy on this section will inspire the landscape improvement of the whole Grand Canal.

The Grand Canal is not only the main body of the Hangzhou water network system, but also closely linked with historic context, future development, citizens' life and city image of Hangzhou. It passes through different boroughs, connects urban and rural areas. The riverside areas have composite city functions that are complex and diverse. Also, it has plentiful coastal landscape elements which present evolution tendency from outskirts landscape to metropolis landscape. Based on the field study, we found that the viewing system is consisted of static part, including bank, boat, bridge and building, and dynamic part which includes pedestrian system, slow-bicycle system and sightseeing boat system. The visual perception and landscape visual evaluation of the viewers in the viewing system are decisive to both city image and citizens' living quality. However, the current status cannot satisfy these functional requirements fully. Therefore, the research on the dynamic viewing system of the Grand Canal has important practical value.

Based on our former research (Jin and Wang, 2013), which has already established a subjective quantitative visual evaluation system under the influence of multi-factor interactive model, in this paper, we deepen the research and analyze at the characteristics of the canal landscape visual in different viewing system. Then, we constructed and optimized dynamic viewing system for the Grand Canal Hangzhou section and overlook system. We also made the landscape control guideline for new urban area and landscape improvement method for old urban area. Finally, we proposed upgrade strategy on city spatial form layer, landscape improvement layer and tour routes optimization layer, thus improving the canal landscape visual perception and image entirely. The proposed methods have good operability and universality; we believe that they will contribute to the scientific and more precise research of the future canal landscape.

2. Methods

2.1 The analysis, composition and visual characteristics of viewing system

As one way of interaction between people and landscape, viewing is to perceive the existence of landscape using the vision as the medium. People can conduct the quantized evaluation of 'landscape visual perception', the substance of which is to evaluate the value of the city physical environment based on vision layer. Viewing system is the chosen tour manner of the viewer during the tour, which is usually be divided into dynamic and static viewing system. The static viewing system means viewer get the landscape visual perception from a fixed stationary point, where the physical relationship of viewer and landscape system is relative stable and the obtained landscape visual evaluation is interrupted punctate distribution. Besides landscape system itself, the main factor which affects the visual evaluation result of the viewer in static viewing system is relevant with stadia and visual angle between the stationary point and landscape. With the change of the stationary point, the stadia and visual angle also changes accordingly. Among the space of cities along the canal, the main places that can be served as stationary point of static viewing are urban gateway, urban dominating points, urban open space and Visual corridor. In our research, the static viewing system is consisted of bank, boat, bridge and building.

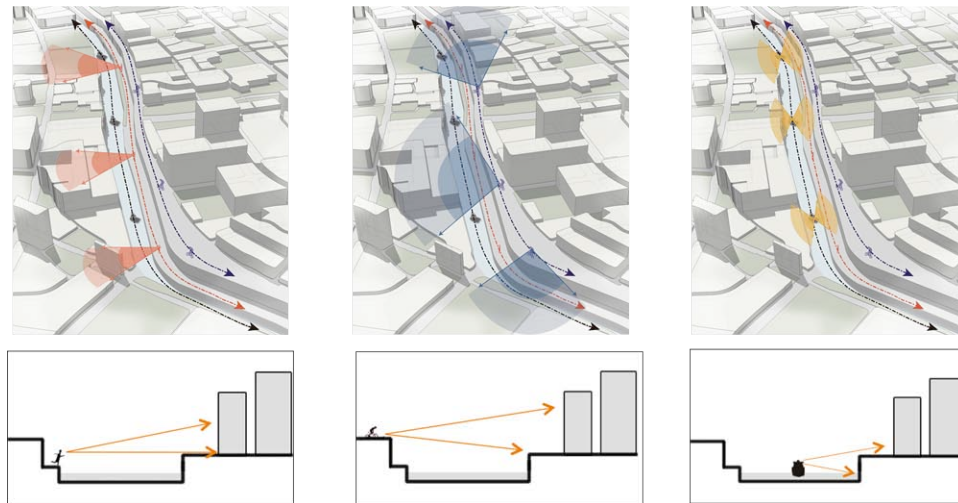


Figure 2: Illustration of vision characters in different motion systems.

In dynamic viewing system, which is different from the static viewing system, people obtain the landscape visual reception in different motion states, and then form the visual evaluation on the city landscape within one scope so that to accumulate the evaluation on all parts to form the landscape visual evaluation distribution. Therefore, the landscape visual evaluation obtained by viewers in dynamic system can be seen as the collection of evaluation result of countless stationary points, which presents linear distribution. Besides landscape system itself and motion speed, the main factor which affects the visual evaluation result of the viewer in dynamic viewing system is relevant with stadia and visual angle between its tour route and landscape. In different motion systems, with the change of the tour route and motion state, the viewer may obtain different visual evaluation on same landscape. In the same dynamic viewing system, viewer and the landscape system keep relative stable physical relationship in the basic viewing unit(1-2kms), whose speed, stadia and visual angle remain unchanged. The dynamic viewing system of landscape along the canal is mainly the slow-traffic system. Based on the field study, the dynamic viewing system of the Grand Canal is consisted of pedestrian system, slow-bicycle system and sightseeing boat system as shown in Fig. 2.

2.2 Construction of the landscape evaluation system based on vision reception

In our former research, according to the landscape composite characteristics of canal landscape, as well as considering the basic idea of visual aesthetics and ecological aesthetics, we established evaluation elements for evaluating the landscape system itself, which was divided into three category layer elements and nine system layer elements which includes contour rhythm, contour recognition, contour fluctuations, building façade, building materials, building roof, visual plaque, visual hierarchy and visual color (Celio, Ott, Sirén, and Grêt-Regamey, 2015). In the meanwhile, we embody the landscape visual evaluation on canal landscape into the evaluation of its two-side urban façade and establish corresponding quantized evaluation criteria. After that, we rate every element involved to get the visual evaluation score T of corresponding layer. Therefore, the score of urban outline, architectural form and visual perception are denoted

by T_{UO} , T_{AF} and T_{VP} , respectively. Notation S_{UO}^n is used to denote the score of evaluation elements in urban outline, where $n=1,2,3$ represents the contour rhythm, contour recognition and contour fluctuations, respectively. Similarly, S_{AF}^n and S_{VP}^n are defined as the score of each element in architectural form and visual perception. The highest score of each element is 10, which means no modification is needed, and the lowest score is 0, which means the modification is inevitable. The T_{UO} , T_{AF} and T_{VP} could be calculated by summing up the score of all elements as $T_{UO} = \sum_{n=1}^3 S_{UO}^n$, $T_{AF} = \sum_{n=1}^3 S_{AF}^n$, $T_{VP} = \sum_{n=1}^3 S_{VP}^n$.

On the other hand, we introduce the concept of landscape visual attention-degree, *i.e.*, the degree of visual attention paid to different landscape elements. As the connections between visual perception and quantified visual evaluation, the landscape visual attention-degree is one major parameter that describes different Ferris system viewing them for the important parameters of the difference between the same landscape system in different categories of factor of landscape visual attention. The main influencing factors is viewing in different motion system speed, distance and angle, static system of stopping point can be considered for speed is zero, the motion of the system. Based on the factors analysis in decision-making, we carry out pairwise comparisons of relative importance to build the judgment matrix. The eigenvector calculated represents the relative weight of these visual elements in different environments and motion systems, and could be assigned as the value of corresponding landscape visual attention-degree.

We introduce notion E_{m-c} to denote landscape visual attention-degree in both viewing systems (static and dynamic), *i.e.*, the weight of each element for landscape visual evaluation in different motion system, where m stands for the motion patterns and c for different category layer elements. For example, E_{bi-uo} denotes the landscape visual attention-degree of urban outline in slow-bicycle system and E_{ug-vp} represents the landscape visual attention-degree of visual perception when viewer stands at the urban gateway (stationary point). We can easily get the relation that

$$E_{p-uo} + E_{p-af} + E_{p-vp} = E_{bi-uo} + E_{bi-af} + E_{bi-vp} = E_{bo-uo} + E_{bo-af} + E_{bo-vp} = 1.$$

$$E_{ug-uo} + E_{ug-af} + E_{ug-vp} = E_{dp-uo} + E_{dp-af} + E_{dp-vp} = E_{os-uo} + E_{os-af} + E_{os-vp} = E_{vc-uo} + E_{vc-af} + E_{vc-vp} = 1.$$

Therefore, the visual evaluation of one landscape subsection or stationary point X in different motion systems are defined as following equations, respectively is defined in the similar way

$$X_{Pedestrian} = E_{p-uo} \times T_{UO} + E_{p-af} \times T_{AF} + E_{p-vp} \times T_{VP}.$$

$$X_{Slow-bicycle} = E_{bi-uo} \times T_{UO} + E_{bi-af} \times T_{AF} + E_{bi-vp} \times T_{VP}.$$

$$X_{Sightseeing-boat} = E_{bo-uo} \times T_{UO} + E_{bo-af} \times T_{AF} + E_{bo-vp} \times T_{VP}.$$

$$X_{Urban-gateway} = E_{ug-uo} \times T_{UO} + E_{ug-af} \times T_{AF} + E_{ug-vp} \times T_{VP}.$$

$$X_{Dominating-point} = E_{dp-uo} \times T_{UO} + E_{dp-af} \times T_{AF} + E_{dp-vp} \times T_{VP}.$$

$$X_{Open-space} = E_{os-uo} \times T_{UO} + E_{os-af} \times T_{AF} + E_{os-vp} \times T_{VP}.$$

$$X_{Visual-corridor} = E_{vc-uo} \times T_{UO} + E_{vc-af} \times T_{AF} + E_{vc-vp} \times T_{VP}.$$

In conclusion, landscape visual evaluation in different motion systems is related with not only objective landscape quality but also landscape visual attention-degree. By building a quantitative visual evaluation system under the influence of the objective multi-factor interactive model, we quantize the result of landscape visual evaluation obtained from viewers in different viewing systems, and then provide the technical support and basis for the subsequent research on landscape improvement strategy.

3. Results

3.1 Data Analysis

According to the distribution of heritage points, landmarks and open space along the canal, also considering the urban gateway and existing visual corridor, as well as the surrounding urban dominating point, we set 23 stationary points in the middle of the canal, 7 of which are on the bridges, the other are on the boat. In addition, we set other dominating stationary points and 6 points on the bank. We analyze stadia and view angle from stationary points firstly, and then rate all the elements to get the distribution of the landscape visual evaluation of these stationary points. Therefore, we can understand the visual evaluation status of the Grand Canal's static viewing system. The darker color and wider radiation range would indicate this stationary point has better landscape visual evaluation as shown in Fig.3.

Besides, we divide this section of the Grand Canal into landscape subsection every 1000-2000 meters, resulting in 38 landscape subsections in total. We utilize the mathematical model proposed in to calculate corresponding score and summed up unweightedly for these landscape subsections. After that we input the data of every district into GIS. Using surface analysis tool, we obtain the 3D landscape visual evaluation model. Similarly, the area with better the current landscape visual evaluation would display darker color (Svatonova and Rybansky, 2014).

The dynamic tour system of the Grand Canal includes pedestrian system, slow-bicycle system and sightseeing boat system. Pedestrianism is the main dynamic visiting way, which has the convenience and flexibility that no other transport tool equips. The active crowds are mainly nearby residents supplemented by tourists with relaxation and taking a walk as their main objectives. Slow-bicycle system is an important part of the Grand Canal motion system due to its



Figure 3: Analysis of static viewing system and landscape visual evaluation model.

wide popularity and great participation. The main participation crowd of slow-bicycle system is nearby residents. The sightseeing boat system plays the role of connecting the visual relationship between landscape point and green corridor of the Grand Canal. Also, it establishes the relationship between heritage itself and the tourist interpretation system. The streamline of sightseeing boat system is more successive and complete in longer absolute length when compared with that of general urban recreation zone. The participation crowd is mainly tourists.

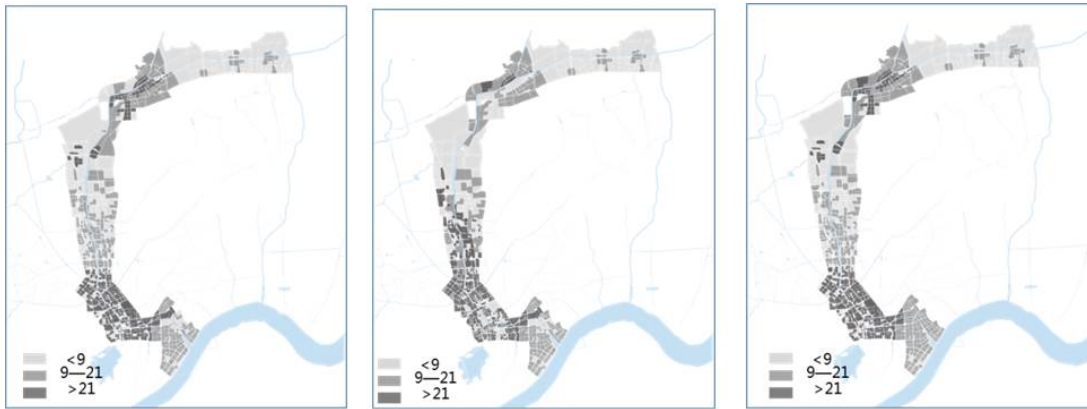


Figure 4: Illustration of vision characters in different motion systems.

Given the differences of landscape status and environment of surrounding cities among different landscape subsections, we utilize the mathematical model proposed calculate corresponding score get the distribution of the Grand Canal landscape visual evaluation score and the evaluation result in different dynamic tour system. Similarly, the darker the color of the area is, the better the visual evaluation of the landscape status in this viewing system is as shown in Fig 4.

3.2 Promotion strategy on viewing system

Through the analysis and calculation of visual evaluation results of the landscape itself and that in different viewing system, we divide the Grand Canal landscape promotion strategy into two parts. One is the promotion of landscape itself, the other is optimization of viewing system. When we optimize the viewing system, we don't change the landscape itself but to optimize the tour route to improve the overall landscape visual perception and image. It mainly includes the integration of dynamic viewing system and organization of static viewing system, namely tour routes optimization and overlook system construction as shown in Fig.5.

3.2.1 Dynamic viewing system optimization

We established quantitative multi-factor visual evaluation system and assigned the parameters and weighted value to obtain the distribution of the landscape visual evaluation value in different dynamic viewing systems. The area with score above 21 is considered as first-class area where people are encouraged to pass. When the score of the area is between 9 and 21, we define it as the second-class area, where we recommend planning appropriate tour route there only after improving landscape quality. When the score is below 9, the subsection needs special landscape renovation, and is not suitable to tourist for the moment. We pay more attention to connect the first-class areas. Considering the public traffic transfer point, landscape resources, basic visiting unit and existing tourist routes, we constructed landscape dynamic viewing system of the Grand Canal Hangzhou section, optimized existing tour routes and planned some new tour routes.

This dynamic viewing system can establish the relationship between the landscape visual evaluation elements and urban motion systems. The differences of landscape visual attention-degree on elements of different layers and its accompanying diversity in visual evaluation are adequately considered in different motion system via scientific and effective operation. Therefore, we can enhance advantage and avoid disadvantage of landscape to improve the overall landscape visual perception and landscape image of the Grand Canal. In addition, it enjoys good adaptability in city function because it fully takes into account of environmental influence of the urban space around the Grand Canal.

3.2.2 Overlook system construction

The ideal city overlook system should be consisted of numbers of overlook points and circle-layers and cover existing overlook landscape resource along the canal (Wang, Yang, Chen and Xu, 2013). In the above research, we chose the stationary point through spatial analysis, constructed quantitative multi-factor visual evaluation system, calculated the parameters and weighted value, and determined the distribution of landscape visual evaluation score in different static viewing system. Besides these, through delimiting the landscape circle-layer, *i.e.*, analyzing the stadia and view angle of the stationary points, and integrating the visual corridor, we established overlook system to control 3 main overlook factors: landscape target, viewing point and corridor axes.



Figure 5: Overlook system construction.

In our research, the overlook targets of stationary points are banks, boats, bridges and buildings. Canal, historical relics along, revetment, open space, kinds of buildings, bridges and the space under bridges are all viewing targets of stationary points on boats, whose stadia is short and view angle is small. The targets of the stationary points on bridges include bridges themselves, landscape revetment near the bridge, canal landscape corridor, symbol landscape and skyline. Its stadia is short and view angle is large. The revetment along the pavement, buildings on the other side and the skyline are viewing target of the points on banks whose stadia is far and view angle is small. The surrounding urban viewing, overlooked viewing are the target of the points on buildings, *i.e.*, dominating points. Its stadia is far and view angle is large. According to the obtained landscape visual evaluation score distribution in different static viewing system, we chose 80 stationary viewing points (includes 14 points on bridges, 20 points on boat, 26 points on banks and other 20 dominating points) and 12 overlook corridors (includes 5 visual corridors and planned 7 canal viewing axes).

This static viewing system is based on scientific and effective operation on quantitative multi-factor visual evaluation system. We analyzed the stadia and view angle of different stationary points and obtained the distribution of the landscape visual evaluation score in different viewing system. Considering the spatial characteristics of overlook system, such as continuity and interactivity, we sorted out existing static viewing system, and then constructed new overlook system to promote the overall landscape image of canal.

3.3 Promotion strategy on landscape optimization

The research object of the Grand Canal landscape promotion includes built-up area and establishing area these two parts, corresponds to applications of landscape optimization and city spatial form promotion, respectively. Among them, the existing zone along the Grand Canal involves multiple center districts of Hangzhou and protected historic zones. In this region, we

chose the key lots to transform and controlled the landscape system elements pointedly to improve the visual evaluation of landscape along the canal.

The key transformation lots are the points at key locations in the viewing system but with low landscape visual evaluation score. For example, the stationary points obtained after spatial analysis, including urban gateway, urban dominating point, open space and end point of visual corridor, but landscape quality status of which are below the first-class standard (the landscape visual evaluation score is below 21). Or the added important sections for connecting tour routes in dynamic viewing system, but landscape quality status of which are below first-class standard).

In static viewing system, we focus on modifying the dominant elements in different viewing system. For example, the stationary point on boat located at Genshanmen Park. Its stadia is near and view angle is small but the visual perception is valued. Therefore, we made corresponding regulation according to the quantified evaluation criterion. In dynamic viewing system, we analyzed landscape visual attention-degree distribution in the zone where added routes and focused on controlling and transforming corresponding elements. Qiaoxi historic cultural block is such an example. We added cycling tour routes there to connect nearby two slow-bicycle transition points. Other corresponding regulations are made according to the criterion because people in this zone value the urban outline more as shown in Fig. 6.

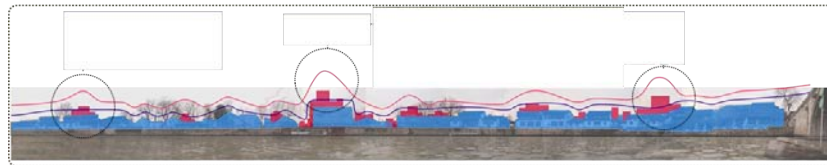


Figure 6: Optimization of Qiaoxi block.

Although we can improve the landscape visual reception and image through only optimizing the tour routes, some problems exist. The landscape visual evaluation score of the extra section for connecting tour routes and the stationary points that are important to urban spatial form may below first-class standard. The promotion strategy of landscape optimization will consider landscape status and visual attention-degree distribution to make the specific regulation according to the evaluation criterion so that we can solve the problem of low visual evaluation on part of new tour routes, which is brought by the viewing system optimization

3.4 Promotion strategy on urban spatial form

In the case of establishing areas (which are mainly located at west part of the canal), we formulated landscape control guidelines on urban spatial form to hierarchically control the set of height, volume and visual corridor. This can be seen as the long-dated way to control and promote the landscape along the canal, also the target of the future deepened research.

Based on the spatial pattern prediction model of GIS (Aklıbaşında and Bulut, 2014), we made comprehensive analysis on all elements that affect the city development so that we can get the judgement on development intensity of future city and formulate control guidelines on the height as shown in Fig. 7. There are 6 types in all. Height zone 1 includes mainly super high-rise

buildings that above 100m. The height of buildings in zone 2-6 are basically 80-100m, 50-80m, 24-50m, 12-24m and below 12m, respectively.

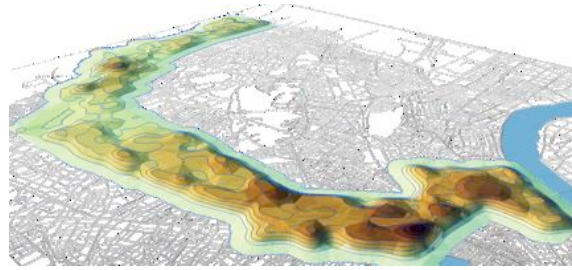


Figure 7: Spatial pattern prediction model of GIS.

The height zone 1 includes the core area of municipal center and sub-center where have been highly developed; height zone 2 includes highly developed residential area adjacent to the central area; height zone 3 mainly refers to the residential and comprehensive development area located at the outer circle of the center and sub-center; height zone 4 is the residential and comprehensive development area close to the height zone 3; height zone 5 includes general areas of low intensity residential and comprehensive development area; height zone 6 includes industrial and logistic area, surrounding ecological conservation areas and sensitive area where control requirements are high. Through the analysis and research, a little part of establishing areas along the canal is height zone 2 and 3, but most of the which belong to height zone 4-6.

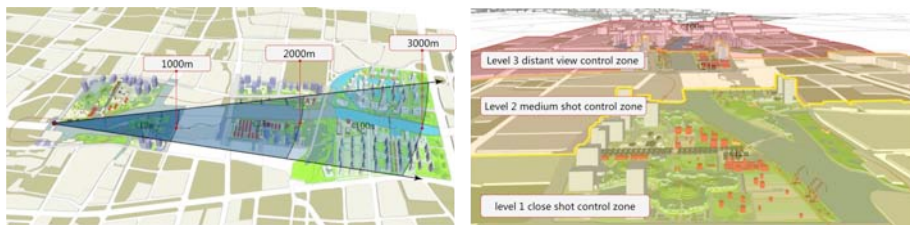


Figure 8: Hierarchical control from the refinery to canal new town.

Zone 2, 3, 4 and 5 are mainly located near the industrial relic area which are the key future development areas. The differences of the development intensity and the height enhanced the layering of urban landscape. However, too messy building height may cause mutual occlusion. Therefore, we set hierarchical control guidelines for the important landscape corridor along the canal. Take the visual corridor from the refinery to canal new town as an example, whose length is about 3000 meters. We see viewpoint of visual corridor as the datum and set one control unit along the Grand Canal every 1000 meters. The buildings in these control units should be limited to the corresponding height according to specific standard as shown in Fig. 8.

Through making hierarchical regulation on the set of height, volume and visual corridor of future urban spatial form in establishing area, we formulated the landscape control optimization mode whose main part is spatial form control guidelines. Then, we can control and promote the landscape visual evaluation of the establishing area along the canal on urban spatial form.

4. Conclusions

Based on our former research, we take the Grand Canal as an example to study and analyze the viewers' characteristics of landscape visual evaluation on canal landscape in different viewing system. Then, we established a quantitative visual evaluation system under the influence of the objective multi-factor interactive model. This method uses intuitive and clear data to illustrate the complex city relationship, and provides technical support and guidelines for subsequent optimization design. Based on these, we constructed and optimized viewing system and overlook system of the Grand Canal Hangzhou section, formulated the landscape control guidelines for new urban areas and landscape optimization methods for existing areas. Finally, we proposed promotion strategies on urban spatial form, landscape optimization and tour routes, trying to find the balance point between preservation and development to seek reasonable and scientific landscape promotion strategy.

In addition, the method of visual evaluation and the canal landscape promotion strategy are scientific and general applicable. They can be easily applied to large scale, continuous linear urban open public space. We can adjust the corresponding factors in the landscape visual evaluation, viewing systems and urban spatial form according to the specific situation and requirements.

Acknowledgements

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New Mahalle

(New Mahalle – a more urban, green, inclusive neighbourhood.)

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1. Introduction

Nowadays, almost half of world's population lives in urban areas and these amount are constantly growing. Urbanization has reached high levels and, especially in developing countries, cities with a population greater than 10 million have become extremely common. (Morano E, 2003) These led to a huge social inequality within city's neighborhoods. When poor population comes to survive in the urbanized world, they have to face a variety of problems conserving different aspect of living, for example access to qualitative housing and public spaces. Uncontrolled urban environments are appearing in big cities to cover the extreme demand of housing and they are constantly expanding. Such environments are called *slums*. (UN-HABITAT, 2003)

Istanbul has 14.4 million people living in its metropolitan area and it is the biggest city of Turkey and one of the most populated metropolitan areas in the world. After its recent fast growth, as in other megacities in the world, Istanbul faces density and urbanization problems. The combination of build environment from different periods is very interesting and challenging for architects and urban planners. Especially when it comes to bad quality historic neighborhoods the difficulties and challenges are much more.

2. Theoretical Background

2.1 Urbanization

From industrial revolution till today, developing world has been trying to enforce its economy by enlarging industrial and services sectors. Obviously, the majority of these economic activities are taking place in cities. Employment opportunities are constantly increasing in urban areas, causing people move from rural to urban areas in an extreme rate. Urbanization is so fast that urban areas are extending from district cities to metropolitan areas in less than a decade. (UN-HABITAT, 2007)

These rapid "domestic" migration is happening because of economic and business reasons. People in developing countries in order to have a sufficient income, are forced to search for better job opportunities in big cities, where the majority of economic and developing activities are taking place. Big industrial complexes are being built in order to find cheaper (than in developed world) workers. One more reason for urbanization is political situation and warfare which could cause whole population from an areas (or country) move in order to survive. (UN-HABITAT, 2007)

As cities are considered economic wealthy centres, people moving to them are expecting better income and working conditions. As more people are moving there the need of work placements are growing in a rate that could not be covered by the rate economic activity are growing. As a result, instead of finding a better financial state immigrants are still trapped in poverty. Urbanization of population leads to urbanization of poverty and unemployment. In this case, urban poverty is expected to be between 45 – 50% by 2020. (Moreno E., 2003)

2.2 Megacities

At 19th century, even if there was not an official definition of what is a *megacity*, cities with more than 1 million population was considered as one of those. As situation worldwide changed, such a definition would have given us too many megacities today. Since 1970, United Nations have officially defined megacity as a city with more than 10 million population. (Morano E, 2003)

Today, there are 28 megacities around the world. Tokyo is the most populated city in the world with a population around 38 million. It is followed by Delhi with 25 million, Shanghai with 23 million, Mexico City, Mumbai and Sao Paolo with 21 million inhabitants each. By 2030, it is expected to have 41 megacities with Tokyo still the biggest with 37 million followed by Delhi with 36 million. It is also interesting to say that except from the number of megacities

which almost tripled in 24 years, similar growing pattern follow urban areas in various levels. Most megacities today are located in the developing world. More than one third of them are in Asia, six of them in China, four in India and it is expected to have seven more by 2030. (United Nations, 2014)

2.3 Informal Settlement Area (Slum)

Apart from the need of workplaces, there is also a huge demand for cheap housing, but city's development speed is lower than the demand, so municipalities cannot offer enough housing options. As the demand for cheap housing raises, informal residential areas emerge as an immediate and cheap solution, because people do not have to pay for the land and they constructed (or renovated) their houses as cheaply as they can. (UN-HABITAT, 2003)

The word *slum* appeared by the end of 18th century in everyday language in Great Britain. The term was used to describe the informal activities which low income social groups was doing. It was meaning places or areas where informal activities was happening. (Davis M., 2007)

By the middle of 19th century, the term appeared in text and defined in dictionaries. *Oxford English Dictionary* defined slum as "A squalid and overcrowded urban street or district inhabited by very poor people". At the same period slum areas found in French, USA and India. As a result phenomenon recognized worldwide and started researching common characteristics the world round. (Morano E, 2003)

Until the begging of 21st century there was no official definition of the term slum, so in each country there were different definitions and often translations of the term, like favela or barrio in Latin America, gecekondu in Turkey. In 2002 UN-HABITAT held in Nairobi, Kenya, a worldwide conference where an official definition of the term *slum* was defined. According to this "an area is considered as slum if it has at least one of the following characteristics:

- a) Poor accessibility to clear water.
- b) Poor accessibility in sanitation facilities (private or public).
- c) Poor construction quality of houses.
- d) It is highly dense area.
- e) It is unsafe area. Illegal activities are held and inhabitants have no guarantee for their stay there." (UN-HABITAT, 2003)

2.4 The Islamic City

Trying to define what is a livable qualitative urban space for a contemporary city like Istanbul, the Islamic character of it should be considered as well. So, I search the principles of the traditional Islamic city, try to identify them into the existing form of urban space and city fabric and wonder how public space could be changed to become more livable and at the same time still acceptable by resident's mentality.

Traditional Islamic city

The basic neighborhood building guidelines in the traditional Islamic city are determined by principles and guidelines started by the time the Prophet Mohammed settled in Medina. Core in urban design is the house and the access to it as it described socially and physically by the essence and spirit of Islam and their development and evolution of Islamic law through the time as the religion spread. Very important is the influence of scholars. Some of them created schools of law and they strongly influence lifestyle and design guidelines. (Hakim B. S., 1988)

The decision-making process of physical formation of the city is based on the interaction of rulers (people with governmental and/or religious power) and citizens although they act in different scales. Rulers decide on the macro scale of the city and they create a first scale urban fabric of governance, religious and economic centers (or buildings) and major infrastructure. On the other hand, citizens' decision are on the micro scale of a neighborhood. They create a second scale urban fabric of private houses, streets and open spaces. Although rulers influence the urban fabric by creating a planned structure, citizens' influence is spread in greater area and affect the lives of most people. (Hakim B.S., 1988)

The guidelines followed by rulers and citizens in the traditional Islamic city are the behavioral guidelines stated in Islamic law. Harm is the basic guideline, everyone should exercise their right without harming others. Second important policy which regulates Islamic behavior is privacy. In physical terms it has to do with the private domain of the house. In this case visual corridors into private areas should be avoided to secure personal privacy. Other behavioral principles are interdependence, right of original usage, respect for others' property, pre-emption and right of access to water. (Hakim B.S., 1988)

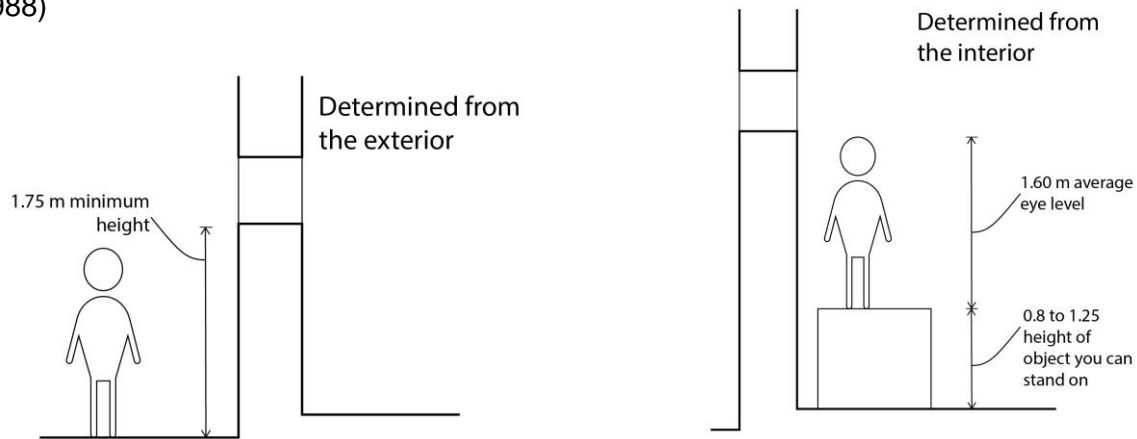


Figure 1: Height of the windows to secure privacy. Source: Hakim B.S., 1988

On the city level, Islamic city is defined mainly by rulers or designers. Mosque is the core of the Islamic city, the same importance it has in the society. It is the main public space in the city, where people meet, socialize and interact. It combines religious services, open/ green space, educational services and governing facilities. Next to it there is usually a bazaar or a weekly street market (for smaller mosques). (Abu-Lughod J. L., 1987) It is obvious that the mosque is a physical center for the city and the neighborhood and at the same time a spiritual center.

Residents of each neighborhood have similar religious, ethical or socio-economical characteristics. (Abu-Lughod J. L., 1987) Social, cultural and political structure is different between Islamic and non-Islamic cities. Cities which adopted Islam later on usually follow the previous urban structure with limited changes in religious centers and social structure. The implemented principles from Islam was aiming to serve personal privacy. (Karimian H.)

A neighborhood in the Islamic city is cluster of houses usually organized according to religion, ethnicity or language. It is quite autonomous as it has its own mosque which is religious, governmental and economical center. Multiculturalism in the whole Islamic city is represented as combination of different social groups in neighborhoods. Social structure is defined by the people's relation and interaction within the neighborhood and it is the main factor shaping urban form of neighborhood. (Karimian H.) Mixture of social groups in the same neighborhood exists in the cotemporary Islamic city and especially in the international western influenced ones, like Istanbul. (Saoud R., 2002)

The financial and trade activity of the neighborhood is served by small local shops, but the major needs of residents are covered by market streets or indoor market next to the mosque. In some cases when the mosque and the neighborhood are not so important, the market is a street market in a weekly basis in order to cover residents basic needs, but in other cases the market is so famous for its size or its focus on specific products that it attracts costumers from other neighborhoods. (Behar C., 2003)

Roads and streets are connecting neighborhood with the close ones and having as a goal to serve mobility between houses and center of the neighborhood. Street network inside the neighborhood is a combination of main, usually busy roads and narrower streets. Both are used as public life spaces. (Behar C., 2003) Houses are the actual private space for each family and it has a garden or yard for outdoor activities Houses are usually inner oriented in order to give residents the necessary privacy. (Hakim B. S., 1988)

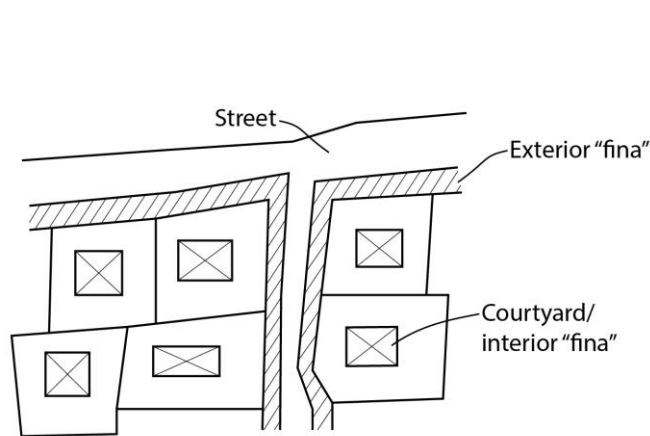


Figure 2: "Fina" as a street element.

Source: Hakim B.S., 1988

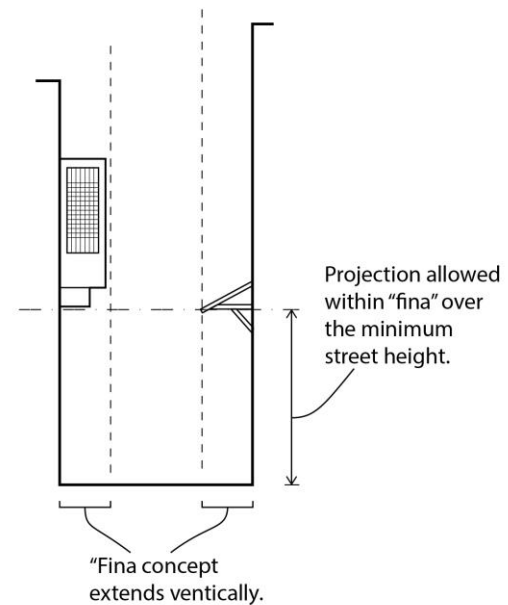


Figure 3: Build over the "fina".

Source: Hakim B.S., 1988

3. The city of Istanbul

3.1 Turkey and Istanbul

Turkey is a transcontinental country, between Europe and Asia, with an important geostrategic location. It works as a strategic location between Asia, Africa and Europe and through the time, as the crossroad of civilizations and cultures. It has Mediterranean Sea on its south, Aegean Sea on its west and Black Sea on its north. Bosphorus, Sea of Marmara and Dardanelles are all together formulate the Turkish Straits, which connects Aegean Sea with Black Sea and demarcates the boundary between Europe and Asia.

Turkey is a republic since 1923 (29/10). Its area is 783.562 km² and it had 76.667.864 population on 2013. Turkey's capital city is Ankara and other big cities are Istanbul, Izmir, Bursa, and Adana. Istanbul is the most populated city of Turkey and on the country level, Istanbul is the main air hub for domestic travels and the second main train hub. It consists of two parts, the European and the Asian part divided by Bosphorus Sea. One third of its population lives in the Asian part. Through the times, Istanbul (Constantinople as known before 19th century) was capital city of Roman, Byzantine and Ottoman Empire.

Since 2004, province and city of Istanbul have the same boundaries. The city of Istanbul covers an area of 5.461 km², it had 14.107.954 inhabitants on 2013 (it is expected to reach 15 million inhabitants by 2015) and an average density of 2.725 people/km². (Turkish Statistical Institution) For administration purposes, province is divided in 39 districts and each of them in neighborhoods (*mahalle*).

3.2 Today and Tomorrow

From socio-economic aspect, the city of Istanbul today combines upper, medium and lower income classes. Especially in the central - historic areas, all different socio-economic level are found, but the majority of population especially close to the touristic zone and the waterfront belongs to the upper class. If we compare European side with Asian one, in the first we found lower socio-economic neighborhoods in greater extend as in the Asian side. (Derviş P., Öner M., 2009) Fener and Balat are such neighborhoods, characterized as centrally located, historical and low income.

As the city expanded through the time and different civilization were building one after the other, the actual core of the city is very densely built. Green areas are limited in the central areas of Istanbul, they are usually across the waterfront and the main attractions.

On transportation level, today Istanbul has an extensive bus network with local and express bus lines. Some of them are connecting both sides and the majority of them connect central locations. (Derviş P., Öner M., 2009) Finally, a very important and popular way of commuting in that city is by ferry.

In the future, it is expected that urban fabric will reach the Black Sea coast till 2030 and population will be more than 18 million. A third bridge (Yavuz Sultan Selim Bridge) is already being constructed and it is expected to finish by the end of 2015. By the next two years, three metro lines are going to be constructed and one is being planned in order to make transportations more effective in both sides. It is also planned to add an extra tram line to connect north suburbs.



Figure 4: Green and slum areas, today.

4. The Focus Area: Fener and Balat

4.1 Fatih: The Historic District

Fatih is the historical peninsula of the city of Istanbul and a district and a municipality by itself since 2009. It covers an area of 13 km² with a population of 428.857 people (2012). Its density reaches 33.000 people per km² which makes it one of the denser districts. (Turkish Statistical Institution) Fatih's borders are mainly defined by the topography as it has Golden Horn to the North and Sea of Marmara to the South. To the North, Theodosian wall is remarking the Western borders.

Fatih is was the first core of the city and its history starts from ancient times. During the Byzantine period Fatih was the actual city of Constantinople with a lot of governmental and religious buildings spread all over the district. Today, it is a crowded working class district, as after 1960s large amounts of middle class immigrants moved in. It has a unique character as it combines areas with strong cosmopolitan atmosphere, historic and touristic neighborhoods as well as extreme conservative communities.

4.2 Fener and Balat

Fener and Balat are two neighborhood in Fatih district which are located by the Golden Horn. Their history starts already from the Byzantine period as they were wealthy and important areas of the city of Constantinople. Today, they are one of the poorest areas of Istanbul and populated by immigrants from Eastern Turkey or Syria but with the unique colorful atmosphere and the long history make them one of UNESCO's World Cultural and Natural Heritage areas (as part of the Historic Areas of Istanbul), however less than 1% of tourists visits it.

Fener

Fener is a neighborhood by the Golden Horn close to the Theodosian wall which is known as the Greek neighborhood. Its streets are full of old wooden mansions and churches with picturesque facades dating from the Byzantine and Ottoman period. After the conquest of Constantinople, Fener was mostly populated by Greeks,

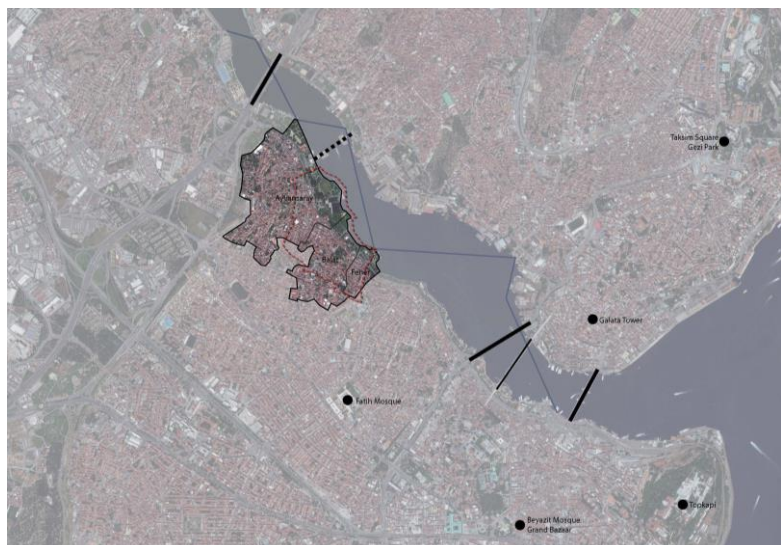


Figure 5: Focus area. Base source: google maps

especial some important and wealthy families The Patriarchate of Constantinople moved also to that area and made it even more important. From that time till today, Fener has very important role in Christianity as the center of Christian Orthodoxy. All over the area, there are a lot of old Greek Orthodox churches, the Phanar Roman Orthodox Lyceum and an important Bulgarian church by the shore of Golden Horn.

Even from the last period of the Ottoman Empire, Fener had already started losing parts of the Greek wealthy population, as they moved to other district of Istanbul. Especially after the Istanbul pogrom (6-7 September 1955), the area declined and was left almost abandoned. After that, immigrants from inner Turkey, Anatolia, and Syria moved into the area and occupied the run down, empty buildings.

Balat

Balat is the neighborhood right next to Fener, by the Golden Horn, towards the Theodosian wall. From the Byzantine period, it was a Jewish district, when a Jewish community settled here. Ahrida (Ohrid) Synagogue is one of the oldest synagogues in the city and it is located in Balat.

But after an earthquake (1894) and some fires in the area, the majority of Jewish people moved to Galata area, and they gradually were replaced by immigrants from Black Sea region. By the establishment of Turkish Republic, warehouses, factories and workshops appeared in the area because of the close proximity to the waterfront. Later on, they were left empty because of location change of port activities.

Ayvansaray

Ayvansaray is a neighborhood between the Theodosian Wall and Balat by the Golden Horn. During Byzantine Period, Palace of Blachernae, an imperial residence in suburbs, was located there. Today, it is a picturesque quiet residential neighborhood, with a number of historic monuments though. Parts of the neighborhood, especially close to historical monuments, are also protected as UNESCO's World Cultural and Natural Heritage Convention.

4.3 Historic Areas of Istanbul

The Outstanding Universal Value of Istanbul (speaking about the Historical Peninsula) resides in its unique integration of architectural masterpieces that reflect the meeting of Europe and Asia over many centuries, and in its skyline formed by the creative genius of Byzantine and Ottoman architects.

The four areas of the site are the Archaeological Park, at the tip of the Historic peninsula; the Suleymaniye quarter with Suleymaniye Mosque complex, bazaars and vernacular settlement around it; the Zeyrek area of settlement around the Zeyrek Mosque (the former church of the Pantocrator), and the area along both sides of the Theodosian land walls including remains of the former Blachernae Palace. The site was scripted in on 1985 and it fulfills the 4 first criteria from the criteria list, all of the cultural ones. (UNESCO World Heritage Center)

Finding a balance between change and preservation is a delicate issue in the Historic Areas. The Management Plan, which is currently being prepared in collaboration with all stakeholders in conformity with the related legislation, will address this issue. It will address the traffic and transport plan for the city, the urban regeneration strategy and tourism management, and will provide a proper framework to ensure that construction and infrastructure projects respect the Outstanding Universal Value of the property. It will also include policies for conservation, standards for restoration and rehabilitation, management responsibilities, accessibility, visitor management, policies for increasing the perception of the site, increasing the quality of daily life, risk management, awareness raising and training. (UNESCO World Heritage Center)

Rehabilitation of Fener and Balat Districts Programme

Rehabilitation of Fener and Balat Districts Programme is a joint programme of the European Union and Fatih Municipality. The Programme is being implemented by Fatih Municipality, supported by a Technical Assistance Team and it started in January 2003. It works under four concepts: restoration of houses, social rehabilitation, renovation of the historical Balat Market and establishment of a waste management strategy and it aims for the active

participation of the district inhabitants through regular feedback on implementation and decision-making. (Rehabilitation of Fener and Balat Programme)

4.4 Design Area

As the 3 neighborhoods are huge, for that specific project it is selected the area between Yıldırım Street and Çiğirli Çeşme Street by the Golden Horn, which includes parts of all of them.

Urban fabric is dense with narrow streets. As it was an area with former important churches and schools, there are still big open spaces around them which are fences or unused. In the dense area, there is a variety of public building, some of them built on Byzantine and Ottoman period. The most interesting of the area is that a core of old dense wooden buildings already exists close to the waterfront, but on the top of the hill there are newly constructed concrete apartment buildings. Between the new and the old urban fabric, there is an area where new meets old constructions, and as there are some empty plots, this is an opportunity to create an interesting combination of historic and contemporary built environment.

As the area is an old neighborhood of the city which became abandoned after the majority of its residents moved to other parts of the city or in other countries, the quality of some buildings are poor or bad. Some need minor reparation to maintain their situation and some need extend reparations to reinforce their construction in order to be safe for their residents. Few of the buildings though are half demolished and they need a reconstruction to reach their original situation. The majority of poor quality buildings are in the area of Fener.

The area has a unique topography which influence the built environment. It is built between the waterfront and a hill, so the northwest part is on the top of the hill (approximately 30 m above sea level) and it goes all the way down till Golden Horn (in around 500 m). As a result, main streets are following the topography and there is one highway street close to the waterfront, and one narrower on the top of the hill. Bus lines are passing by these two main streets and there is no connection between the waterfront and the hill. Secondary streets are connecting the two main streets.

As the topography is so strong, there are two major cores. One on the top of the hill, which is the conservative neighborhood of Çarşamba with a strong commercial center. Close to the waterfront, there is the commercial center of Balat, with restaurants and cafes, small shops and workshops. Between the two centers, residents use to walk.

In such a dense urban fabric, there are not so many green/public spaces. There is a big linear park by the waterfront, but it is separated from the actual city by the busy highway. Smaller green/public spaces are located close to main public buildings and they are as their outdoors space.

So, streets and pavements are where the actual public life is found. There are also two big empty spaces which are fenced and inaccessible because they belong to the Ecumenical Patriarchate.



Figure 6: Built environment and public buildings (black).



Figure 7: Bad quality buildings.

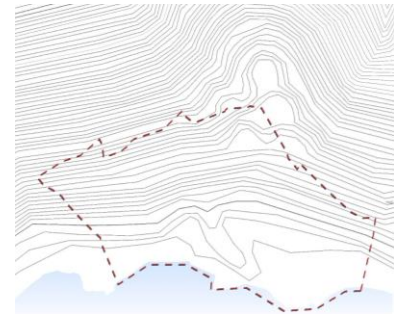


Figure 8: Topography.



Figure 9: Green and public spaces vs empty spaces.

5. Design Toolbox

5.1 Design Principles

According to a research project made by Gehl Architects and EMBARQ Turkey, the historic peninsula of Istanbul is an area of a great importance, various qualities and potentials to become a livable and sustainable part of the city. Their analysis and strategies are referring to the actual historical core up to the first city wall on three different layers: City Qualities, Walkability and Recreation.

My focus area is outside of the research area of that project, but I think that it has a huge importance for city's history and should be treated as the rest of the historic areas, so it would become a part of them and a node between the actual historic core and the Theodosian walls historic area

5.2 City and District Level

Urban Structure

First layer of design principles is the urban structure. As the area is quite old, its structure is defined through the time and it should be protected and preserve as a quality, a memory of the past.

Inclination in some streets are so high, so steep grades are necessary. This challenging pedestrian landscape is difficult for people with disabilities, people with prams or the elderly and bikers.

The presence of monuments sometimes works as barriers in terms of integration with the rest of the city and the waterfront, especially in the areas close to the walls. By the time some monuments have been ignored (maintenance and proper utilization of area around them) which affect their quality today.

Due to the messy street network, the city is complex to comprehend, access and orientate in it. Because of the lack of planning, there is no clear pedestrian network, there are only few walking routes which are difficult to be followed due to poor connections between them. The lack of proper and clear pedestrian crossings, bridges or subways add more difficulties in pedestrian network.

Public transportation is usually crowded, especially the lines serving the inner city and the Asian side. Also, there is poor connection between the different means of transportation and pedestrian network lacks of bike infrastructure.

Strategy

A pedestrian oriented neighborhood which promotes walking, cycling, and public transportation and makes it easy for users to change among them. Effective connectivity with the rest of the city will enable residents to commute easier and tourists to reach the area.

Urban Space

Second layer of design principles is the urban space. Access to adequate and qualitative urban space is based on planning and maintenance in the space especially in historic areas like these.

Footways are frequently used for parking and that way pedestrians are forced onto the road. Lack of maintenance of the pavements, pedestrian streets and public lights create poor walking conditions and unsafety in the public space. Street network is car oriented and as a result there is not enough safe pedestrian crossing.

Tourists tend to visit monuments in the very central areas and forget to enjoy the actual city life and "secret" monuments. Many of them have poor surroundings and improper maintenance.



Figure 10: Steps and steep streets.

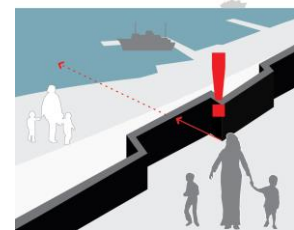


Figure 11: Historic wall as a barrier.



Figure 12: Promote walking, cycling, and public transportation.



Figure 13: Isolated green and public spaces (urban leftovers).

Public squares are not part of the usual vocabulary of that city (as it has an Islamic character) and there are leftover pieces with no particular character or identity.

Strategy

Attractive public spaces and historic sites integrated with the rest of the city. It is important for the sustainable development of the neighborhood and the health of their residents to provide qualitative urban space, adequate access to public and green spaces for everyone.



Figure 14: Neighborhood integrated with the city.

Social Life

Third layer of design principles is the public life. Social life in the public space has to do with the balance between private and public space, sense of belonging and safety.

During the night, some areas are empty as they lack of night activities as well as accommodation. Except from busy street, passing by in the rest of the area gives a feeling of unsafety, especially for women.

The streets experience a severe lack of resting facilities, they are mostly for walking. The only place that public benches could be found is in mosque yards. Many children are playing in the street because of the lack of facilities for them within urban open spaces.

Strategy

Greater variety of activities around the clock in a multifunctional city will make livable neighborhoods and activate financially the area. By creating commercial and leisure activities, neighborhood will become more popular and economical sustainable.



Figure 15: Traffic, noise and fumes.



Figure 16: Variety of activities.

5.3 Street Function

In order to upgrade the quality of urban environment, reduce the use of the car, promote walking and create a financially and socially active neighborhood all day round, street function will change and a new network will be proposed. The new network aims to give more space to pedestrians and bikers and discourage the car use inside the area. Following it is shown different kind streets functions in the area today and the changes are proposed to them.

To make the street more pedestrian friendly and enable connection with the waterfront, road width will decrease and bike lanes will be implemented. As the bus lines connecting the area with the rest of the city are passing on that street, bus lane (for all the different bus and taxi providers) in both directions is proposed. Also, both pavements are becoming slightly wider to be used by more pedestrians and staircases/ steps are implemented by the waterfront to allow people reach the water.



Figure 17: Section transformation of highway and park.

5.4 Focus Area

Aim for the focus area is to create an alternative urban structure which will be example for the rest of the city and gradually will spread its qualities. To encourage the bike travel across the waterfront, a bike way will be implemented and structure the linear park connecting the central areas and with Eyüp. Fener and Balat will be a stop along the bike way towards Eyüp for visiting historical buildings, have a rest in the park, eat lunch or dinner or enjoy the unique urban environment of the historic neighborhood.

The new street network is pedestrian and bike oriented, so a new block division has been implemented using the existing urban fabric by changing the street function. The linear park is connected with the urban fabric and green/open spaces are introduced where it is possible so the green starts integrating into the built environment and gives everyone the possibility to access it. At the same time, new construction will fill the empty plot to make a continuous city environment, structure the open spaces and provide residential and commercial facilities.

In order to minimize the urban gaps and give the filling of a continuous dense urban neighborhood, new construction are added where it is necessary. A new pedestrian network

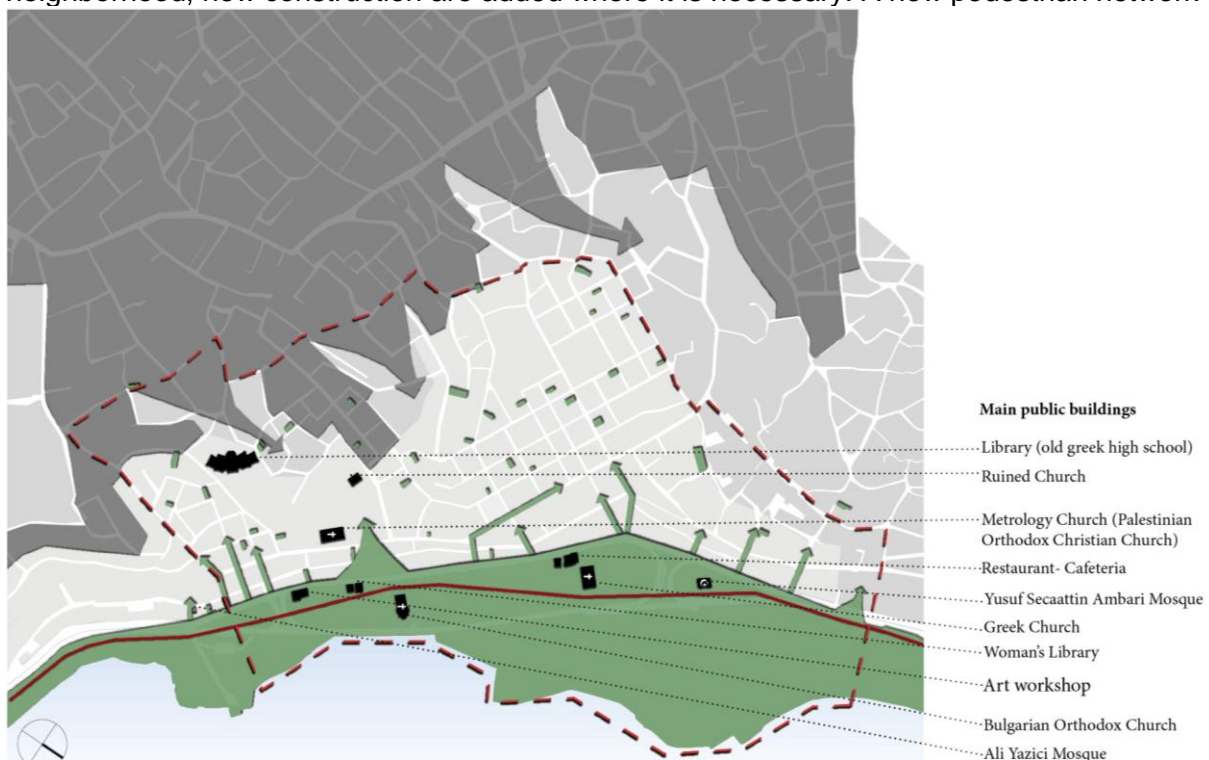


Figure 18: Strategy: Highlight public buildings, expand green areas and densify.

aims to connect all public buildings in the area and combined with new green areas will create a safe and pleasant urban environment. As it goes up to the hill, it becomes more urban and green and open spaces are smaller with little more private character.

5.5 Reparation and Climate Strategies

According to the proposed strategy for reparation, buildings are categorized according to their structural condition. The ones with no or limited structural reparation will be totally restored and maintained from times to times to act as reminders of the history of the neighborhood. The ones that need sever construction reparation will be kept as ruins and they will act as memory open spaces. On that way, the neighborhood will have enough open and green spaces with an alternative historically loaded character to their residents.

Water management in the area is another important issue, as today there is no proper drainage system on the streets. To improve the water management, drainage is combined with a water collection system. Every tree which will be planted in the pedestrian streets and public spaces, will be combined with an underground water storage and perforated pavement, so the rain water will be collected and stored to be reused in the neighborhood.

6. Proposal

Project proposal is developed in 3 levels: the neighborhood level, the new core which is created and the street and public space level. In all level, they are used the strategies above to upgrade the urban quality and provide and create an example area for the city.

6.1 Masterplan – Neighborhood level



Figure 19: Masterplan.

A new street hierarchy is implemented based on the existing street pattern, so new blocks are formulated in order to encourage safe pedestrian and bike movements. The linear park which was located between the two lanes of Ayvansaray Street, is now connected with the city fabric and green is gradually flowing inside the urban. The linear park works as a buffer zone between the city and the busy street, and as the most public space of the area. Cultural functions are spread all over it, from museums and libraries till religious buildings, the majority of them already existing.

As we walk up to the hill, public and green spaces become smaller, in order to provide both privacy and public life. The new core of the neighborhood is the market square, by Vodina Street. Its new functions as an open green space, is to host the weekly street market of the neighborhood and combine the new with the old buildings. The Ruin square, located northern of the Market square, is the upper corner of the former church yard, which contains the ruins of a mall church. Formulated as a small urban open space, with the ruins in the center offers a reminder of the past with an interaction with the modern city life. New street hierarchy offers a pedestrian network with focus on offering both busy commercial and private neighborhood-feeling streets. Public spaces and street functions are design so the more up to the hill, the more focused on privacy, so they are becoming smaller and less commercial.



Figure 20: Zoom in plan and section.

7. Conclusion: Qualities for a livable district

I number the urban qualities which are considered necessary and important in order to achieve sustainability in public life in modern Islamic cities which are result of the research above.

1. *Public spaces and urban green.* Spaces like mosques, squares and parks where people could meet and socialize. Also, green spaces are important for a better environment, atmosphere and mental health for people living in urban areas.
2. *Financial activity in urban environment.* Market or street market is an important event for a district, a generator for future development and could enforce street life. Especially in Islamic cities, market is close to the mosque (center of neighborhood) and it is an important event for the neighborhood.
3. *Street network- Connectivity.* Roads and streets to facilitate commute in the district and to other districts and provide the necessary space for pedestrians, bikes and cars.
4. *Building quality.* Adequate quality of construction, access to water, electricity and sanitation for all the houses
5. *Mixed uses.* Mixed uses in the area in order to have a livable and financially active neighborhood all day.
6. *Social sustainability.* Mix of different culture, income and age group. Balance between public and private areas to ensure people's interaction and safety feeling for women and children. (Gehl, 2008)



Figure 21: Visualization of Market square.

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The Test Planning Process and the case of Patras

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Abstract

Infrastructure development is traditionally related to top-down strategies. Nevertheless, in last decades the urban redevelopment of cities requires top-down policies complemented with bottom-up approaches. This is true specifically in complex institutional frameworks which need the enforcement of the interested public. Regarding the socio-economic crisis in Greece, infrastructure networks have already been dramatically influenced mainly by the fragmented decision-making between the different planning levels and actors. The territorial scope focuses at the west part of Greece in the city of Patras. Thus, the case study of the railway development in Patras will represent an informal procedure, called Test Planning. In one word Test planning is a collaboration process among numerous stakeholders. The idea to use such a procedure in Patras emerged due to the different interests of various actors concerning the railway integration in the urban fabric the last two decades. This allows to examine the Test Planning Procedure in a situation of crisis. It was initiated in 2014 and it is expected to be completed in September of 2015, involving the important actors of the city, regional development agencies and independent experts of various disciplines. Regarding the research methodology it will be developed in several steps. Firstly since the paper is a part of an extensive and progressive project, the broader problematics and potential of the specific rail section will be introduced. Secondly relating to the Test Planning Process the different phases will be presented. In the end, the outcomes of that process may contribute both in other cases of railway redevelopment and in spatial planning issues forming new guidelines for a long-term self-governance model and an alternative conceptual basis in Greece.

Introduction

Railway had a significant role in industrial, economical and urban growth of the cities since the very early years. Nowadays, there is a big debate on railway infrastructure related to the spatial and urban planning context as well as to the institutional context regarding the development of new approaches and methods. More specifically, in Patras case, the impact of railway networks is examined on macro and micro level, focusing on EU Transport Corridors, the national and regional network system and on local level just as the fragmentation of urban grid or the reactivation of surrounded brownfields or inactive sections. Furthermore, beyond the physical planning, new approaches on decision-making are developed in order to face long-term problems unsolved by traditional planning practices.

As a representative example of the above statements, the project of the Test Planning in Patras is selected as a case study. In 19th and early 20th century, the city was a main trading and cultural hub and the role of the railway was remarkably decisive. Nowadays a reliable and direct connection between Athens- Patras is a strategic project of high priority due to the fact that it contributes to reduce the East-West division of high-performance transport infrastructure that exists in Greece for a longer period and connects Patras port (western gate) with its hinterland. Since the last two decades, an endless discussion and unsustainable studies about a fast connection between Athens-Patras and simultaneously urban integration of the rail tracks have been developed without concrete results. At the same time the city seeks of further urban development and economic growth. Thus the problematic focuses on the implementation of an ad hoc method that gathers together various stakeholders and actors and it will provide alternative and feasible solutions.

The paper is structured as follows: After a brief introduction about the role of railway infrastructure and the main problematic, the procedure of Test Planning is represented focusing on the specific principles. Afterwards, a further analysis on the potential of Patras case follows. This examines Patras position on international, national, regional and local level. Then, the organization and participants, as well as an overview of the Test Planning process in Patras are illustrated. In the end, the paper concludes with the impact of this procedure regarding the operational, regional, urban and institutional context.

1. Test Planning Process: Definition

Test Planning Process is an informal method for achieving concrete and feasible proposals in challenging tasks in spatial planning. It stimulates a critical discourse on implementation solutions regarding long-term problems. (ETH et al.,2013) Instead of traditional and formal spatial planning methods, Test Planning is a collaboration process among numerous stakeholders of different interests, which combines top-down policies with bottom-up approaches. More than a common competition, Test planning is gathering competitive ideas from different planning teams who are working together in a cooperative process with an interdisciplinary steering committee. The resulted contributions are presented and discussed and after a close evaluation are promoted to the correspondent executive committee for further elaboration and implementation.

1.1 Development and establishment of the method

The method was developed through the so-called Vienna Model in 1970s after the massive flooding of Donau River that caused considerable damages. Due to the huge size of the disaster and the big number interested groups of the city, the planners realized that the traditional planning methods were insufficient. A new plan, called the Vienna Model, was intended to organize all the interested groups in a three-year planning process in order to find sufficient solutions. Despite the satisfactory solutions of that process the time period of the process was needed to be shortened when this was applied to other tasks. As a result a Test Planning process today lasts for one year, with an eventual second year as a concentration phase. Conducting a Test Planning Process in Greece allows to this cooperative method, which has proven itself in difficult and complex projects in Switzerland, Germany and Austria, to be tested in an especially challenging environment and further developed. This explains the special interest of the ETH Zurich Chair, who designed the Test Planning procedure in 2001 and has had successful experiences with it since then. (ETH et al.,2013)

1.2 The principles

Briefly, some basic key-principles are referred below:

1. Concurrence of ideas!

The core of Test Planning is the competition of various ideas. As a result the most efficient solution is given to the contractor against the frame of given conditions.

2. Rhythm!

Ideas and solutions become mature through the regular meetings due to a repetitive discussion and continuous testing.

3. No winner!

Unlike a traditional competition, there are no unique winning proposals. This method examines the different ideas of the teams since in complex tasks since there is no often an ideal solution.

4. Ad hoc organization!

Test Planning is an independent procedure and the roles even of local and regional officials attribute according this fact. As a result, alternative, impartial solutions can emerge.

5. Communication!

Test Planning sites are about areas whose future is strongly of high public interest. Towards a public support of the results and the attraction of different actors, communicating and marketing the different steps and solutions is necessary since the beginning.

6. Problem & Solution Finding!

Apart from the final solutions, a redefinition or identifying new problems against the given ones take place. This turns Test Planning to a dynamic procedure.

7. “Protected Process”!

Ideas and solutions are firstly discussed and tested in close meetings between the teams and Steering Committee before any publication in order to develop a strong argumentation. Thus, a fruitful and discourse dialogue with different actors and the public can follow afterwards.

The Test Planning process belongs at the collaboration procedures and combines top-down policies with bottom-up approaches. The main concept of the method is to discuss the ideas through the planning process and highlight the advantages and disadvantages of each proposal. Through dialogue and criticism teams can build concrete results focusing on the existing and most important problems of the task. In general Test-Planning procedures provide a framework of a continuous organization and learning while it is a flexible and open process.

Complex spatial problems with several actors are characterized by the presence of “seams” (spatial, functional organizational), that complicate the implementation of traditional planning tools and methods. Along with a fragmented and unilateral decision-making and the scarcity of strategic planning, a new methodological and customized model is required based on coordination, cooperation and communication against the conflict of interests. Test Planning Process can turn to a new methodological model in order to influence the spatial practices in such complicating contexts as in Greece. The constructive dialogue during the procedure is a basic element both among the teams and the interdisciplinary experts and also benefits the final recommendations Steering Committee. Thus a common ground of trust and openness is formulated among various stakeholders.

The Test Planning Process ensures efficient results in complex and challenging tasks due to critical discourse. The different approaches of each team in combination with the final recommendations of the Steering Committee give an overall view both at the real problematics and a variant of solutions to the Executive Committee. Furthermore, the substantiated arguments and results prior based on constructive criticism favor and support a probable second concentration phase in future. Since the most serious mistakes happen in the beginning of each planning process, the gained information from various experts and the planning teams ensure a progressive process.

2. Test Planning Process in practice

After the Vienna experience and the development of the Vienna Model other practices were mostly promoted by the Chair for Spatial development of the ETH Zurich as a form of collaboration between the academia and planning practice in order to create the opportunity to achieving two mutual goals; on one hand, engaging the research in the solution of complex planning situations, on the other, experimenting the feasibility and effectiveness of the methods and instruments developed by the so-called Action Planning school in over 30 years in different cases and different contexts. (Tosoni, 2014)

Focusing at the Trans-European corridor Rotterdam- Genoa, several projects took place. The case of Europa Viertel in Frankfurt am Mein (1996-today) related to the revitalization of the shunting yard in the North West part of the city, offered the opportunity to deal with a complex spatial problem with various involved actors. Thus, new hints regarding the so called Test Planning Process were developed for the analysis of the process design method. Furthermore, Bovisa Gasometri brownfield area in Milano was another case that was

embedded at the daily routine of the involved Institution (Chair for Spatial Planning and development, ETH). Later on the process was also implemented in Switzerland such as in the largest industrial wasteland in Solothurn area (2011-12) a complex case study regarding the different interests of various actors, airport or the cooperation project regarding Pfaffikon city where traffic reorganization and urban areas restructuring around the railway station area were urgent. Regarding the above case studies a systematic research has already been established and developed. This allows both to enrich and improve these ad hoc procedures and to reach concrete results.

3. Patras as a potential hub

Patras illustrates high potential on a further transport infrastructure development, especially that of rail. It is rather important to remark that since the modern establishment of the city, both its economic and cultural profile have been closely related to its transportation importance, being largely oriented to European destinations. The specific role of the city on international, national/regional and local level is represented below.

3.1 International Level

Greece is being situated at the crossroads of three continents and the intersection of Asian and European trade routes. It is at the same time a Southeastern European gate for Asia and Africa as well as a gate to the Middle East for Europe. In addition to this, the country is currently in the middle of a geopolitical transformation due to the shifting of the global trade routes to Asia. For instance, this is greatly illustrated in the hub deal between Hewlett-Packard, Cosco and Trainose, increasing the geopolitical importance of the Piraeus port, thus strengthening its position among the top European ports. Thus, Greece from a peripheral position is transferred to the heart of the Trans-European transportation networks and creates the potentials for economic development. Meanwhile, the European Commission is interested to develop a unified cross-border traffic management system including roads and railways for both transport and traffic management (TEN-T projects: corridor Orient/East-Med). Therefore, an improvement in railway network in Greece is expected in Hamburg-Athens- and further to Patras- corridor. This corridor is one of the most strategic EC projects, since it connects the central Europe to the maritime interfaces to the North, Black, Baltic and Mediterranean seas. In a more global context Patras may be described as part of a major worldwide economic and political 'puzzle' that has to be resolved as soon as possible. In an explicit way this international character that could be directed forward, towards the expected future of Patras, seems analogous in many ways to the character of its historical neoclassical past of 19th and early 20th century.

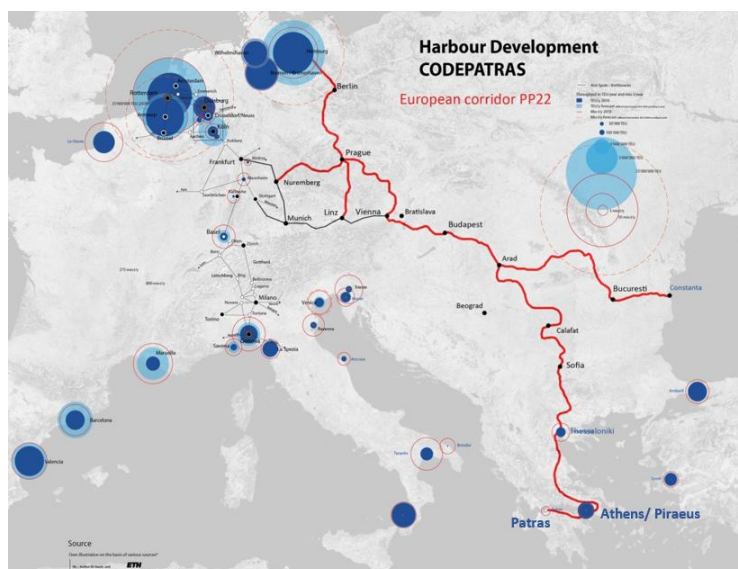


Figure 1: Europe Orient/ East-Med corridor, ETH, IRL, Zurich

3.2 National and Regional Level

Considering the national transport networks, Patras as one of the most important urban centers and portal zones, is part of the main transport corridors in Greece, such as PATHE (a road corridor connecting Patras-Athens- Thessaloniki- Euzonoi). Simultaneously with the development of the road, the air and maritime transport, the railway network will complete a future integrated transportation system both on national and regional level.

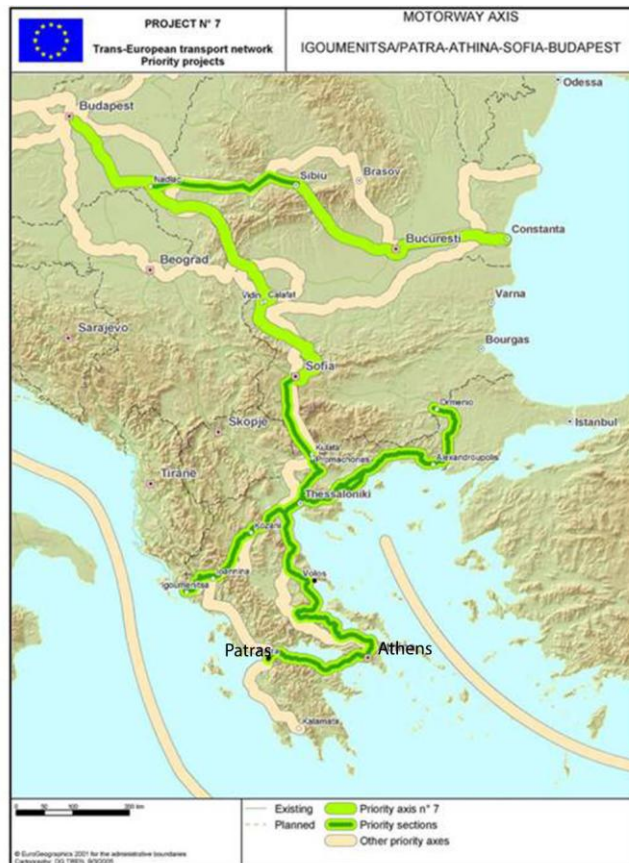


Figure 2: Greece PATHE, road and rail network, “City- Port Eco Logistics CIELO”, European Territorial Cooperation Program, Greece- Italy 2007-2013

In addition to this, Patras is part of Peloponnese region that is characterized by a unique natural and cultural landscape as well as a significant primary production. Both the present and the future potential contribution of the region in Greek economy are remarkable. Regarding the existing Spatial Planning Framework (GG, 2003) on regional level, an integrated transportation system in Peloponnese should be strengthened. Since small-scale airports, bus connections and ports (most of them orientated as cruise ship ports), the reactivation of the existing rail network could be decisive, for tourism as well as promoting local agricultural and art craft activities.

However in a more generalized sense the presented proposals refer to a condition of a much broader, economic and political significance. It is within this general context that the particular importance of the city of Patras has to be evaluated; not as an isolated urban territory ‘enclosed’ in the interior of contemporary Greek economic reality, but more likely as a part of an extended international, national and regional network of transportation relations.

3.3 Local level

Regarding the given reality of Patras, there are numerous hidden potential related to the natural landscape, the historical and cultural context as well as the existing transport facilities. Firstly, Patras is shaped as an urban stripe along the coastal front and is bounded by Panachaikon Mountain in the east. Moreover water axis perpendicular to the existing rail tracks as well as open and green spaces can be included to a general strategic plan and be correlated in an extended and peri-urban green network. Secondly the history of the city and the cultural background have left an obvious imprint through important architectural spots and elements or the ancient remains. In addition to this Patras is significant educational and research center due to the University, the Technical Institute, the Science Park etc. concentrating ca.30000 students and scientific staff. Furthermore, concerning the existing transport infrastructure, three important systems are identified; the public transportation system (intercity and local bus, the suburban railway), the port system (domestic and international ship routes to Italy and Ionian Islands) and the road system (the new by-pass and mini by-pass road) that intend to decrease the inner traffic. However, the above systems and potential features do not respond to an integrated strategic approach for the city.

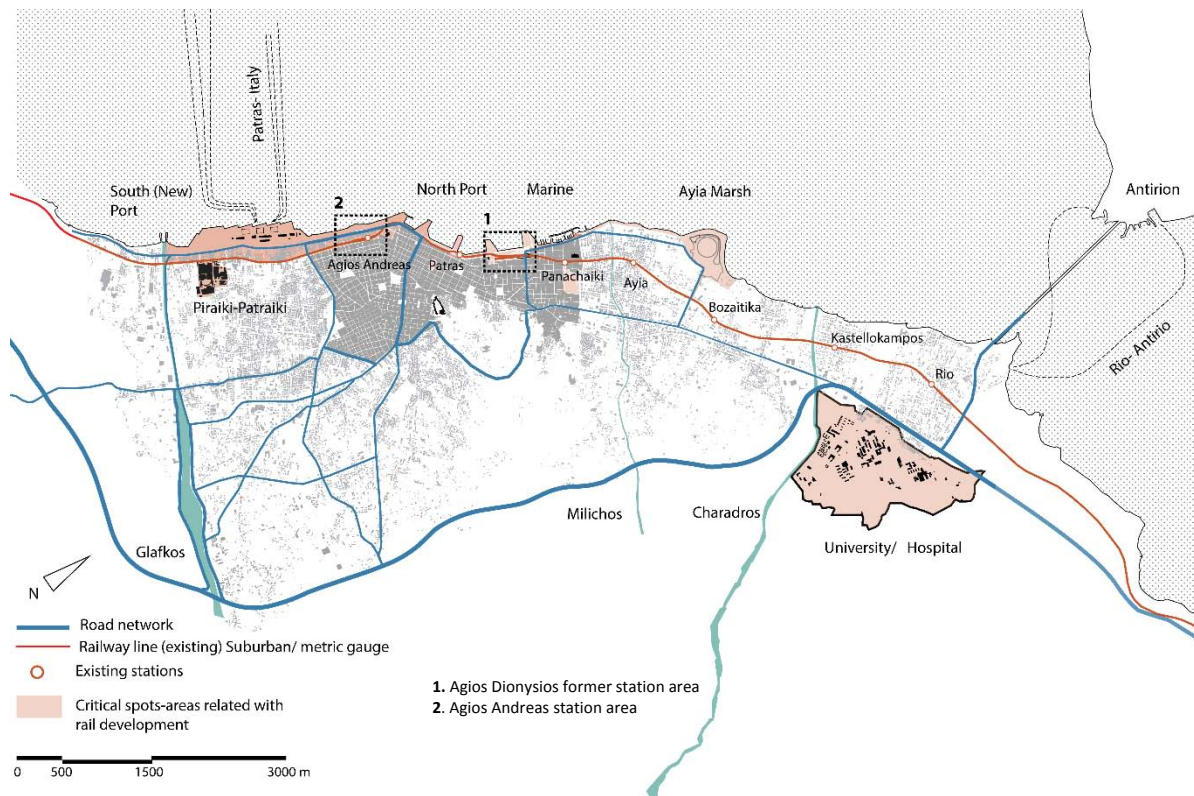


Figure 3: Patras map illustrating the most important features related to the existing rail alignment, Theodora Papamichail, IRL, ETH

4. Test Planning and the case of Patras

In Greece, Test Planning Process is a pioneer method since it was firstly implemented in the case of Patras. It was an initiative of the ETH in Zurich under the supervision of Prof. Scholl in close collaboration with the University of Patras and the National Technical University of Athens. The key question for this Test Planning procedure is the railway connection between Athens and Patras and more specifically the section between the north region of Rio and the south region of the New Port. Beyond the rail connection, there are other tasks closely related to the reactivation of the rail line. In order to test the forthcoming results in Patras, the idea of a Test Planning process emerged. One such process involves the important actors of the city and regional development, independent experts of various disciplines, as well as

several planning teams that would develop innovative solutions based on a mutually set goals and tasks. The contributions of the teams would be deliver the foundation for informing the executive representatives of the city and region and the population, outlining their involvement in further steps.

4.1 Problematics and the task

The problematics are referred to the existing and future operation of railway system as well as to further urban development in Patras. Considering the operational context, on the one hand the suburban train stops at Kiato while the construction works continue along the corridor Patras-Athens. The expropriation section reaches the suburban areas of Patras city where a temporary rail station is planned since the rail alignment across the city center is not yet defined. On the other hand, the local suburban train operates from Agios Vasiliios to Agios Andreas station serving approximately 8000 pass/day and reducing by 70,000 cars in daily traffic and tends to be extended to the south and north.¹ Given the above circumstance, the meeting node of the metric gauge and the new standard gauge is Mpozaitika location. Moreover the rail tracks should be integrated in the urban fabric with a perspective that the new port (South Port) is connected by train since it is a precondition of the EU funds that have been invested on the construction of the New Port. The methodological framework includes the below statements:

- The standard gauge will reach Mpozaitika area and is a given circumstance.
- The current operation of the local suburban train should continue despite any future construction works.
- The operation of Proastiakos should continue at the South Peloponnese (Kato Achaia, Pyrgos) in normal or metric gauge. Moreover it should run at a minimum twice/hour.
- Considering Intermodal operation for rail, intercity/local bus.
- The new port should be part of the standard gauge, meanwhile accessible by metric gauge. Cargo trains should be able to run on the standard gauge to/from the South Port where full length train yard operations should be available (or divided in two half trains in an area outside the city).
- For future development, Ro-Ro (piggy-backs and trailers) connections to Italy, a train berth is necessary. A container handling infrastructure can also be considered in the port. (Frezadou, Papamichail, Signer, 2015)

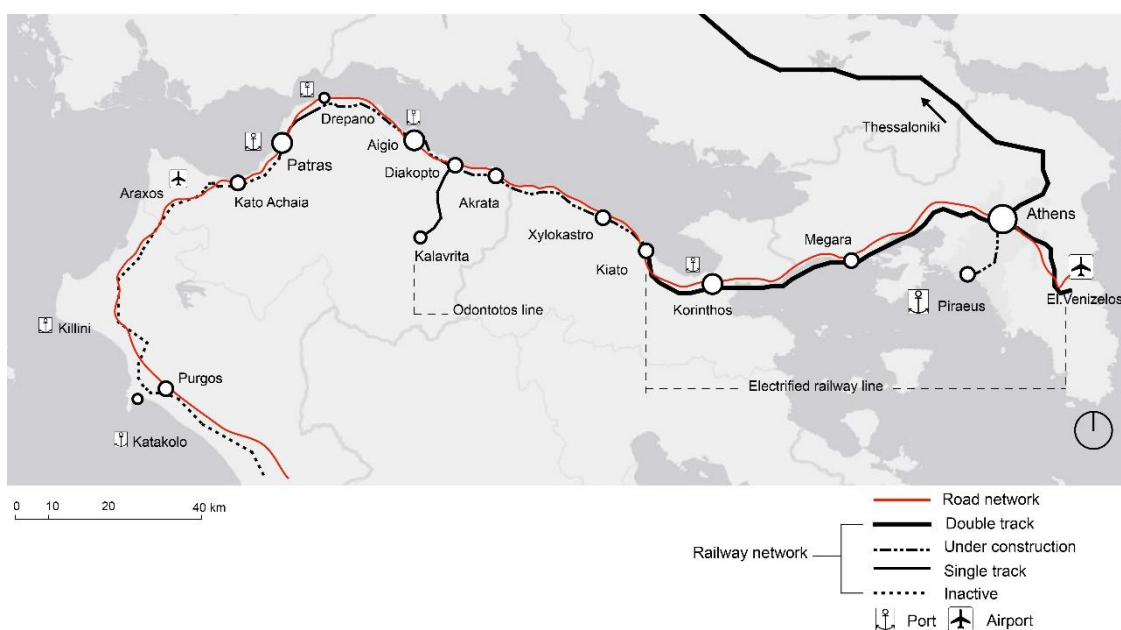


Figure 4: Rail and road networks, Patras-Athens, IRL, ETH

Regarding the urban development of the city, it is closely related to the natural landscape, potential brownfields along the existing rail alignment and the economical rehabilitation. Thus the perimeter is defined with a minimum 250 m, i.e. 125 m each side of the existing metric gauge including important areas of the city that seek for revitalization. The above mentioned perimeter will be adjusted in the following cases (critical spots):

- Sections between the three rivers and the rail line.
- Sections with important facilities (sports, education, historic and cultural heritage)
- Sections with brownfields along the rail tracks.
- Sections between the existing road networks, close to the given perimeter.

The relevant proposals should provide a stepwise development that will present a short-term a medium term and a long-term solutions. As a result the development perspective should both include the above mentioned and a wider observation perimeter such as the broader Patras region or Peloponnese.

5. Organization of Test Planning procedure

Regarding the organization of the process, people from interdisciplinary fields are grouped together according to the following team structure:

5.1 Executive Committee

Usually two to nine persons, representatives of the decision-making authorities of the contracting political authorities and companies. It is regularly informed by the work of Steering Committee and approves the recommendations that result by the Test Planning Process. (ETH et al.,2013) The immediate related stakeholders of the rail operation and integration are OSE², ERGOSE³, the Municipality of Patras, the Ministry of Transportation and Networks. Further stakeholders may be interested regarding urban planning and economic development such as OLPA⁴. However, in the case of Patras the constitution of the Executive Committee was not clearly defined since the different interests prevent the representatives from a common dialogue. This non-collaboration spirit and the negative competition is one of the main reasons that the rail integration in Patras is a long-term problem counting almost two decades of negotiations and insufficient solutions. The process and the publication of the results is a common effort to reunite the various interests.

5.2 Steering Committee

It is consisted often by seven to eleven interdisciplinary experts chosen by the commissioner as well as independent experts (ETH et al.,2013); leads the Test Planning Process, examines carefully the content and is responsible for the final recommendations and the attention of the Executive Committee. In this case, academics from ETH, University of Patras and University of Athens as well as international and local experts from planning, architecture and transportation fields composed the team.

5.3 Teams

In the current project, four teams participated. The different background and experiences of each team offered various insights on the task on both macro-scale and in-depth studies. Moreover they strengthened their knowledge with more experts on economics, transport and landscape architecture. The number of the teams is wisely selected since with a smaller number of teams there is a danger that a weak team stays out of discussion and only the contributions of two teams are included. The following four teams participated in the process:

- ASTOC, Architects & Planners, Germany
- Feddersen, Feddersen & Klostermann, Switzerland
- Carydi office, Greece
- International University Team (ETH Zurich, University of Patras, University of Athens)

5.4 Planning Team

Usually three to four people, responsible for the preparation and the fundamentals of the test planning, pretesting the project and taking the operative leadership of the process. The preparation of the task mission lasted approximately six months. (ETH et al., 2013) Further meetings and workshops before were supported by the Chair of Spatial Development in Zurich in collaboration with the University of Patras and the University of Athens. In Test-Planning Process, time-consuming coordination with high level positions is avoided. A diagrammatic and embedded at Patras case the organization of the process is represented below.



Figure 5: Organizational Structure of Test Planning Process, ETH, IRL Institute, 2015

6. An overview of the Process

In general, Test Planning Process follows different stages. Beyond the typical one year period of the procedure, several steps precede and ensue, inextricably linked with Test Planning Process:

6.1 Preceding steps

- In 2012 in Zurich, a Preparatory meeting took place where the first problematics and the relevant information were presented regarding the railway and spatial development of Greece and the region of Patras. Experts with a different background from the academic and professional field participated providing their experiences on international and local level. A first idea regarding the task definition started to emerge.
- Later on, a Joint Seminar Week followed in the city of Patras in June 2013 between the ETH in Zurich, University of Patras and the National Technical University of Athens with 35 participants. Swiss and Greek students worked in mixed groups coordinated by interdisciplinary experts. The future railway corridor between Kiato and Patras and the integration of the rail line to the urban grid was taken as a case study. The results were promising since alternative ideas were proposed that could be implemented gradually with manageable costs.

- In February 2014, a Swiss-Greek Mobile Seminar was held in Zurich. This seminar offered the opportunity to discuss all the relevant tasks regarding an integrated infrastructure and urban approach in Patras. Through travelling at the eastern part of Switzerland the participants faced different examples of rail development. Two visits were carried out; one in Chur, at the node of the normal width track with the Rhaetian Railway and the other in Domat Ems at the industrial mixed gauge track. In Ardez/Lower Engadine a possible Test Planning process for Patras was discussed.

6.2 Test Planning Process (TPP)

This phase lasted 6 months according the following stages:

- **12.12.2014:** Constitution of Steering Committee. First discussion and improvement of the task mission
- **6.2.2015:** the kick-off event took place in Patras where the task was presented and the teams together with the steering committee and experts visited the most critical spots along the existing railway line.
- **27.2.2015:** a workshop discussion took place between the steering committee and each team separately. The idea of the enclosed meetings was that each time had to keep its own direction in order to achieve various final solutions in the end even with some common points. The teams have the opportunity to visit again the critical sites related to the task mission.
- **27.3.2015:** a common interim presentation held where the Steering Committee as well as the members of the teams had the chance to discuss each solution and highlight the main points.
- **29.5.2015:** the final presentation took place with remarkable results. Each team presented its complete proposal and a constructive criticism followed.
- **5.6.2015:** the final reports and the posters were submitted. The Steering Committee will compile them in the form of an overview for a comprehensive presentation. It should be highlighted hereby that the purpose is not to select one of the four solutions but combine them in the most appropriate way. For this reason the final session of the Steering Committee aims to develop further recommendations to gain the attention of the Executive Committee.
- **29/30.6.2015:** the Steering Committee met and discussed on the final proposals of the teams and on the follow-up recommendations. Afterwards these would be transferred to the Executive Committee for further discussion and implementation.

During the above six-month procedure the role of the Steering Committee was determinant since they were providing the correspondent feedback after each meeting and supporting any idea and solution.

6.3 Simultaneous and following steps

The communication with the public is a crucial and usually parallel procedure in order to motivate and communicate the results to all target groups information activities since the beginning of the process. Apart from related articles at the local press and online information during the procedure, an exhibition that takes place in September of 2015 will present officially the final results. Such an effort will exert to attract more actors and citizens, especially the interest of the Executive Committee that its constitution and position until the final results remained neutral. In the current case, Test Planning Process, after its completion, consists a foundation firstly regarding the value of a constructive dialogue and the meeting of the stakeholders who already have submitted contradictory proposals based on different interests, such as OSE, ERGOSE and the Municipality of Patras. Additionally, as a future perspective an interactive interface is about to be established among other interested and significant stakeholder groups (citizens, NGOs, technical chambers and

associations, environmentalists etc.) regarding the implementation of TPP results. This can be achieved through workshops that would bring the above mentioned groups on a common ground. Regarding the socioeconomic crisis, new models of action planning should emerge. Thus, Test Planning as a representative of merging bottom-up and top-down policies can activate alternative procedures minimizing any risks and delays. At the graphic below the process is represented in steps:

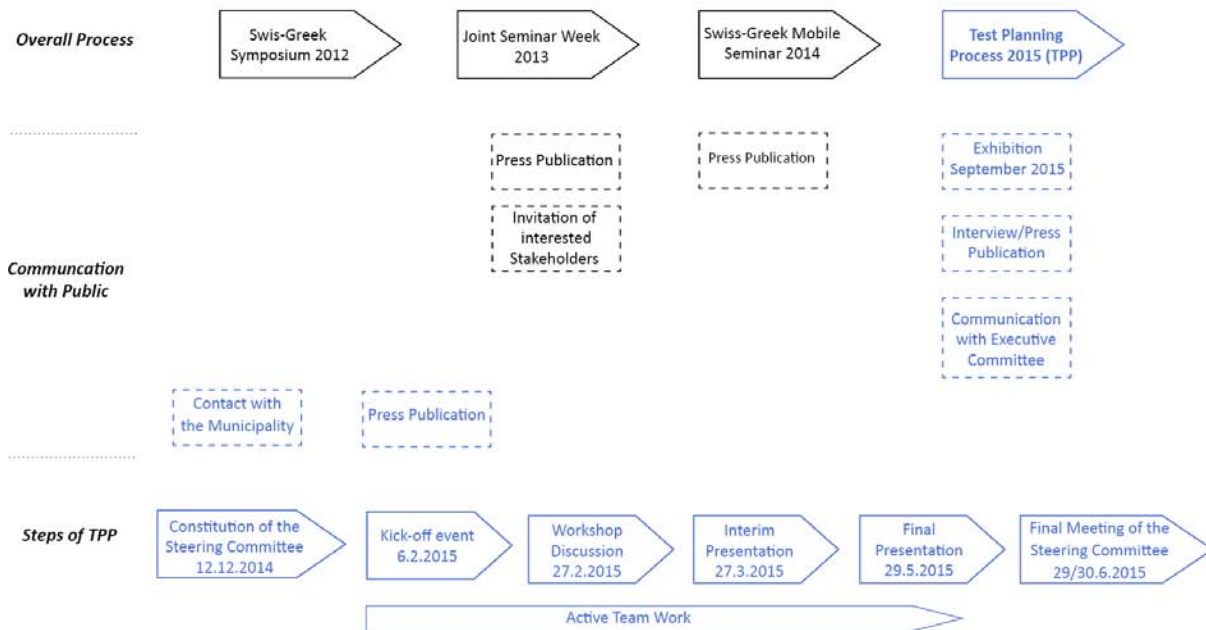


Figure 6: Overall Procedure of Patras project, Theodora Papamichail, IRL, ETH.

7. Concluding remarks: Future expectations

Regarding the above mentioned process, the outcome⁵ of this project is articulated on operational, urban and institutional context. Each team provided a different oriented solution focused on different scale levels (local, regional, national). Through a continuous feedback the arguments were crystallized and the ideas matured, while reports on the disregarded options were submitted too.

Firstly on operational level, the main points are represented below:

- Reliable and fast connection to Athens, with three types of connections (Intercity, Interegio, Suburban trains) achieving different transport needs on regional and local level.
- According to above, the suburban train in Patras is still in operation despite any future infrastructure works.
- Alternative solutions for cargo trains and freight facilities.
- Additional means of transportation supporting the railroad, such as tram connections, towards an integrated transport system.
- The costs of the construction and operation are feasible and compatible with the Greek context.

On urban and regional context,

- Ideas to support and reactivate Peloponnese network to support primary, secondary and tertiary economic sectors (i.e. agriculture, tourism)
- Strengthen a future decentralized model of living between Patras and Athens, and further in Peloponnese region.

- Revitalization of brownfields in vicinity, such as Agios Dionysios former station.
- Improving the current situation of public and green spaces.
- New economic hubs and revitalization of critical spots, such as city's waterfront, Piraiki Patraiki former industrial area etc.

Both on operational and urban context, the proposals were placed on a short-term (next 5-7 years), mid-term (up to 15 years) and long-term (in 30 years) development periods providing a strategic planning through time.

On institutional context, comparing to the formal Planning System, Test Planning Process as an ad hoc organization limits bureaucratic processes and gathers more interested stakeholders together. It can also cooperate with the Spatial Laws and promote new urban policies related to the revitalization of critical spots. Moreover, it can control the privatization policies and the discrimination of the railway system. This may consist an opportunity for further research and documentation.

To conclude with, new hints about the Test Planning resulted also through this project. Regarding the nature of the Greek Planning context important actors, such as the Municipality were approached later, after the results of the submission of the proposals. This proves that Test Planning is an open, independent and flexible process. In addition, a constitution of an International University team was created for the first time and it competed successfully with the other three, professional ones. This team was formed by six experts from the three Universities (ETH, Zurich, Universities of Patras and Athens) that completed the project with creativity, perseverance and enthusiasm. Furthermore, the problem of the railway development was redefined, a procedure that led to concrete and feasible solutions. As a result, Test Planning process is proved itself in complex tasks, combining different fields and experts and offering great opportunities of future development and collaboration in the Greek context.

¹ The reactivation of the metric line in Patras (Agios Vasilios-->Agios Andreas, diesel line, one train/hour) is the more profitable since it operated again with almost zero costs and it services 1.6 Mio pass/year than the section Kiato-->Airport (double gauge, electrified, one train/hour) that costed 200 Mio Euros and it services 4 Mio pass/year.

² OSE, Hellenic Railway Organization: responsible to maintain and operating rail infrastructure.

³ ERGOSE, subsidiary company of Ose, responsible of the management of OSE's investment program projects

⁴ OLPA, Organization of Patras Port

⁵ The results will be announced in September 2015. Thus the proposals of the teams, the review and the recommendations of the Steering Committee are confidential until then, and only general remarks are referred above. The overall documentation will be represented at the Brussels workshop.

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A place-based spatial policy in Flanders – a quest for success and realizations, partners and instruments.

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1 KEYWORDS

Area development, Flanders, spatial planning, a place-based approach

2 Abstract

Spatial planning in Europe and in Flanders is tackling internal and external problems. The region is still recovering from a deep financial crisis and is struggling with social and climatological changes. Traditional spatial planning has not always been able to deal with these new challenges and actors that are coming forward. In the Europe 2020 strategy (2010-2020) Europe introduced the idea of a '*place-based approach*' as an alternative or addition to traditional spatial planning, referring to the context-dependent nature of efficiency and equity problems that the policy deals with, and to the fact that design of integrated interventions must be tailored to places, since it largely depends on the knowledge and preferences of people living in it. Nevertheless, little research has examined the use of the place-based approach in Flanders.

In this paper the place-based approach, also called area development, is referred to as a tool to deal with the complexity of spatial development, more specifically a proactive planning approach, characterized by an intensive coordination of initiators, plans and projects in one specific area, in order to implement the plans and projects on the field. A place-based environmental policy was already introduced in Flanders in the Flemish Mina-2 plan 1997-2001 and has been more recently developed within the context of spatial planning. At this moment, different actors are testing area-development in Flanders.

This paper reports results from different studies examining two cases in Flanders: area development in the Valley of the Lys by the Province of West-Flanders together with other regional actors, and the Flemish process for the demarcation of the urban growth boundary of Aalst. The paper unravels similarities and specific aspects of the two cases and describes the degree of implementations of plan intentions.

We found that authorities are experimenting with place-based planning in Flanders for several years, but that results, actors and instruments differ. These results can be used to develop future place-based planning, programs and projects in Flanders.

3 Introduction

Spatial planning in Europe and in Flanders is tackling internal and external problems. The region is still recovering from a deep financial crisis and is struggling with social and climatological changes. The traditional land use planning – being a more passive planning approach aimed at controlling land use through a zoning system and regulations - has not always been able to deal with these new items and with the new actors that come forward (Albrechts, 2006). Planning authorities are struggling with the growing importance of citizens, and more general with the broad range of actors involved in a planning process. There is a need for cross-fertilization between the model-based and top-down planning views, with the bottom-up experiences, to construct an integrated approach. In current policy settings, spatial planning tends to emphasise the achievement of policy intentions through realisation of actual spatial interventions and growing importance of citizens as spatial actors (Sager, 2011).

Meanwhile Europe introduced the so-called '*place-based approach*'. Nevertheless, little research has examined the use of the place-based approach in Flanders. In section 4 the context and use of place-based planning in Europe and Flanders is described.

The purpose of this paper is to show what happens in practice; that is how the regional government of Flanders, together with other actors, are experimenting with new planning instruments in order to get the plans implemented on the field. We will illustrate these experiments with two cases, the urban region of Aalst and the area development in the Valley of the Lys. We hypothesize, in part 5 of this paper, that place-based planning processes are very time-demanding, but at the end some of them are really contributing to the implementation of the spatial visions in these areas.

The paper ends with general and specific conclusions on place-based planning in Flanders and in the two cases, and recommendations for further research.

4 The context and use of place-based planning in Europe and Flanders

In the Europe 2020 strategy (2010-2020) Europe has introduced the idea of a place-based approach as an alternative or addition to traditional spatial planning, referring to the context-dependent nature of efficiency and equity problems that the policy deals with, and to the fact that design of integrated interventions must be tailored to places, since it largely depends on knowledge and preferences of people living in it (ESPON and Politecnico di Torino, 2014). Place-based development policy can be defined as '*a long-term development strategy whose objective is to reduce persistent inefficiency and inequality in specific places, through the production of bundles of integrated, place-tailored public goods and services, designed and implemented by eliciting and aggregating local preferences and knowledge through participatory political institutions, and by establishing linkages with other places; and promoted from outside the place by a system of multilevel governance where grants subject to conditionalities on both objectives and institutions are transferred from higher to lower levels of government.*' (Barca, 2009, pag. 5). Place policy making is embedded in multiple institutional domains and arenas, which challenge the hierarchical setting of planning levels and the traditional administrative boundaries. All relevant actors (public and private) need to be involved in new planning processes, for different reasons: procedural competences, acceptance and legitimacy, substantive contributions, etc.

This place-based planning approach is related to a more general approach of strategic planning. In the nineties, in many countries a different type of planning was needed, moving away from regulatory policy and instruments to a more development-led approach that aims to intervene more directly, more coherently and more selectively in social reality and development (Albrechts, 2006).

A place-based environmental policy was already introduced in Flanders in the Flemish Milieu 2 plan 1997-2001 and has been more recently developed within the context of spatial

planning. Albrechts et al.(1999). It can be considered as a specific form of strategic planning, with special attention for the organization of planning processes, and dynamic networks of various actors from different policy domains interacting in arenas and fora (Van den Broeck, 2001). Since that moment, different experiments with this planning methodology have started, but the regional authorities have decided not to formalize this planning method in the legacy system. Recently, several Flemish authors have described actual trends in the planning system, using keywords related to the place-based planning such as strategic planning, project-planning, transitions, governance and coproduction (Van den Broeck, 2008, Boussauw and Boelens, 2013, Coppens et al., 2014).

Within this paper the place-based approach, also called area development, is referred to as a tool to deal with the complexity of spatial development, more specifically a proactive planning approach, characterized by an intensive coordination of initiators, plans and projects in one specific area, in order to implement the plans and projects on the field.

Within Flanders, different planning initiatives and partners can be found, linked with area development on a regional scale. Over the past few years, due to the Flemish decree concerning the inter-municipal or intercommunal cooperation of July the 6th 2001, (Vlaamse Regering, 2001) a large number of regional initiatives were established (Pisman et al., 2013).

First of all, planning processes for the demarcation of urban growth areas can be distinguished. In 1997, Flanders adopted the Spatial Structure Plan for Flanders, a spatial policy plan (Ministerie van de Vlaamse Gemeenschap, 2011). One of the leading ideas of the Structure Plan has been to (re)develop and enforce the urban areas, characterized by intense spatial, cultural and socio-economic interactions and by higher building densities. The authorities want to create extra houses and industrial zones within the urban areas, and to stimulate more sustainable mobility. Shortly after the adoption of the plan, Flemish authorities started planning processes in each of the urban areas, to discuss about future development with key actors in the region, in order to agree on a program and on different zoning plans mainly for extra housing and economic activities. In fact these planning processes have a lot of characteristics of place-based planning.

Next, the subsidizing of strategic projects by the Flemish authorities, is been given attention in this paper. *“A strategic project is a project with an integral and spatial character which contributes to the spatial quality of an area. The project is place-based and is related with different policy domains and different policy levels. It must be able to realize the strategic project within a short or medium time period.”* (Departement Ruimte Vlaanderen, 2012, pag. 7). The Flemish authorities started subsidizing project managers for strategic projects since 2004.

Finally the specific programs for area development by the provinces, are noteworthy. In practice, the provinces have been taken many initiatives for area development on a regional level. Often, those initiatives are financed by European funds and situated within the place-based approach. Due to the closer contact with both the local and the Flemish level, the provinces are in the ideal position to deal with conflicting or competing objectives at different planning levels.

5 Hypothesis and methodology

This paper wants to contribute to the growing awareness that producing plans may not be considered as the main purpose of planning. Planning without implementation on the field is futile. Accordingly Europe has introduced the idea of a place-based approach. The present study seeks to elaborate the implementation of two place-based planning processes in Flanders. The hypothesis is that place based planning processes are very time-demanding, but at the end they are really contributing to the implementation of the spatial visions in these areas.

In order to test this hypothesis two planning processes are analyzed. At first a general description of the different steps in the planning processes is given, focusing on the actors involved and the main visions developed. This analysis is based on literature study of policy documents and selective bilateral contacts with key-actors. At second, focusing on the realizations anno 2015, the data of the building and allocation permits are explored, more specifically the number of permits is taken into account. The registers of building and allocation permits are developed by the local communities, and can be considered as indicators for the dynamics within a specific area. In Flanders an allocation permit is obligatory to divide a plot in multiple, smaller plots in order to sell at least one of those plots as building land. A building permit is necessary to build, rebuild, demolish a built structure, fell a tree, etc. Further research is however necessary since for example not all activities need a building or allocation permit, not everything is registered correctly, the impact of permits is differently, a permit doesn't necessarily lead to a realization on the field.

6 Case demarcation of urban growth boundaries – case urban region Aalst

The first case is situated within the central part of Flanders, between Brussels and Ghent. The center of the area is the urban region of Aalst, but also parts of local communities of Denderleeuw, Liedekerke, Haaltert, Erpe-Mere and Affligem are included. The urban region has approximately 80.000 inhabitants. The analysis refers to the time period 2003-2015.

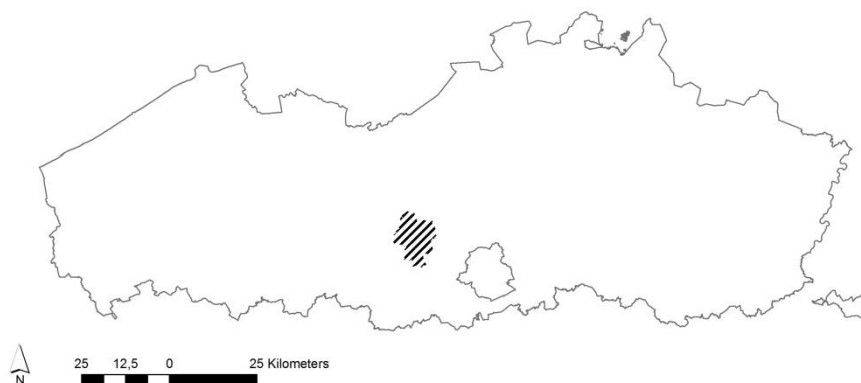


Figure 1 case 1

6.1 Demarcation of the urban growth boundary of Aalst by the Flemish Authorities (2003)

In Aalst the planning process for the demarcation of the urban growth boundary was organized between 1998 and 2000. The process was supervised by communication experts (CIBE) and by spatial planning experts (studiebureau Omgeving). Local authorities, as well as representatives of the provincial and regional level (different domains) and local inhabitants, were invited to participate. The result was a shared vision on the urban area, and a limited set of actions.

Unfortunately, it took three years for the Flemish authorities to develop and approve the regional zoning plan for the urban area of Aalst. The main reason for this delay is the experimental phase of urban planning in this stage. The planning process in Aalst was the first experiment with this type of planning together with local key-holders. The zoning plan itself, was also one of the first experiments with the new planning codex. Finally the Flemish government approved the regional zoning plan in 2003 (Vlaamse regering, 2003). In the table and map below, changes in zoning are displayed. The zoning plan creates many new opportunities for housing and economic activities. At the same time natural areas within the urban tissue are safeguarded and neighborhoods close to railway stations received

opportunities to redevelop these areas with higher building densities and with a mixture of activities.

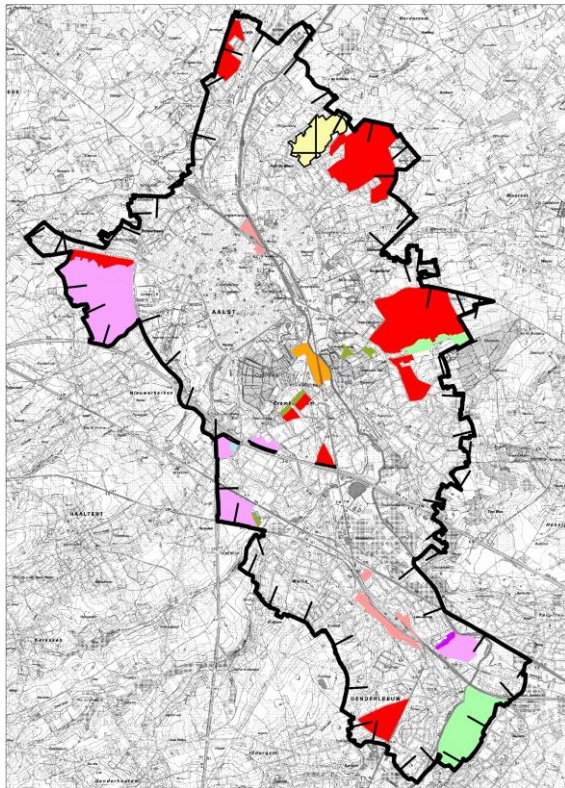


Figure 2 Map regional zoning plan, case 1

Categories zoning plan	Area
Residential areas	-12 ha
Industry / offices	124 ha
Agricultural areas	-180 ha
Recreational areas	11 ha
Nature	7 ha
Other green	56 ha
Railway areas / mixed use	21 ha

Table 1: Areas included in the regional zoning plan, case 1

6.2 Strategic project Siezegemkouter (2007-2011)

In 2006, the strategic project Siezegemkouter was initialized by a provincial development organization (development of industrial areas), and funded by the Flemish authorities as a strategic project. Initially, the aim was to coordinate the realization of a qualitative, sustainable industrial zone at the western border of the urban area. The strategic project was not related to the general residential program included within the zoning plan, but only referred to one of the industrial zones included in the general plan.

After a short period, political questions arose about the zoning plan, and new research, a masterplan and finally a new zoning plan, were necessary in order to find a consensus about the development of the area (Vlaamse Regering, 2013). The funding of the strategic project was used to re-do the planning process of the specific area, and for the moment the area is not yet realized.

6.3 General observations of the planning process and analysis of the building permits within case area 1

The planning process for the urban region of Aalst, finished 15 years ago, was one of the pioneer projects of Flemish spatial planning and place-based planning. The consensus and dynamic at that moment, did not result in many urban projects or long lasting planning initiatives. The ideas to create a project group for the acquisition and development of regional industrial zones and a consultation platform to discuss cross-border and common problems and opportunities were not realized. The action plan mentioned two other strategic projects:

Waterfront Dender and Station Denderleeuw, but no local actors were found to initiate and coordinate these projects.

Based on the data in the registers with building and allocation permits in the period 2004-2015 (table 2) and on bilateral contacts with local actors, it was found that in all areas of the zoning plan, initiatives were taken. In the residential areas allocation permits were given to divide the land. At the moment, the residential areas are partly realized, mostly by private actors. Furthermore the urban agricultural area, the peri-urban green and natural areas are preserved. For the two neighborhoods around the railway stations masterplans were developed and the areas are currently under construction. Because of the complexity, the implementation is spread over several years. The realization of the industrial areas seems to be the most difficult part. Siezegemkouter is not yet realized. Further research is necessary to give a correct overview.

On the map below (figure 3) the different areas of the zoning plan are situated on a heatmap, giving information about the building and allocation permits for the complete urban area and the local communities (partly) situated within the urban area (Aalst, Denderleeuw, Liedekerke, Haaltert, Erpe-Mere and Affligem). The darker zones on the map are referring to neighborhoods with a higher concentration of permits. The map indicates that the central zones of the urban area (Aalst, Denderleeuw) have the highest number of permits, but also some of the residential areas, rezoned within the zoning plan for demarcation of the urban growth boundary of Aalst are lighted on the map.

Referring to the concept of place-based planning within the case of Aalst we noticed, during the planning process of the demarcation of the urban growth area of Aalst, an intention to start a regional coordination of plans and projects. This intention however, did not result into other coordinating initiatives or actors within the region. Finally, most of the initial zoning plans are realized by private actors. To realize industrial zones within this complex planning context without a regional coordination seems to be more difficult.

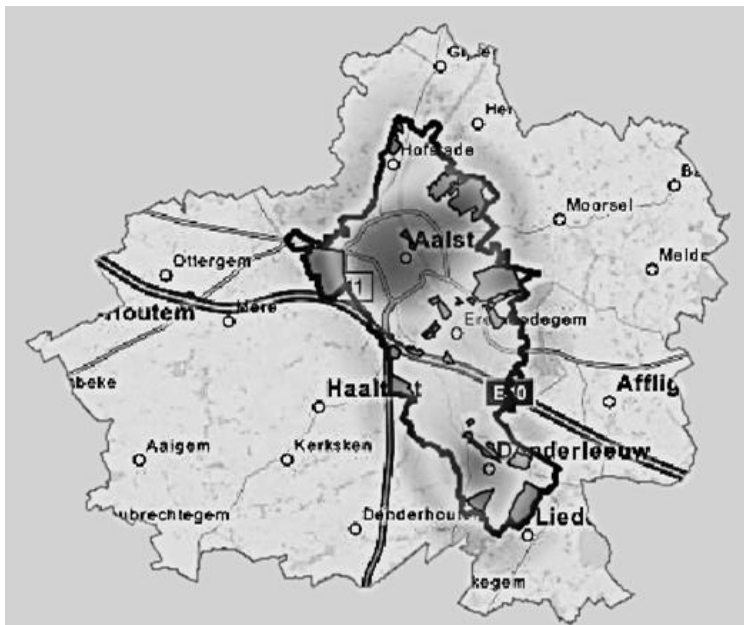


Figure 3: Heat map building permits, case 1

Area zoning plan	Building permits	Allocation permits
Residential areas	271	40
Industry / offices	59	4
Agricultural areas	13	4
Recreational areas	7	0
Nature and other green	20	3
Railway stations	25	0
complete map	12.808	1.210

Table 2: Number of building / allocation permits per area, case 1

7 Case 2 area development by different regional actors– The Valley of the Lys between Wervik and Kortrijk in West-Flanders

The second case is situated within the Western part of Flanders, along the valley of the Lys, which is currently part of an important ecological corridor and open area within the urban tissue of the region Kortrijk-Roeselare-Lille. The valley is surrounded by historical villages, cities and industrial areas. The historical presence of industrial activities, mainly textile industries, determines the actual view. The originally meandering River Lys is replaced by a wide channel with a water regime adapted to shipping. Only fragments of the original landscape, like some relicts of old Lys arms, are remaining.

The second case is much more complicated than the first one, since more actors and more planning instruments are involved. The analysis refers to the situation in the time period 2006-2015. We distinguished four successive planning instruments or processes.

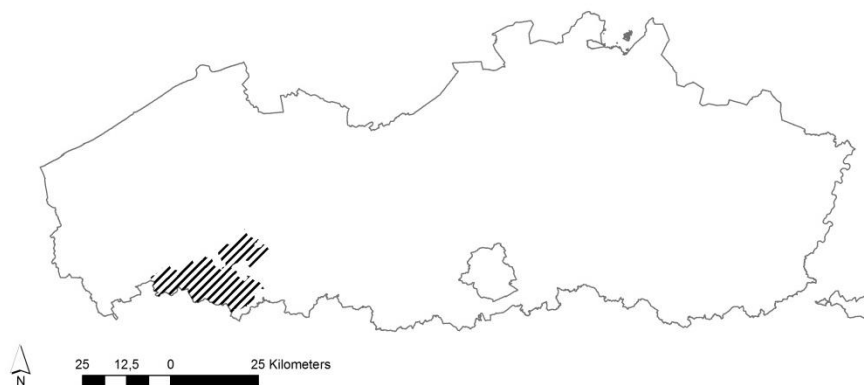


Figure 4: case 2

7.1 Demarcation of the urban growth boundary of Kortrijk by Flemish Authorities (2006)

In 2006, the Flemish government approved the regional zoning plan for the demarcation of the urban area of Kortrijk (Vlaamse Regering, 2006). Thus, the first step of the planning process seems very similar to the first case for the urban area of Aalst. The planning process (2001-2004) was an intensive exercise in strategic planning together with the most important local and regional actors. Finally, Flemish authorities decided not to include the rezoning of the Lys valley in the zoning plan, notwithstanding the shared planning concept that the valley could function as a central green area within the urban region. They argued that it was too early to rezone the area, since the vision needed to be completed with shared actions.

7.2 Area development within the valley of the Lys by Province of West-Flanders

Medio 2003 the province of West-Flanders, intercommunal partner Leiedal and four local authorities (Wervik, Menen, Wevelgem and Kortrijk) decided to develop a shared vision for the Valley of the Lys. This resulted in a report (Provincie West-Vlaanderen and Intercommunale Leiedal, 2005) with a general vision describing the area within a time period of 15 years, and a list of 107 actions with an indication of actors involved and a distinction between short-term, mid-term or long-term actions. Yearly, the action program is followed up by a steering group (Pisman et al., 2011a, Pisman et al., 2011b).

7.3 Regional zoning plan for the valley of the Lys (2008)

The regional zoning plan for the Lys Valley and Open Areas in the region of Kortrijk was adopted by the Flemish Government in 2008, two years after the adoption of the demarcation of the urban area (Vlaamse Regering, 2008). The vision of the Province, Leiedal and four local communities was inspiring for the zoning plan. The plan aims to keep the valley as open and natural as possible in the future. In the table and map below, changes in zoning

are displayed. The zoning plan changes originally residential, industrial and agricultural areas into natural zones.

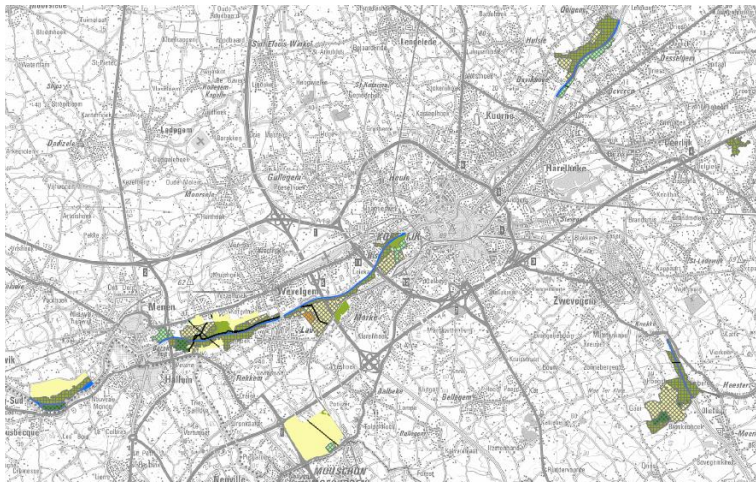


Figure 5: Map regional zoning plan, case 2

Categories zoning plan	Area
Residential areas	-9 ha
Woodland	-30 ha
Agricultural areas	-171 ha
Industry	-2 ha
Recreation	+8 ha
Nature	+202 ha
Other green	+31 ha

Table 3: Areas included in the regional zoning plan, case 2

7.4 Strategic project ‘Green Trails’(2010-2013, 2014-2017)

In 2010 Flemish authorities started to subsidize strategic project ‘Green Trails’ (‘Groene Sporen’). This project includes a wider area than Valley of the Lys, since also three other green trails: valley of the Scheldt, Heulebeek and channel between Bossuit and Kortrijk are analyzed. The strategic project aims to use green infrastructure to develop the regional identity and landscape quality.

A charter was adopted between two main partners: province of West-Flanders and intercommunal actor Leiedal. For every trail a steering group has been installed and a list of actions has been described (Departement Ruimte Vlaanderen, 2012).

Recently the project has started up for a second period (2014-2017). The global aim of the strategic project is unchanged, but more partners are included since the province of East-Flanders has become an official partner. Secondly the strategic project is now more explicitly situated in an international or interregional context of Euro-metropolis of Lille-Kortrijk-Tournai. Finally the project will pay more attention to creating a local agenda together with local authorities.

7.5 General observations of the planning process and analysis of the building permits within case area 2

Generally, the region around Kortrijk is known as an area with a very active planning scene on a regional scale. The analysis shows that over the past 10 years, many planning processes have been organized successfully. The central and driving actors are province of West-Flanders and intercommunal organization Leiedal. Flemish authorities for spatial development and for other policy domains are often involved, as well as local authorities. Recently, planning processes become more international or interregional orientated, introducing new actors as the province of East-Flanders, Wallonia or France.

In 2010, five years after the consensus on the general vision and according actions, the area-development in the Valley of the Lys was evaluated by University of Ghent. They confirmed the intensive planning processes and planning activities in the area, but were more critical about the results of those planning processes in the field. Many actions were not

yet realized because of the continuing planning phase and the complexity of planning actors and planning responsibilities.

For this paper we decided to analyze the register of building and allocation permits in the area (2006-2015), in order to have an overview of actions that led to an actual change in the field.

The heatmap (figure 6) shows that the areas included in the zoning plan for valley of the Lys are not the areas within the urban area (Harelbeke, Kortrijk, Menen, Waregem, Wervik, Zwevegem, Wevelgem, Wielsbeke) that have many applications for building or allocation permits. The darker zones on the map, showing the areas with the most applications, are situated in the built-up-zones of the urban area, and not in the open core of the valley.

Table 4 gives a more detailed overview of the number of building permits or allocation permits (dividing of a larger plot into smaller building plots). The number of building and allocation permits is rather limited in all areas. This is a first indication that the actual changes on the field are restricted. Further research, however, is necessary since the main option of the zoning plan was to keep the areas open in the future. The preservation of the open areas, such as the transformation of an agricultural zone into a more natural use, does not always demand building or allocation permits.



Figure 6: Heat map building permits, case 2

Area zoning plan	Building permits	Allocation permits
1 Laag Vlaanderen	15	1
2 Diefhondbos-Posthoornhoek	28	2
3 Biezenveld-Patersmote	12	0
4 Plaatsbeek-Ooigembos	9	1
complete map	25.759	928

Table 4: Number of building / allocation permits per area, case 2

8 Conclusion and discussion

In general, this paper addresses that place-based environmental policy has recently been developed within the context of spatial planning in Flanders. The place-based approach, also called area development, is referred to as a tool to deal with the complexity of spatial development, more specifically a proactive planning approach, characterized by an intensive coordination of initiators, plans and projects in one specific area, in order to implement the plans and projects on the field. Flemish, as well as provincial and intercommunal initiators for this planning approach were identified.

In case studies it was found that the planning processes for the demarcation of urban growth areas can be founders for place-based planning. Furthermore, in the case of Kortrijk, the subsidizing of strategic projects by the Flemish authorities was useful because a process manager was financed. However, referring to the case of Aalst, if there is no initiator in the region to submit a strategic project, this opportunity is missed.

In the second case of Kortrijk, multiple place-based planning initiatives have been detected, leading to diverse and intensive planning processes and activities. The initiators for these planning activities range from Flemish authorities, intercommunal actors, to the province of West-Flanders. This has not lead to discussions about the global vision on the future of the area. This paper does not focus on multi-level governance or cooperation, but both cases deliver interesting insights. Regional and multi-level cooperation is becoming more and more an essential part of Flemish planning activities (Saris et al., 2011, Boucké, 2015, Instituut van de overheid- KU Leuven et al., 2012).

Focusing on the implementation of the planning projects, in the first case of Aalst, 15 years after the adoption of the zoning plan for the demarcation of the urban growth area, most of the initial plans are realized by private actors. To realize industrial zones within this complex planning context without a regional coordination seems to be more difficult. The most important industrial zone, Siezegemkouter, is not yet realized. For the second case of Kortrijk, more research is necessary to evaluate the results of the numerous planning processes in the field.

To conclude, we found that authorities are experimenting with place-based planning in Flanders for several years, but that results, actors and instruments differ. These results can be used to develop future place-based planning programs and projects in Flanders.

In this paper only two cases are analyzed. It can be interesting to elaborate this research with more cases in the future. The selection of the cases can be discussed. The cases are selected because of the involvement of the author in parts of the planning processes in the past and because of previous research within these areas. In addition, the zoning plan for the demarcation of the urban growth boundary for Aalst was the first zoning plan adopted, which makes it an interesting case because of the longer time period. Furthermore, the region around Kortrijk is well-known for its regional planning activities (Pisman et al., 2013), and the combination of two zoning plans within a recent time frame together with a sequence of strategic projects, justify the selection of Kortrijk as case.

The quantitative analysis of building and allocation permits is useful because it gives a general view of the dynamics on the field in the areas. However the quantitative analysis can be discussed and further research is recommended for different reasons, such as: not all activities need a building or allocation permit, not everything is registered correctly, the impact of permits is differently, a permit doesn't necessarily lead to a realization on the field. More interviews with local actors and an analysis of recent evolutions and changes on maps or on the field can be added in the future.

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Open City: Smart managing the city

Jelle Rijpma; Eva van Bolderen

On behalf of Jelle Rijpma Advies [consultancy firm] and Brabant Academy; The Netherlands

INTRODUCTION and summary

We are facing a paradigm shift in our society. You can feel it everywhere; incubators, creative people and innovators are uprooting the old systems. Conflicts are occurring between old and new institutions, undermining foundations that have provided years of service. Rotmans argues that at this moment we are at a tipping point; we are developing into a more sustainable society: from linear to cyclical thinking, from vertical to horizontal organizing and from top-down to bottom-up management (Rotmans, 2012, 2013).

All these transitions in the world affect the cities we live in, and thereby, the way in which we should be practicing city planning. We see that city planning no longer uses pre-set designs: it has become a matter of smart management. We are moving towards a city planning with new partnerships, with new forms of interaction between unequal parties and that stimulates self-organization.

Three to four years ago, Jelle Rijpma Advies and the open innovation platform Brabant Academy started looking for new forms of cooperation and innovation within cities in a continuous project called Open City. In this project, new tools for urban development are developed and applied, using the city as a laboratory (Brabant Academy, 2014). Through pilot projects and practical examples, a conceptual framework of the Open City is being developed. This framework is not fixed because it must continue to reflect the changes and dynamics of society. This conceptual framework is based on a set of different examples that show that smart management is the new way of practicing city planning. Smart management consists of three cornerstones.

Firstly, the integration of technological, social and environmental values of a city: These values are all of interest for current cities, but you should not see them separately from each other; they complement each other, together adding value to the culture and economy of the city. Technological innovations will not be successful without social innovations. Additionally, technological and social innovations have a huge impact on the environment. New city planning initiatives should take these relationships into account.

Secondly, new partnerships: New forms of partnerships allow decisions to be made on an equal basis, with unequal parties. Different parties should be seen more as partners instead of parties *to deal with*: citizens become partners; in real estate, tenants do not have to be just tenants but become partners; farmers become energy suppliers et cetera. These new

partnerships and roles are driven by openness, honesty and transparency. A wide range of examples derived from pilot projects demonstrates that new partnerships can be successful in city development without the need of big plans or large efforts in time, money or resources.

Finally, a clear vision and strategy: A couple of examples are given in the paper to make clear that a pre-set design is not necessary. A clear vision of and strategy for city planning—what should the city look like in the future and what is needed to make it a reality—will help you achieve your goals.

At the end we, the authors, ask you for commitment and contribution for realizing Open City and to formulate and construct a renewed body of knowledge which deals with the fascinating changes in our society worldwide.

1. Open City

The societal changes we are recognizing worldwide more and more started 15 to 20 years ago. National policymakers started to discuss items like the network-economy and the 24/7 economy all around the world. In the Netherlands, it has been translated to concepts of network cities and regions. We notice that political changes have been taking place at the same time. People are becoming more critical of the politicians as well as of big companies who have to supply health services, energy, water and so on. People argue that “they are not listening” and “that there is no freedom of choice in” the services; this while prices keep going up. The financial crisis that started about ten years ago has speed up the process of change. Citizens did not want others to provide solutions but started to organize themselves more and more. It does not matter whether they buy their energy or their care services collectively or even if they make their own energy; all the signs are pointing in the same direction: *self-organizing together* within society and especially within the city.

Rotmans specifically articulates how this applies to the Netherlands. He states that we are facing a paradigm shift in our society. You can feel it everywhere; incubators, creative people and innovators are uprooting the old systems. Conflicts are occurring between old and new institutions, undermining foundations that have provided years of service. Rotmans argues that at this moment we are at a tipping point; we are developing into a more sustainable society: from linear to cyclical thinking, from vertical to horizontal organizing and from top-down to bottom-up management (Rotmans, 2012, 2013).

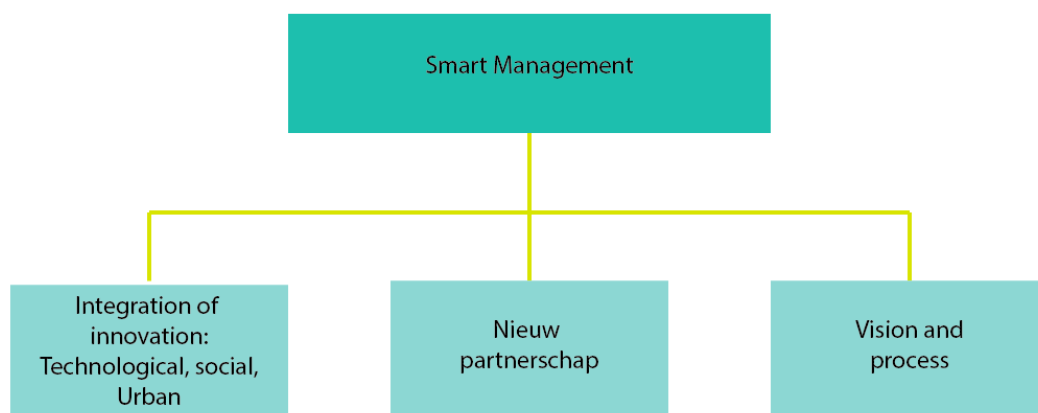
All these transitions in the world affect the cities we live in and thereby the way in which we should approach city planning. We see that city planning no longer uses pre-set designs: it has become a matter of smart management. We are moving towards a city planning with new partnerships, with new forms of interaction between unequal parties and that stimulates self-organization. We have been participating in

this process of change and transition for more than fifteen years, and we gradually are recognizing what the puzzle pieces are. Recently, we have contributed by putting some of the pieces into place, putting what we have learned into practice. Four years ago, we also started to create a new body of knowledge that will fit the paradigm of change. We call the transition Open City because we believe that the new city planning has to be open, transparent and fair for anyone. We aren't there yet! In the next few years, we have to make it work. Open City needs a body of knowledge for the future! We contribute to this body of knowledge and try to achieve the Open City with we do today

Four years ago, Jelle Rijpma Advies and the open innovation platform Brabant Academy started looking for new forms of cooperation and innovation within cities in a continuous project called Open City. In this project, new tools for urban development are developed and applied, using the city as a laboratory (Brabant Academy, 2014). Through pilot projects and practical examples, a conceptual framework for the Open City is being developed. This framework is not fixed because it must continue to reflect the changes and dynamics of society.

2. Smart Governance

The conceptual framework is the outcome of a set of different examples showing smart management as the new way to practice city planning. Smart management consists of three cornerstones.

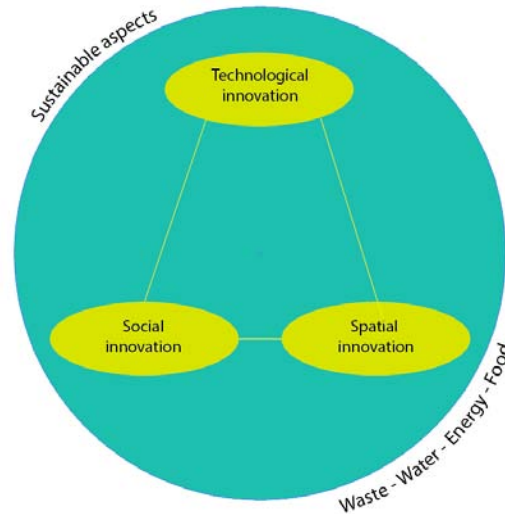


We will explain the meaning of the cornerstones in the following chapters.

3. Integration of innovations

In our society, we have a tremendous interest in the innovation of technology. When you think of our phones, our computers, our cars, our houses, etc., you will encounter technological innovations. But at the same time, technological innovation cannot take place without the adaptation of people. Even more important is that new technology is often adapted due to social innovation. For example, our urban space frequently asks for another use and can be the start of innovation.

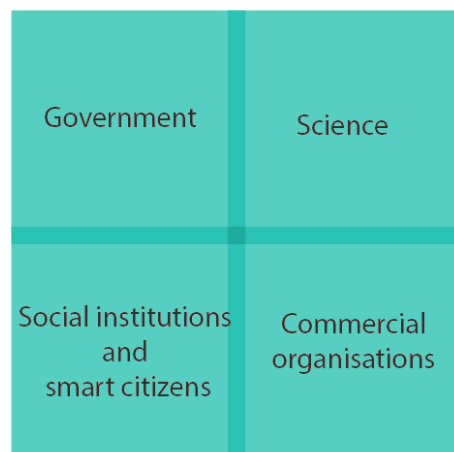
Sometimes we reinvent our space by growing vegetables on empty roofs or wasteland. When considering the question of the city growing its own food, we will have to consider producing food in a very different way, possibly with the use of new technologies and in other spaces. Social innovation and adaptation must take place simultaneously.



Worldwide we have to search for the connections between these three fields of innovation: technological, social and spatial. The approach to innovation is dependent on the economical state and the cultural values that the society concerned are based on. The issues presented by each city are different and will thus produce a different outcome despite their differences, every city has to value the chains of *waste*, *water*, *energy* and *food*. Those that do not will collapse sooner or later. It is better to start now rather than postponing this search until it is necessitated by something that happens in the future.

4. New Partnership and the smart citizen

Governments in many parts of the world have a democratic basis. We have elections and then we regulate money and power according to a voting majority. In some other parts of the world one is ruled by imposed laws. Nonetheless, people are connected worldwide and are able to communicate, gather knowledge and work together to start their own new businesses. People organize themselves. We then have a smart citizen! How will the government work together with the smart citizen? The democratic aspects will still be there, but we need another way of producing



knowledge or business, another way of solving particular problems, other ways of participation and so on.

There will be new partnerships. Most of them will contain several unequal members. So, one of the most intriguing questions is: how will they make decisions on an equal basis?

We started a project in the small village of Vught recently. In Vught, there are plans for big infrastructure projects. The biggest one concerns an existing railway. The railway has to be reconstructed because of the goal of diminishing transportation of goods by rail transport through a number of big cities elsewhere. The new route will be guided through Vught. The second big reason is that by reconstructing of the existing railroad, more speed train connection can realized between the growing Economy and region of Eindhoven and the existing economy in Amsterdam and the Hague. All from a international perspective of regional growth in the Netherlands and diminish the environmental burden for the big cities.

The first options for construction through Vught where too simple. A very good and normal way of top-down-thinking. And of course those solutions were not excepted by Vught. The community organized itself not on a base of Not In MY Backyard but on the base of going along with the national goals. And at the same stating the point that if the national government and regional government want a solution for their problem, it better be a good solution for all. The inhabitants organized themselves pretty good and formed a well educated power towards the national government. The local Government did the same as the local Government in Zeewolde which will be explained in the next chapter *Vision and Process*. They also made a strategic urban vision. The very strong organization of the inhabitants itself and the positive way of thinking along with the goals of the national and regional governments was very powerful and probably decisive action and attitude.

The conclusion at the end after just a few years(!) of planning and discussion, is that the railway will be reconstructed and brought below ground over a length of 1.5 kilometres through the village centre to the outskirts of the village. The national, regional and local governments agreed on the plans. It will be good for the governments but not for the inhabitants who live along the railway. It will directly influence those living in the 350 to 1500 houses directly along the railway and in the close vicinity thereof. The compensation for these people is governed by law but not sufficient, thus it arouses strong emotions. So, in 2014, after a an experiment in one of the streets involved, we at Jelle Rijpma Advies suggested to implement an independent platform for businesses, housing corporations, real estate developers, investors, banks, the local government and inhabitants with interests along the railway. Through this independent platform, Vught is trying to resolve the individual problems of the inhabitants along the railway. The basic question to solve for the inhabitants and others involved in platform will be "will I be okay" and secondly "how can I regain control of my situation". The platform does not create regulations or a fund for financial losses or damage. Thus, an inhabitant will not have rights provided through this platform, but he will be given assistance in getting his life back under his

own control. We spoke to a lot of inhabitants, and after a while they were smiling again.

By challenging them, they themselves came with their own, feasible ideas. The participants of the platform, or potential participants, were also cooperative because it was in their interest as well, and it is only in collaboration that they are capable of solving the problems of the inhabitants as well as their own. There are a few inhabitants going to build new homes elsewhere in Vught. The local government is providing the land, the estate agents will sell their current houses and some other parties will advise them how to build their new homes. Those inhabitants who cannot afford new build houses because of mortgage problems will be offered a loan on the land by the local government. The owners of an apartment building suggested that they could renovate a school nearby. Therefore, the local government initiated a first meeting to discuss this in July 2015. Others have suggested that they wanted support for their elderly parents who need to go to a service apartment. No financial claims are made; it is more like a trade with closed wallets, budget-neutral. Nevertheless, the result has to be, "I have control over my situation again". In September 2015, there will be individual interviews with all the inhabitants directly involved so that everybody knows the variety of individual problems and individual and collective wishes and solutions. The platform will deal with the problem of how to make decisions while there are so many unequal participants involved.

For this, we will use the existing but not very practiced method of consent. A decision will be based on if someone has *strong objections* and not by voting. Furthermore, there are strict rules for debate. We call the independent platform, including the method and the goal Dynamic Government. The process of the platform will be hosted by an independent host. The local government will be one of the partners in the platform and there is no partner who will rule. There is equal partnership. A few years ago, we at Jelle Rijpma Advies called this principle *New Partnership*. A new form, existing next to the democratic organization we know in the Netherlands. We are already experimenting with different situations. Vught's case forms a substantial project. The expectations are high, and the first steps are very promising. The way of approaching the inhabitants is conflicting with the normal way of behaviour by the Government. Mainly because the attitude has to be open for the real questions of the inhabitants but also it isn't about regulations and rights but it is about the answer to the question "can I get control on my live again". We hope that the method of the independent platform will help the inhabitants. And in the case of developing new attitudes and methods for reaching the Open City, we hope strongly that this Smart Management will be a example to learn from an behave the making of Open City.

5. Vision: strategy and process

If you accept the idea, the foresight, that citizens will be smart and will undertake more and more to fulfil their wishes and to solve their problems, then the existing government has to change its attitude. The government, including the local government, has to solve the question of what the government will do itself and what

it leaves to society. In urban planning we are used to the government making and executing plans. In this case, the government has full responsibility and control, which is a so called "top-down" method. If you do not agree with the plans you, then you have to protest and so on. The attitude is reactive and judicial and often with financial claims. This makes no one truly happy. At the same time, it is not wise for a government to let everyone free to build and plan as they choose (although that is an interesting hypothesis). Their might always be a collective interest, concerning all inhabitants. Nevertheless, it is certainly not wise to make big plans over a long period of time. Moreover, we do not need to. We can restrict ourselves to making a vision of the potential development and forming a strategy for the process that will lead to a good result. From the long career of Jelle Rijpma, we have selected examples that will guide us towards a or renewed urban planning.

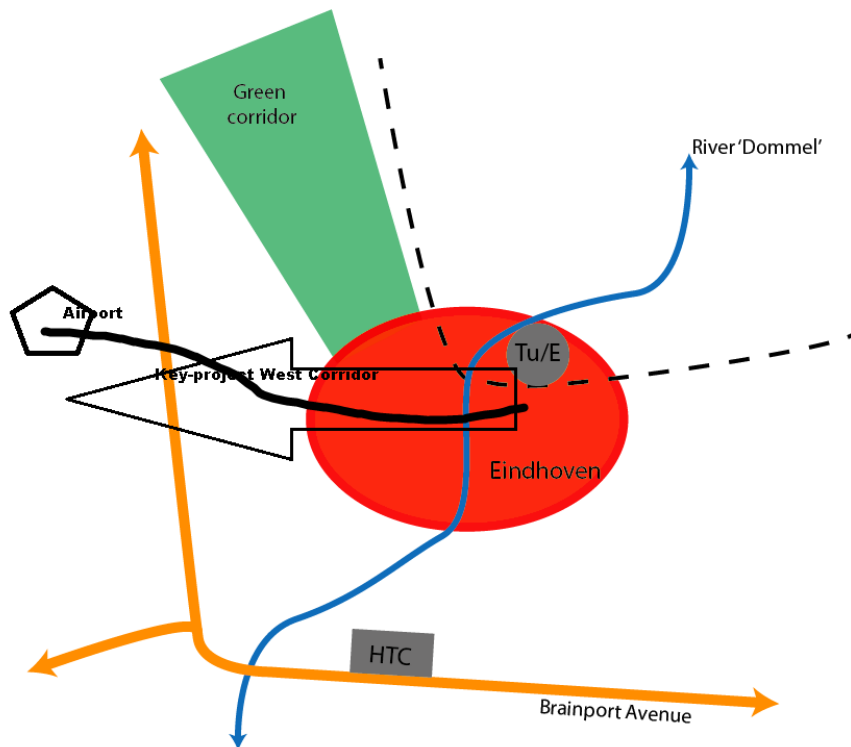
One interesting case was realized in Zeewolde in 2009. In six months an urban vision was formulated for the urban development. This in order to combine the development of Zeewolde with the big proposed development in Almere for almost 60.000 new houses, according business locations and also the realization of 2000 hectares of new ecological structure. The plans should make the international position of the Region of Amsterdam stronger. It meant big plans and impact for Zeewolde. First attitude of Zeewolde was Not In My Backyard, which attitude was not very successfully. Therefore Zeewolde turned her attitude towards cooperation bases on a own urban vision. The local Government wanted a strong participation of the inhabitants of Zeewolde in formulating the urban vision. They also had little time because the plans of Almere were speeding up and were heading for agreement in the urgency program for the region of Amsterdam which needed commitment and decisions of the National Government.

De local government started with a discussion with six themes that were extremely important for Zeewolde. Then they started a process in which the inhabitants and participants in Zeewolde discussed the six themes and there potential solutions. The politicians stepped aside and were not involved during this process. The solutions were brought to the city council, and they made the decision about the urban development. No big plans were made, but a variety of chances were designated to be realized when the opportunity arose. In fact during the process there were several stakeholders who wanted to work together and also self-organizing goals of development en sustainability were introduced. Par example, Zeewolde produces wind energy for 135.000 households. The urban vision still is still implemented today, and the community's building and developing activity never had to stop because the solution was flexible. So the case of Zeewolde is a successful example of a strategy, which is based on a strategic and flexible urban vision executed by a following process in which there is made a successful connection between big plans of other governments and commitment of the local inhabitants.

We can find many examples of strategic urban vision followed by process in the region and in the city of Eindhoven. Jelle Rijpma was involved directly in some of them when representing the national government. The government of Eindhoven has been developing a range of new urban planning methods. One of which to be very proud of and is still existent and developing is the Key-Project West-Corridor. Key-

projects meant to be building projects related to urban transport. The national government would contribute with money for the expected losses. The key-projects should strongly contribute to the international economic development of the big cities in the Netherlands. Actually, the key project West Corridor Eindhoven is not and has never been a project. It is a strategic urban vision of the probable development for a part of the region and was followed by a process of development when the opportunity was there. It started as a line drawn by a civil servant from the city centre to the airport with the idea to incorporate public transport in the future. That line was integrated in the Fourth Nota of Urban and Regional Planning from the national government but was very different in comparison to the other Key-projects in the Netherlands. No one knew what the meaning of the line was, and working for the national government at that time Jelle Rijpma was sent out to find its meaning. It meant a corridor development over 7 to 8 kilometres and the ideas turned out to become a vision for the urban development and a strategy for the process of realizing its development. The first investment in infrastructure, now twenty years ago, was approximately 150 million euros and it was made to realize a continuous unobstructed bus lane. Twenty years and two billion euros later, the development of buildings and reconstructions of locations of the former Philips factories, is still going on. New Buildings, new development and so on.

The next example is the small river the Dommel in Eindhoven. In the time of industrialization, it became a polluted and forgotten river. The curves had disappeared because the water moved through the river quickly. It was used more like a drain than respected as a river. The local government asked for money from the national government, but the national government did not want to invest and contribute. Therefore, the local government copied the method of the West-Corridor: they made an urban vision for the potential development, and also made a strategy for the process. After ten years, the Dommel River has been almost fully restored. The strategy was very successful. Every time when the government or some other party was planning a building of renewal activity near the river, they were asked to do a little part of the reconstruction of the Dommel. Thus, over a time of ten years, the Dommel river was restored with no extra financial contributions. Part of the strategy was organizing a bike tour along the river for the inhabitants with the question, "how far can we follow the river this year?" This strategic action made the public involved and today it is an once every two year event. It has become an inspiration, motivating the organisation of musical events along the Dommel. The river is part of Eindhoven again!



There are more examples to tell about, such as the development of a continuous band of greenery from the city centre to the forest on the outskirts of the city. It has the same characteristics of vision, strategy and process, but also has a new element: a cooperation of landowners, users and consultants. Profits go to the participants only if the cooperation makes profit. This is a new aspect, especially for the consultants, who have to work according to a cost-covering agreement instead of hours and bills.

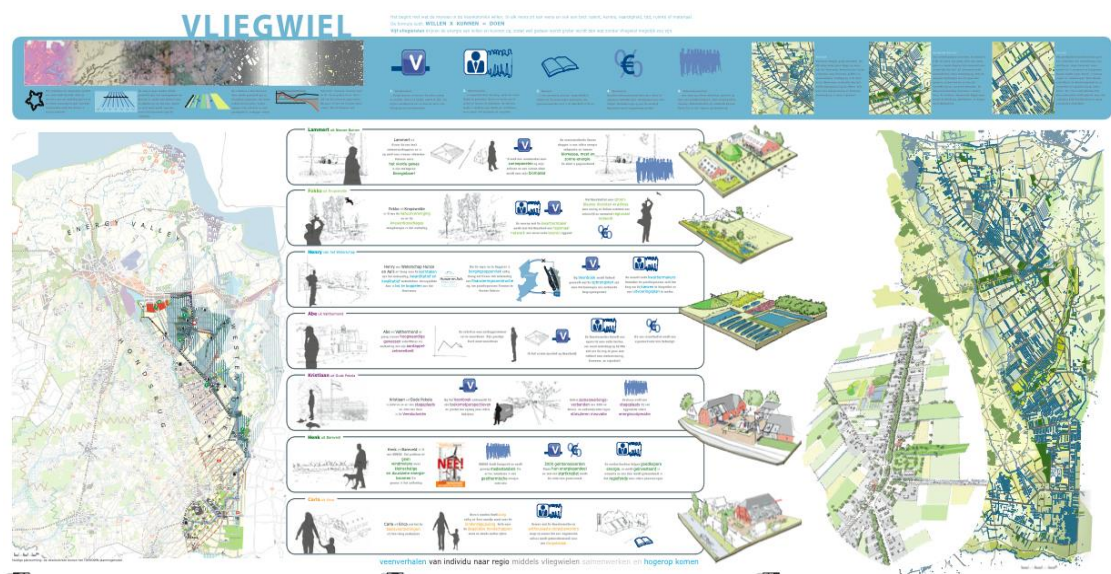
6. Challenge: Open City

Realizing the Open City concept and supporting it by providing a new body of knowledge for urban and regional planning is a worldwide challenge. It is a tremendous challenge. On the one hand, the local and regional government should change their traditional habitats. On the other hand, the other stakeholders and citizens have the same challenge of changing habits and attitudes.

What do we know of the mechanisms of the new multi-stakeholder collaborations, new partnerships and worldwide exchange of knowledge? Do we realize what open, transparent and honest is? And how do we make that work every time? How do we work together in order to make improvements for society, commercial and non-commercial. We, the authors, the members of the board of Brabant Academy and their supporters in Eindhoven, would like to invite everyone to contribute to the Open City. With Jelle Rijpma Advies and with Brabant Academy we will contribute as much as we can. It would be a wonderful idea to collaborate with ISOCARP on this subject. Maybe the idea can also influence ISOCARP Academy and involve ISOCARP Academy in the idea.

The plans of Jelle Rijpma Advies and Brabant Academy, involve the development of the next step in the world of Smart City, Smart Governance and Smart Citizens: We will make a pilot study of a location or zone in a city. The first steps have been taken herein by making a “city laboratory” in Eindhoven that focuses on energy and smart mobility. This will lead us to a clear urban vision that is flexible so that it can continuously adapt to the changing environment.

The second focus will be on the collaborations between and initiatives of citizens working together. We will continue with the ideas we presented in a challenge for the northeast part of the region Groningen. In that study we based the urban and regional development fully on the cooperation and actions that came from the citizens and on very finely differentiated prospective scenarios based on a rich variety in land use. In fact, this forms our basic view of how to approach sustainability. The image below, the plan pictured on the left demonstrates the top-down outcome and the plan picture on the right demonstrates the bottom-up outcome. In the middle the mechanisms and processes of self-organizing citizens are presented. Inspiration for new strategies is connected to open city processes.



The third focus should be sustainability. There will strong sustainability if the urban development is bases on the resulting contributions of the citizens themselves.

Of course, we take the lessons learned into account and we try to take the following step. We can learn lessons from elsewhere in the world and so on. Open City is a big idea! Join in! Contribute!

We, the authors, are very curious and are looking forward to a wonderful discussion and collaboration in realizing Open City.

The cooling effect of urban green infrastructure: does greenspace size and shape matter? (Taipei, Taiwan)

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Wanyu Shih

1. Introduction

Green Infrastructure (GI) plays a critical role in providing multiple ecosystem services in urban areas and their cooling effect is considered as a mitigation strategy for urban heat island effect (Gill et al., 2006). The temperature of urban GI and their immediate surroundings is found to be lower than that in built-up areas (e.g. Bowler et al., 2010; Tan and Li, 2013). Such a mechanism providing better thermal comfort in cities is important to improve human well-beings (Gill et al., 2006) and might have potential to reduce greenhouse gas emission by lower the need of using air-conditioners (Ca et al., 1998). Substantial studies have proved the cooling effect of GI and described the cause of its variation (e.g. Chang et al., 2007). However, less is known regarding the scale of the influence beyond the boundary of greenspaces; as a result, specific planning recommendations of greenspace distribution and design have been not able to be made (Bowler et al., 2010).

A number of studies has evaluated the effect of environmental factors to temperature contrast between greenspaces/parks and non-greenspaces/parks areas (cooling intensity), such as land cover (e.g. Tan & Li, 2013), greenspace configuration (Li, Zhou, Ouyang, Xu, & Zheng, 2012), and vegetation composition (e.g. Feyisa et al., 2014). Amongst various environmental factors, greenspace size and shape were commonly regarded as important characteristics determining greenspace cooling effect. It is generally agreed that larger greenspaces have better cooling effect (e.g. Chang et al., 2007; Tan & Li, 2013; Shashua-Bar & Hoffman, 2000) and there might be a threshold size for delivering more constant cooling benefits (Chang et al., 2007). However, the area-temperature relationship have not yet been fully understood. Greenspace shape changing the length of greenspace edge and so as to energy exchange is considered as one of the variances to this relationship, as there can be a trade-off between size and shape/edge effect. Studies so far analysing greenspace shape however have resulted in inconsistent findings and lacked agreed conclusions. For example, Chen et al. (2012) suggested an edge effect that parks with irregular shape have stronger cooling performance in terms of intensity and effect distance to adjacent areas; whereas Feyisa et al. (2014) found that greenspaces with irregular shape have greater cooling distance but less cooling intensity. Our knowledge regarding how greenspace size and shape might influence greenspace cooling effect on surrounding built environments has still been in a primary stage and generalisable results to give a more specific planning recommendation for greenspace modification is insufficient.

In order to shorten this knowledge gap, this study aims to explore area effect and shape effect on greenspace cooling performance. The interrelation between greenspace size and shape will be also discussed. In order to gain a larger size of case study areas, this study applied remote sensed data to extract land surface temperature (LST) and greenspace characteristics.

2. Study Area

This study used the urbanised area in Taipei Basin (25°N, 121°E) as the case study area, which includes parts of Taipei City and New Taipei City. The area covers approximately 2,726 km² and has population estimated to 6.67 million by 2014. The climate in this region is humid subtropical. According to the Central Weather Bureau (CWB) of Taiwan, the annual average temperature from 1981 to 2010 in Taipei is 23°C. The warmest month is July (29.6°C) and the coolest month is January (16.1°C). Due to global warming and rapid urbanisation (Bai et al., 2011), Taipei have showed a rapid warming trend. In the past 30 years, the increase rate of the annual temperature in Taipei has strikingly reached 0.27°C per year, which is faster than that of the global record of 0.16°C per year (CWB, 2014). Both the minimum temperature in summer and extreme hot days (4 days per decade in the last 30 years) have significantly increased in recent years (Bai et al., 2011; Hsu, Chou, Wu, Lu, Chen, & Chen, 2011). Thermal comfort for human well-beings, particularly in the summertime, has become an imperative issue.

3. Methods

The Landsat 8 satellite images took on 9 June, 2015 at 10:20 local time (summer morning) was gained from the United States Geological Survey (USGS). The first 9 bands of Landsat 8 are multispectral data from the Operational Land Imager (OLI). Except for Band 8 providing panchromatic data with a spatial resolution of 15m, the other OLI bands have a spatial resolution of 30m. Thermal data are provided by bands 10 and 11 with 100m resolution taken by the Thermal Infrared Sensor (TIRS). To facilitate spatial analysis with multispectral data, the thermal data was resampled to 30m by the USGS. This study utilized Band 2 to Band 7 for land classification and Band 10 for retrieving land surface temperature.

Quantum GIS (QGIS) Desktop 2.8.1 was applied to prepare satellite images and to perform spatial analyses. The Land Surface Temperature (LST) was retrieved from the thermal image of Band 10. Based on the procedure described by Congedo and Munafò (2014), the DN values of Band 10 were converted into TOA reflectance and corrected by DOS. This resulted in LST in degrees Kelvin and was further converted into degrees Celsius by the Semi-automatic Classification plugin (figure 1). With Zonal Statistic method in QGIS, this study calculated minimum, maximum, mode and mean LSTs of each case study greenspace and its surrounding buffer. Greenspace cooling effect (GCE) was observed by measuring temperature contrast between the immediate surroundings of greenspaces and the hottest spot of the basin.

Normalised Difference Vegetation Index (NDVI) with threshold values larger than 0.5 was applied to identify green infrastructure in the basin area. Greenspaces smaller than 2,700 m² and those located along river corridors, in the mountain regions, and under clouds were excluded from analyses. As a result, 1,168 greenspaces were selected for further analyses (figure 1). Figure 2 showed the size of case study greenspaces. Among them, 82.8% were below 2 hectare. The smallest and the largest greenspaces in the sample were respectively 2,700m² and 686,700m². A buffer with 50 meter width from the edge of the studied greenspaces was created around each studied greenspace in order to observe LST variations in its immediate surrounding areas. By means of the Polygon Shape Indices in QGIS, greenspace area in meter square and the value of shape index were calculated.

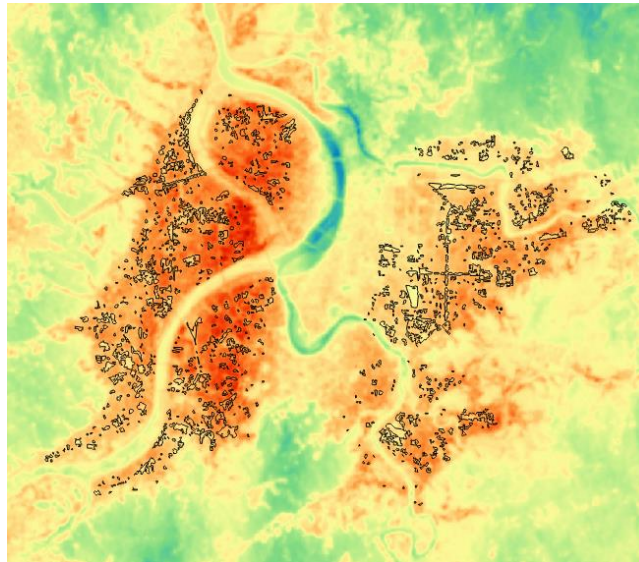


Figure 1: LST Distribution and Case Study Greenspaces

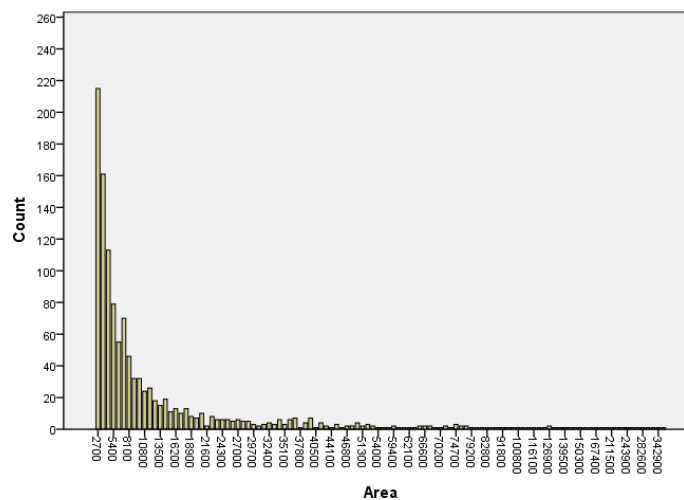


Figure 2: The Area (in meter square) of Case Study Greenspaces

Descriptive statistics was used to describe the minimum, maximum, and mean LST of greenspaces, buffer areas, and GCE. Pearson Rho Correlation Coefficient (two-tailed) and linear regression were firstly conducted between dependent variables of greenspace temperature, buffer temperature, and GCE and independent variables of greenspace size and shape in order to explore their relationship. Further, for examining non-linear relationship between greenspace size and dependent variables, the function of curve estimation, including logarithmic, quadratic, and cubic models, in the regression were performed. A one-way ANOVA was conducted to compare effect of greenspace area on dependent variables. All the statistical analyses were conducted with the software of IBM SPSS Statistics 22.

4. Results

In the study area, the LST ranged from 13.60°C to 34.14°C and the average temperature was 22.93°C. Within the case study greenspaces, the minimum, maximum and mean LST was measured at 19.84°C, 32.75°C and 27.29°C respectively, which was on average 6.85°C cooler than the hottest area of the basin. Comparing to the immediate surroundings outside

greenspaces (the 50m buffer areas), the greatest temperature contrast between inside and outside greenspaces was 6.22°C. Greenspaces were on average 0.12°C cooler. The coolest area at greenspaces were constantly cooler than the hottest area of the buffers, but the mean LST of 29.37% of greenspaces were higher than that of their immediate surroundings. According to the mode value, most of the areas within the buffer were 6.90°C below the hottest spot of the basin. The maximum LST contrast between the buffers and the hottest area of the basin was strikingly reached 15.31°C. The mean temperature of greenspaces significantly influenced the mean and the mode values of the LST at surrounding buffers ($r=0.993$, $P<0.001$; $r=0.963$, $P<0.001$). A strong linear relationship was found between the mean LST of greenspaces and that of buffers ($F(1,1166)=88750.99$, $p<0.001$) with an R^2 of 0.987. $P<0.001$). In other words, built-up areas tend to be cooler when they adjacent to a cooler greenspaces. According to this linear model, every degree in Celsius increased in greenspaces can lead to temperature rise in the immediate surroundings of greenspaces by 0.997°C.

The results of Pearson rho correlation coefficient showed that greenspace area was negatively related to the minimum greenspace LST ($r=-0.227$, $P<0.001$), the mean greenspace LST ($r=-0.106$, $P<0.001$), the minimum buffer LST ($r=-0.180$, $P<0.001$), the mean buffer LST ($r=-0.068$, $P<0.001$), and the mode buffer LST ($r=-0.113$, $P<0.001$) at a significant level, whilst their relationship were very weak. The regression analyses demonstrated similar results. Because some studies suggested that the relationship between greenspace size and greenspace temperature and/or cooling effect is not linear, this studies estimated their relationship with not only linear models, but also logarithmic, quadratic, and cubic models. Yet, as table 1 displayed, the goodness-of-fit (R^2) were very low in all models, indicating greenspace size is not likely a good predictor for the mean LST of greenspaces and that of buffers. The ANOVA T-test further confirmed this finding. The mean LST of either greenspaces or their buffers was not significantly different between different greenspace area (figure 3).

Table 1: Regression analyses of greenspace area to mean LST of greenspaces and buffers

Models	Mean LST of greenspaces					Mean LST of buffers				
	R ²	F	df1	df2	Sig.	R ²	F	df1	df2	Sig.
Linear	.011	13.267	1	1166	.000	.005	5.441	1	1166	.020
Logarithmic	.010	12.131	1	1166	.001	.002	2.405	1	1166	.121
Quadratic	.013	7.791	2	1165	.000	.005	2.809	2	1165	.061
Cubic	.014	5.411	3	1164	.001	.005	1.871	3	1164	.133

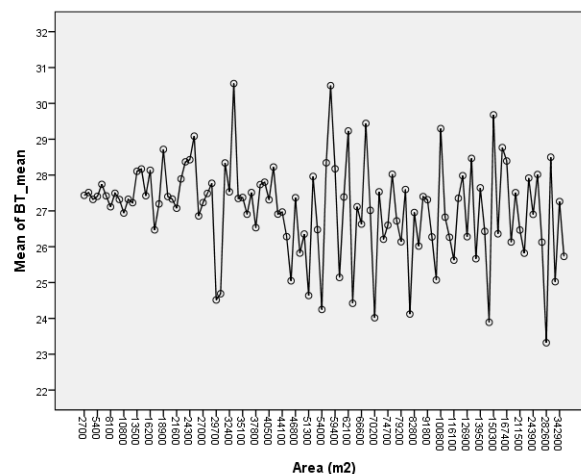


Figure 3: The Distribution of the Mean LST of Buffer Areas by Greenspace Area (m²)

The size effect tends to be stronger on the minimum LST of greenspaces and that of buffers. As figure 4 demonstrated, there was a steady decreasing trend of minimum LST for both greenspace and buffers with the increase of greenspace size, which was reclassified by hectare. This was particularly obvious for greenspaces below 5 hectare that more samples were available (all more than 15) and therefore the result was statistically more valid. Also, the mean and maximum temperature contrast between greenspaces and their surroundings were more significantly varied by greenspace area. The one-way ANOVA demonstrated significant size effect on temperature contrast, which was respectively measured by average contrast (F(109,1058)=4.948; p<0.001) and maximum contrast (F(109,1058)=18.004; p<0.001) (figure 5a; figure 5b). The temperature contrast tends to increase with the size of greenspaces. As table 2 demonstrated, the logarithmic curve can better describe the relationship between greenspace area and temperature contrast. The description capability was particularly good for the maximum contrast, which the R² was 0.568 (P<0.001).

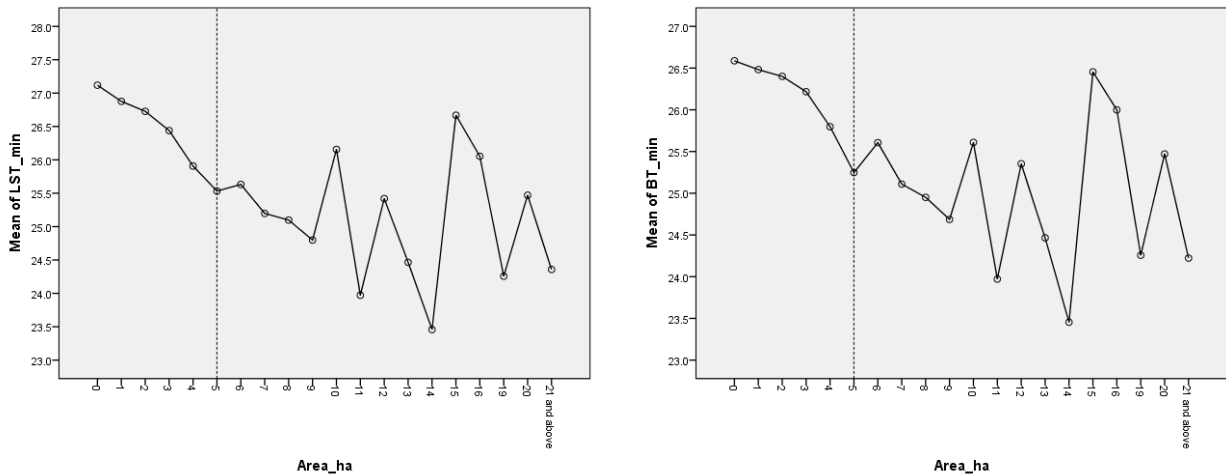


Figure 4: The Distribution of the Mean LST of Buffer Areas by Greenspace Area (m²)

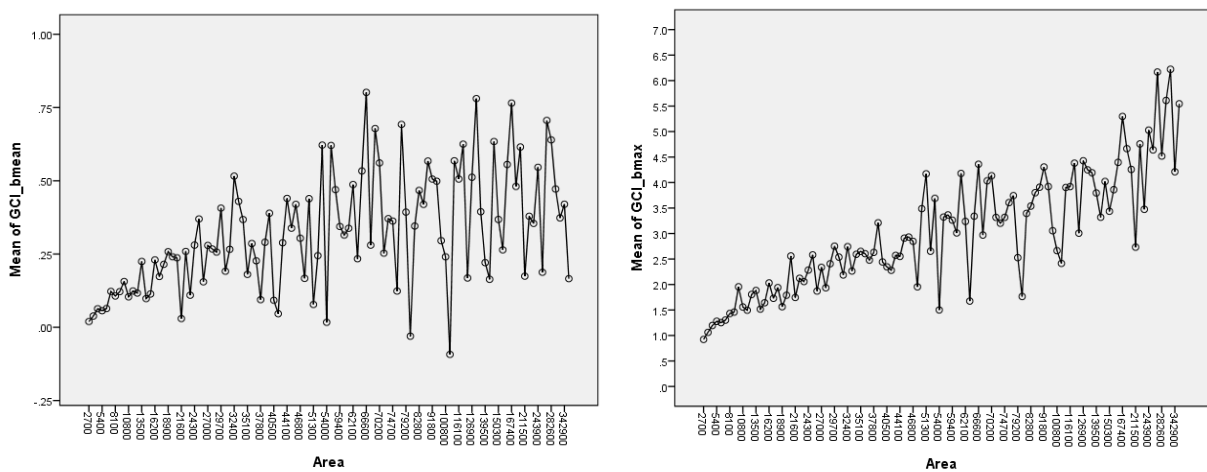


Figure 5: The Distribution of the Mean LST of Buffer Areas by Greenspace Area (m²)

Table 2: Regression analyses of greenspace area to mean and maximum temperature contrast between greenspaces and buffers

Models	Mean Temperature Contrast					Maximum Temperature Contrast				
	R ²	F	df1	df2	Sig.	R ²	F	df1	df2	Sig.
Linear	.112	147.380	1	1166	.000	.399	772.709	1	1166	.000
Logarithmic	.244	376.355	1	1166	.000	.568	1532.548	1	1166	.000
Quadratic	.190	136.491	2	1165	.000	.512	611.166	2	1165	.000
Cubic	.230	116.019	3	1164	.000	.566	505.809	3	1164	.000

Within 343 greenspaces that were averagely hotter than their surroundings, 86.0% were below 10000 m² (1ha) and 96.2% were below 20000 m² (2ha). Yet, no significant relationship was found between these cases and greenspace area (figure 6).

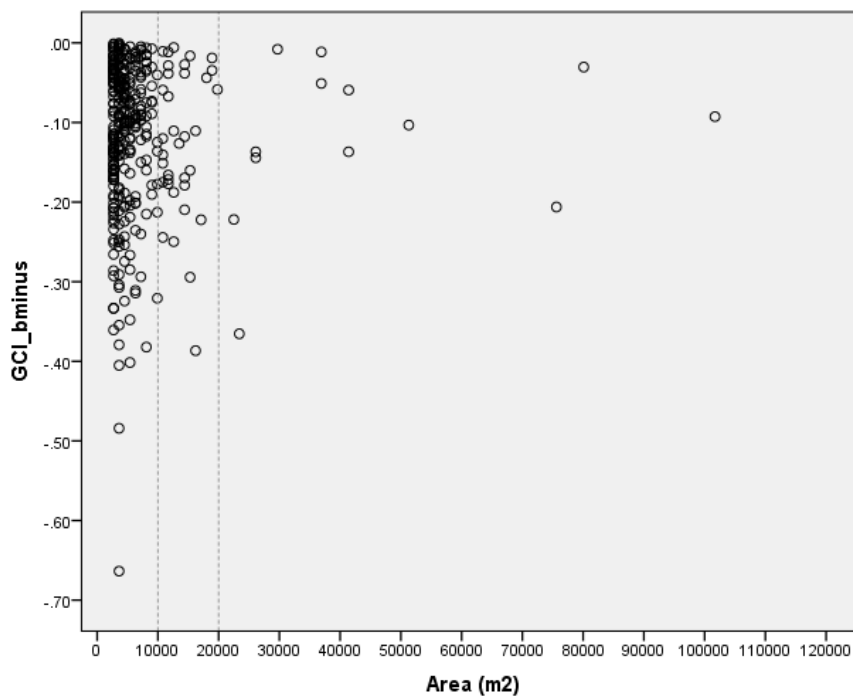


Figure 6: Temperature Contrast of Hotter Greenspaces by Area (m²)

Similarly, the Pearson Rho Correlation showed greenspace shape was weakly and negatively related to the mean LST of greenspaces ($r=-0.083$, $p<0.005$) and was insignificantly related to the mean LST of buffers. The regression analyses also confirmed that greenspace shape was not a good predictor to these dependent variables. As table 3 demonstrated, the R^2 of the mean greenspace LST, mean buffer LST were negligible in all regression equations (table 3). When greenspace size was controlled, the effect of greenspace shape showed no improvement. On the contrary, the shape effect was a relatively good predictor for both the mean and the maximum temperature contrast, which the cubic equation was able to describe 10% and 40% of the cases respectively (table 3b). Increasing shape complexity tends to enlarge temperature contrast between a greenspace and its surroundings.

Table 3: Regression analyses of greenspace shape to four dependent variables

(a)

Models	Mean LST of greenspaces					Mean LST of buffers				
	R ²	F	df1	df2	Sig.	R ²	F	df1	df2	Sig.
Linear	.007	8.104	1	1166	.000	.002	2.754	1	1166	.000
Logarithmic	.006	7.518	1	1166	.000	.002	2.327	1	1166	.000
Quadratic	.007	4.058	2	1165	.000	.003	1.481	2	1165	.000
Cubic	.007	2.704	3	1164	.000	.003	.988	3	1164	.000

(b)

Models	Mean Temperature Contrast					Maximum Temperature Contrast				
	R ²	F	df1	df2	Sig.	R ²	F	df1	df2	Sig.
Linear	.093	119.315	1	1166	.000	.404	790.115	1	1166	.000
Logarithmic	.098	126.000	1	1166	.000	.401	781.045	1	1166	.000
Quadratic	.100	64.412	2	1165	.000	.408	402.212	2	1165	.000
Cubic	.101	43.429	3	1164	.000	.409	268.366	3	1164	.000

5. Discussions and Conclusions

This study examined the cooling effect of urban greenspaces focusing on the effect of greenspace size and shape. The results manifested distinct cooling function of urban greenspaces. Comparing to the hottest spot of the basin, greenspaces were on average 6.85°C cooler and most of the areas within the distance of 50m from greenspaces were 6.90°C cooler. The strong positive linear relationship revealed between the mean LST of greenspaces and that of buffers confirmed the findings of previous studies that greenspaces can reduce temperature of their surrounding built environments (e.g. Oliveira et al., 2011; Feyisa et al., 2014). The coolest spots of greenspaces were constantly cooler than the hottest areas of the 50m buffer. However, it is noteworthy that not all greenspaces were cooler than their surroundings when compared the mean temperature contrast between inside and outside greenspaces. The average LST of 29.37% of studied greenspaces were warmer than that of their buffers. Similar results were reported by the study of Chang, et al (2007) based on air-temperature in Taipei City, which indicated that many parks below 3 hectare were warmer than their surroundings.

Larger parks/greenspaces were generally reported to be either more likely to be cooler (e.g. Li et al., 2012; Xu and Yu, 2008) or that the cooling intensity was greater (e.g. Cao et al., 2010; Feyisa et al., 2014). The analyses of the size effect of greenspaces on the cooling performance was to some extent consistent with this argument. The minimum and the mean LST of greenspaces and that of adjacent areas tend to be lower in larger greenspaces, but the relationship/effect was very weak. The weak effect might be caused by greater range and variation of temperature inside larger greenspaces. According to the result, the minimum temperature of larger greenspaces tends to be lower, since they possess greater distance to the edge so as to prevent outside heat intrusion. Yet, increasing surface area also results in a longer interface with surrounding built environments, which subsequently increases the chance of thermal exchange with warmer built-up areas (Li et al., 2012). In this regard, the mean cooling magnitude of greenspaces and their cooling effect on surroundings were likely to be offset. This also explained why a more significant size effect was observed on the

maximum temperature contrast between the minimum LST of greenspaces and the maximum LST of buffers.

Some researchers asserted that the relationship between the cooling effect and the size of greenspace may not be linear (e.g. Cao et al., 2010, Chang et al., 2007) and there might be a minimum threshold size for delivering more constant cooling effect (Chang et al., 2007). In this study, 96.2% of warmer greenspaces were below 2 hectare. It is possible that small greenspaces were more likely to be influenced by the heat intrusion from surrounding built environments and therefore have higher temperature fluctuation as Chang et al. (2007) suggested. Yet, this assumption cannot be proved by this study, because the greenspaces in Taipei Basin is highly fragmented and there were more small greenspaces than medium- to large-sized greenspaces. As a result, the sampling size of greenspaces particularly above 5 hectares have been too small to make a statistically valid comparison in this study. More studies with more equal and large sampling size of different size of greenspaces will be necessary to observe a threshold size.

In addition, this study applied several models in the regression analyses to estimate possible curve for describing area-temperature relationship. The result showed a very low goodness-of-fit in all models either for the mean LST of greenspaces (the best R² was 0.014 in cubic equation) and or for that of buffers (the best R² was 0.05 in linear equation). Although logarithmic linear equations presented a greater R² to explain temperature contrast between greenspaces and surrounding built environments, it is inappropriate to apply this model for assessing cooling benefits from greenspace, because the model describes temperature difference caused by greenspace size rather than cooling benefits delivering from greenspaces to built-up environments.

Several studies pointed out greenspace shape as one of the important factors to cooling effect, whereas there is a lack of consistency among research findings. This study found that temperature contrast between inside and outside greenspaces tended to increase with shape complexity. Yet, the direct influence of greenspace shape on temperature reduction of greenspaces per se was less significant and it showed no statistical significant relationship with the mean temperature of buffers. It seems that the mean temperature outside greenspaces was not affected by greenspace shape. This is inconsistent with the study of Feyisa et al. (2014), which found cooler built-up areas around irregular greenspaces. As many researchers pointed out, greenspaces with irregular shape have greater interface with built environments that increases the chance of energy exchange (e.g. Chen et al., 2012; Feyisa et al., 2014; Zhou, Huang, & Cadenasso, 2011). In this sense, the lack of consistency of shape effect in the previous studies is understandable. Since the temperature in one area is the result of temperature exchange, the intensity of heat from either greenspaces or built environments can determine the final result and it is not necessarily to be consistent.

In summary, this study found that increasing greenspace size and shape complexity can generate lower minimum temperature both inside and outside greenspaces, but their influence tends to be small. Besides, both greenspace size and shape exert relatively minor or insignificant influence on reducing mean temperature outside greenspaces. Simply increasing large greenspaces or changing shape of greenspaces in cities might not lead to significant cooling contributions to built environments. For delivering more effective cooling benefits, more factors will have to be considered.

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Case study to urban regeneration on sustainable basis: Bonsucesso - Rio de Janeiro – Brazil

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Introduction

The paper aims to present studies carried out for future sustainable redevelopment of underutilized areas in Bonsucesso district - Rio de Janeiro - Brazil, as one of the ways to reduce urban sprawl in environmentally protected areas or those lacking planning. The region studied has one of the largest subnormal occupancy rates in the city of Rio de Janeiro, especially the type known as favelas. On the other hand the region has favourable public transport network, available urban infrastructure and central location in relation to other areas of the city¹.

1. Characterization of The Study Area

Rio de Janeiro city is divided into five Planning Areas (AP): AP1, AP2, AP3, AP4 and AP5. Planning area 3 (AP3) comprehends 80 districts in 13 administrative regions (PCRJ, 2015), accounting for 16.6% of the municipal territory – 203.47km² – and 37.9% of the population residing in Rio de Janeiro, that is, 2,398,572 inhabitants according to CENSO 2010. Its demographic density is 11.788 inhabitants/km².

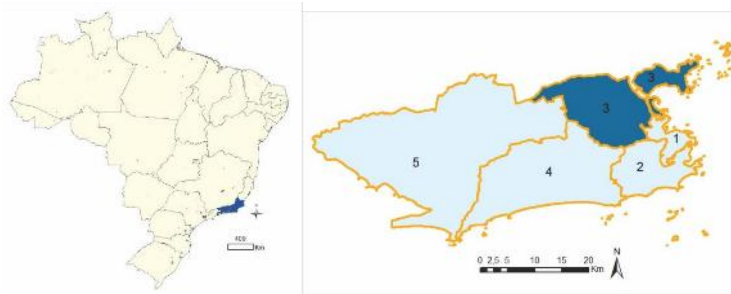


Figure 1: Brazils’ map with study area AP3 location

From its origin AP3 is divided into 3 parts:

AP3.1 – It grew from the Leopoldina Railway consisting of 6 administrative regions (RA): Ramos, Penha, Vigário Geral, Ilha do Governador, Complexo do Alemão and Complexo da Maré.

AP3.2 – The train service, in this case, Central do Brasil Railway, was the link both internally and with the downtown area. The following RAs belong to this region: Méier, Inhaúma and Jacarezinho.

Planning Areas	Area (m ²)		
	2008	2009	2010
Rio de Janeiro city	46 829 483	46 807 142	46 420 263
Planning Area 2	2 415 049	2 419 397	2 374 541
	4 180 960	4 186 523	4 110 146
	18 444 155	18 362 309	18 174 178
Planning Area 5	6 995 321	7 021 126	6 981 298
	14 793 998	14 817 787	14 780 100

Table 1: Slums by planning area

AP3.3 – In this case two railways made the link both internally and with downtown area: Central do Brasil Railway and its auxiliary line. The following RAs belong to this region: Irajá, Madureira, Anchieta and Pavuna.

About two in five cariocas (Rio de Janeiro inhabitants) live in AP3 – the highest population in the city (37.9%), and 1 in 2 slum dwellers lives in AP3, equivalent to 45.4% of the city population. Besides, it must be highlighted that 39.2% of slum areas in Rio de Janeiro are in AP3 representing 18,174,178m², however only 22.8% of the population living in AP3, 149,014 people, is in urbanized communities.

Rio de Janeiro population had a 1.4% growth between 1991/2000. On the other hand, in the period between 2000/2010 the population growth rate was 7.9%, and in AP3 it was 1.98%. The highest ones were Complexo do Alemão and Complexo da Maré accounting for more than 20% growth.

For a long time, the big possibilities of horizontal expansion were the norm in AP3 occupation, generating an area with little identity. In the last decade the AP3 urban structure has been going through changes. The opening of Linha Amarela (express highway) in 1997 made it possible to have new connections and access in all districts of the region. Along with the BRT Transcarioca (Bus Rapid Transit) linking Barra da Tijuca and Galeão it provided better connection between AP3 and AP4.

Among the 13 administrative regions that comprise the AP3, 8 are among the regions considered to be highly developed according to the HDI (Human Development Index), including Bonsucesso district, 0.861, considered to be an average development level. In contrast, the three worst rates of the city are in the same area as Bonsucesso: Jacarezinho (0.731), Complexo da Maré (0.719) and Complexo do Alemão (0.719), all of which are slum areas (figure 2).

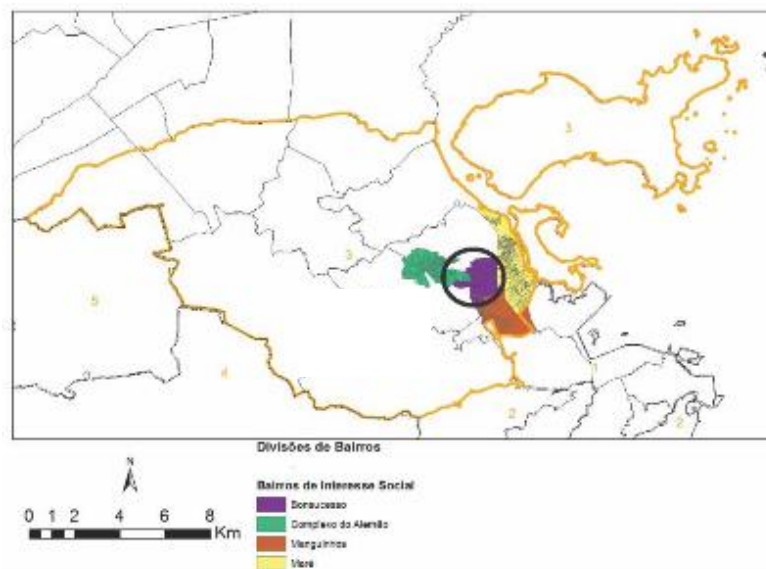


Figure 2: Bonsucesso district, Complexo da Maré, Complexo do Alemão and Jacarezinho

Concerning longevity, the area is above municipal average: 70.82 years old. However, in slum areas, longevity level is low: Complexo do Alemão (64.38), Complexo da Maré (66.03) and Jacarezinho (66.30).

With regard to Social Development Index (SDI) in 2000 AP3.1 scored 0.59 in SDI, well below the rate observed in Lagoa (0.81) district located in AP2. By the year 2010 the rate remained the same in AP3, i.e. improvement was not observed in the region in the decade analysed.

In 2010 the per capita income in AP3 was R\$794.37 (about 1.56 minimum wages), less than the city average R\$1,420.89 (1.79 minimum wages), and the slum areas had the lowest figures: Complexo do Alemão (R\$390.00), Jacarezinho (R\$405.56) and Complexo da Maré (R\$456.71), i.e. the favelas receive 1/3 of the average city wage.

In relation to schooling years Complexo do Alemão, Complexo da Maré and Jacarezinho present the worst city average with 4.2 years, 4.3 years and 4.7 years respectively.

As regards vegetation, according to Pereira Passos Institute (IPP, 2012), Rio de Janeiro city has a per capita rate of 55 m²/inhabit, while in AP3 it is only 3.5 m²/inhabit. The minimum recommended by Brazilian Society of Urban Vegetation (SBAU, 1996), is 15m² / inhabit. The AP3 presents one of highest preservation areas in Rio de Janeiro, Serra da Misericórdia, which has many degraded areas. The main aspects highlighted by Carvalho (2011) about Serra da Misericórdia environmental impacts are: Stress deriving from fringes of subnormal occupations, unplanned use of trails, trash accumulation and incineration, and ore extraction for cement industry. All those aspects were vectors for deforestation and degradation observed in Serra da Misericórdia.

Administrative Regions	Average per capita household income 1 st poorest fifth	Average per capita household income 2 nd poorest fifth	Average per capita household income 3 rd poorest fifth	Average per capita household income 4 th poorest fifth	Average per capita household income 5 th wealthiest fifth	Average per capita household income 10 th wealthiest fifth
2000						
Rio de Janeiro City	58.56	155.68	279.82	535.85	1 953.33	2 875.58
VI Lagoa	164.86	641.19	1 453.25	2 477.18	6 407.44	8 968.35
Lagoa	535.88	1 472.23	2 179.17	3 275.50	7 313.69	9 719.11
X Ramos	62.15	159.10	277.01	466.24	1 173.59	1 585.78
Bonsucesso	88.61	196.94	327.03	566.19	1 586.16	2 223.39
Ramos	91.59	220.17	368.01	567.74	1 296.28	1 692.90
Manguinhos	26.51	85.03	131.57	204.11	497.11	681.25
Olaria	79.60	192.67	322.87	528.84	1 177.56	1 535.84
2010						
Rio de Janeiro City	119.71	359.79	619.38	1 167.21	4 905.41	7 488.71
VI Lagoa	309.99	1 576.83	3 508.86	6 016.81	17 485.38	25 514.36
Lagoa	921.53	2 900.20	4 737.37	7 184.65	20 355.40	30 313.10
X Ramos	146.97	368.77	584.72	945.48	2 439.76	3 359.43
Bonsucesso	161.91	416.50	656.98	1 049.57	2 550.88	3 462.77
Ramos	245.84	497.27	714.47	1 095.89	2 557.48	3 412.25
Manguinhos	85.71	223.90	326.84	497.02	1 064.41	1 447.00
Olaria	177.87	445.34	714.55	1 147.48	2 901.88	3 955.71

Table 2: Income indicators - Inequality / population, 1991, 2000 and 2010.

Areas of Complexo do Alemão, Complexo da Maré and Jacarezinho (including Manguinhos) were occupied by the poorest segment of the population, who was neglected by public housing policies for decades. Thus, the morphological characteristics of the urban environment in these areas favoured occupation by criminal groups and consequent insecurity.

In 2010 the region was occupied by police forces that have promoted an improvement in public safety in the last five years. However, it is urgently needed to have urban interventions allowing use of space by the population without mischaracterizing its local peculiarities.

With the review of the data we can see that the regions of the Complexo do Alemão, Complexo da Maré and Jacarezinho (including Manguinhos) belong to the group of lower quality of life, access to education and social development index. On the other hand, in these regions there is a strong population growth, especially in the areas of subnormal occupation - slums - located mostly in the vicinity of the railway axis of Leopoldina - AP3.1.

Accordingly, and in view of the necessary delimitation of the study, AP3.1 was selected for analysis, as it has the largest subnormal housing conglomerates in the region and a wide range of local unsustainable points with global repercussions. The areas studied are seen as transitional spaces between the formal areas of the city and the slums. The study aims to investigate what planning strategies and urban design can be adopted to promote the

upgrading of the urban environment and the development of the region on a sustainable basis.

As a case study we selected the Bonsucesso district and its immediate surroundings that have developed from the end of 19th century along the Leopoldina Railway. The choice was due to the historical specificities and representative morphological characteristics of the region.

Regional characteristics:

- a) From the beginning it received groups linked to the poorest sections of the population;
- (b) It underwent a period of industrialization from the 1930s, which in turn attracted a mass of residents motivated by the offer of these jobs, but at first it did not have the adequate provision of infrastructure such as sanitation or transport;
- (c) It has specific aspects and socio-spatial segregation characteristics closely linked to their being torn along by two major highways, namely the railway itself and Brasil Av., built in the 1940s;
- (d) There were expansions on both sides of the formal urban area - two of the largest groups of favelas of Rio de Janeiro, namely the Complexo da Maré, bordering the Bay of Guanabara, and the Complexo do Alemão, occupying the hills of Serra da Misericórdia;
- (e) It is characterized today by residential areas and small trade and services, with urban voids and remaining unused sheds from the industrialization period, which had a relative deflation as of the 1970s;
- (f) and finally, as we intended to demonstrate, it has not received sufficient attention by the government - not being expressively considered in practically any of the major projects into effect or being planned.

2. Mapping of Unsustainability

The unsustainable spots in the area have been mapped and analysed with a view to potentially reversing the situation through an urban regeneration process as set forth in item 2.

To better understand the area, it was divided into five sub-areas that will be presented on separate maps.



*Figure 3: Five sub areas in Bonsucesso study area.
Source: Own Elaboration based on image from Google earth*

The most important square in Bonsucesso is the Praça das Nações (spot 1), which is located in the commercial centre of the neighborhood. Anyway, that square is deteriorated and unused, occupied by young offenders, homeless people and drug addicts. It's at the second sub-area (figure 5), near the centre of the district and it has good public transport. It is also close to very important roads and highways that connect so many parts of the city.

2.1 Subarea 1

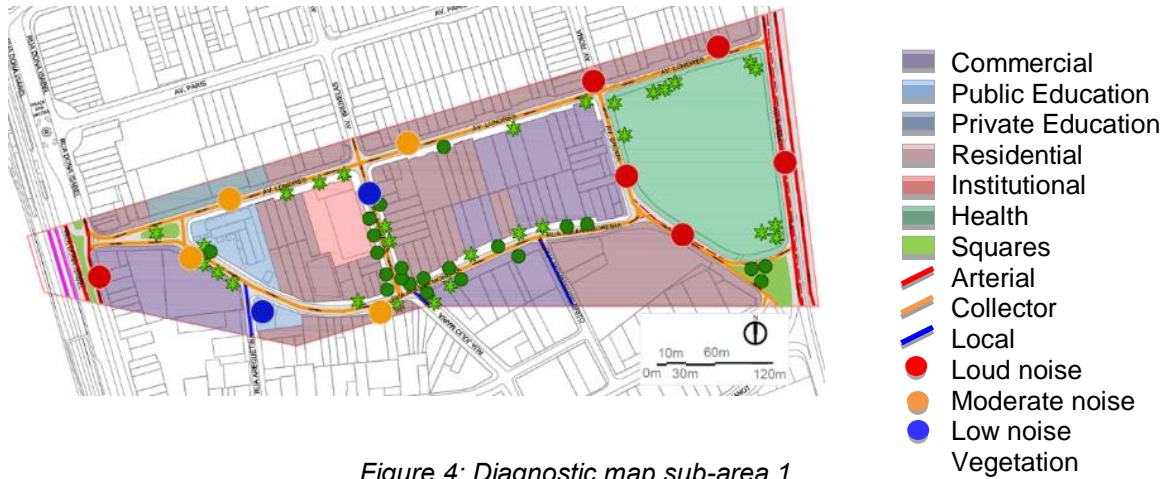


Figure 4: Diagnostic map sub-area 1
Source: Own Elaboration based on Souza and Tavares, 2014

2.2 Subarea 2

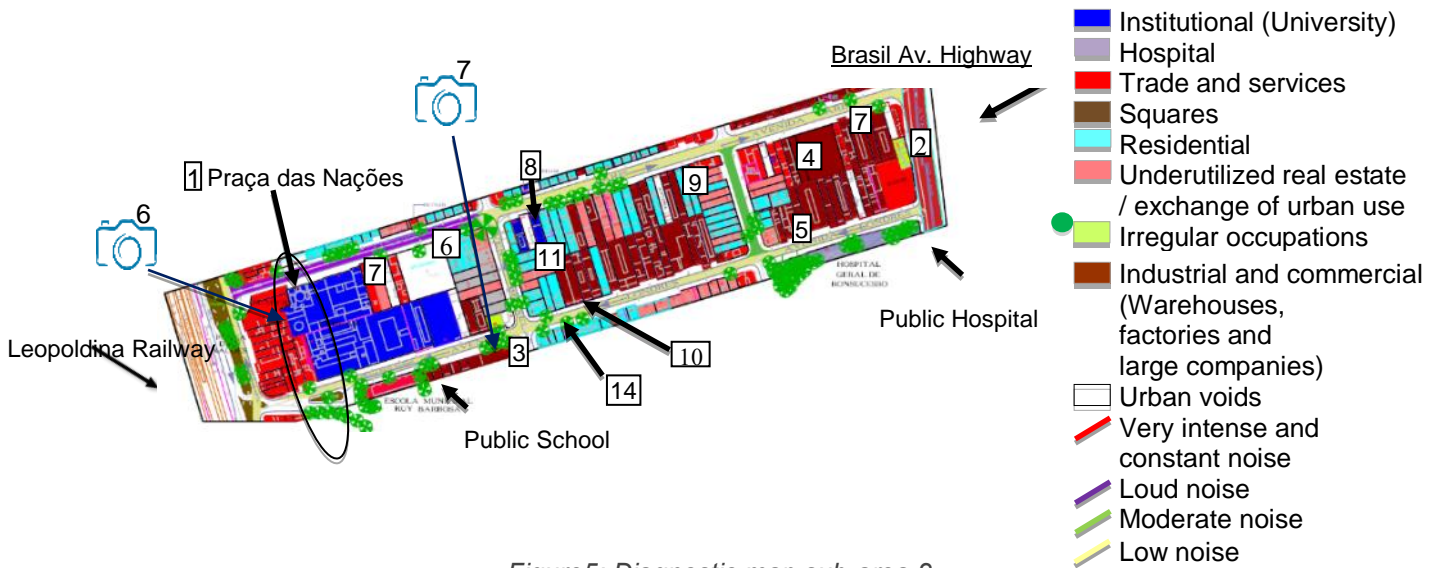


Figure 5: Diagnostic map sub-area 2
Source: Own Elaboration based on Alexandrino, 2015



Figure 6 and 7: Praça das Nações and parked cars on street.
Source: Aragão e Alexandrino, 2015.

The Praça da Nações was a redevelopment project – Rio Cidade - in 2008 with the replacement of paving for permeable blocks, installation of ramps for disabled people, widening sidewalks and installing new lampposts. On the other hand, living areas, equipment

for leisure and sports, or commercial areas were not included, hindering the use of space by residents living in the underutilized area.

The Bonsucesso district was one of the main industrial centres of the city, however with the migration of the industrial sector currently the region is marked by abandonment (spot 2), with the former under-utilized industrial buildings causing large urban voids.

In all the district we can see a large circulation of vehicles, including cargo vehicles. In the residential areas some streets are being used as parking (spot 3), and many gas stations located near schools and hospitals can cause explosions and contamination of groundwater and storm water (spot 4).

The terminus of the bus line occupying part of the road (spot 5) and the sidewalk hinder pedestrian movement, which is aggravated by the large concentration of informal street vendors.

Many urban problems could be observed, such as: irregular garbage dump (spot 6); drains get clogged by leaves and trash in the gutter preventing the correct flow of water into the culverts (spot 7), trees without pruning (spots 8 and 9) and residential areas with low pedestrian flow, favouring insecurity (spot 10).

2.3 Subarea 3



Figure 8: Diagnostic map sub-area 3
Source: Own Elaboration based on Nunes and Victório, 2015

2.4 Subarea 4



Figure 9: Diagnostic map sub-area 4
Source: Christino and Vieira, 2015

The fifth sub-area (figure 10) is the one that has greater amount of irregular occupations among the study areas; this is due to the occupation of the "Adeus and Piancó" hills and the bank of the Faria-Timbó river.

2.5 Subarea 5

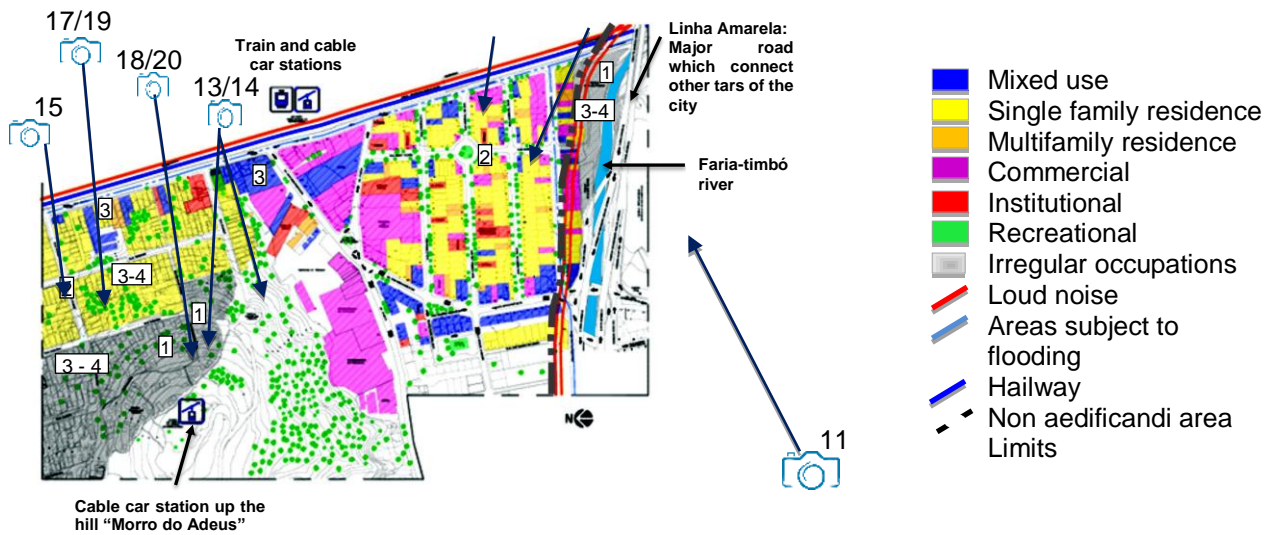


Figure 10: Diagnostic map sub-area 5
Source: Aragão and Sampaio, 2015

The study area has irregular occupation and environmental risks (Spot 1). The occupation of hillsides in Complexo do Alemão brings about soil fragmentation problems and sealing of the pathways. This problem makes the area very susceptible to landslides, offering direct risk to the community and potentially enhances areas of flooding at the lowest points due to the runoff of water that couldn't be absorbed by the soil.

The research identified other problems such as: the banks of Faria-Timbó river were taken by illegal occupations where 1003 people live (IBGE, 2010) in a community called “Vila São Pedro”. These people live under constant threat of flood.



Figure 11 and 12: Vila São Pedro and flooding area.
Source: Sampaio, 2014.

The region was largely deforested, and currently has a low level of afforestation on the slopes and in public streets (spot 2). This situation is directly linked to frequent flooding problems. Even on the sidewalks and streets with low traffic of light vehicles drainage material is not used, prevailing large-scale use of concrete and asphalt paving.



Figure 13 and 14: Slip risk areas.
Source: Google Earth, 2015



Figure 15 and 16: Absence of vegetation and impermeable flooring.
Source: Sampaio, 2014

The subnormal occupation area presents buildings at odds with urban standards (spot 3). In these areas buildings do not follow minimum standards for clearances and a lot of them do not offer good ventilation or natural lighting.



Figure 17 and 18: Typical Building
Source: Google Earth, 2015

Many problems were found with “theft” of energy and public lighting equipment degradation (spot 4), especially close to the poorest areas. The degraded power grid and the energy thefts offer health risks to inhabitants such as serious accidents with shocks and fires. It also has negative consequences both for economic aspects and for public safety since many streets have poor nighttime lighting.

All analyzed sub-areas do not have a significant number of trees or permeability paving. The public transport offer is good, including on the top of the hills because of Adeus cable car station and others, which meet the demand of the population farther from the centre of the district. However, the distance of the consolidated neighborhood and the lack of investment in urban infrastructure bring problems like poor lighting in public areas, which creates barren and unsafe areas.

Any areas studied, including urbanized areas, present uneven pavement and no maintenance hindering pedestrian circulation. These factors bring risk when walking. Furthermore, no facilities were found for the visually impaired, those with limited mobility and wheelchair users. This problem can be observed at *Praça das Nações* where there are trade areas and a large flow of people, however without appropriate care of pavement causing accident.



Figure 19 and 20: Power grid and sidewalks.
Source: Google Earth, 2015

The analysis concluded that Bonsucesso district has a proper infrastructure, but a low level of conservation. This factor, together with lack of urban planning, affects the development of the region.

Many factors must be reviewed, such as: better organization and distribution of commercial areas, use of urban voids, road traffic reorganization, adaptation of routes for pedestrians

and cyclists, replacement of air power grids with subterranean ones, afforestation of public roads, permeable floors, and awareness-raising and environmental education programs.

3. Data Analysis

With the analysis of unsustainability spots of the study area it was possible to develop strategies to enhance the urban development of an area in Rio de Janeiro city on a sustainable basis. Therefore, we selected strategic locations to implement local actions in order to integrate the sectorial procedures and promote "low-carbon planning" of the area through effective guidelines.

In this sense, the study can be considered a pilot for replication procedures in areas with great potential for development and that currently have a low urban, social, economic and environmental sustainability scenario. Both the city of Rio de Janeiro and other cities in emerging market countries that have regions with similar characteristics to the study area, and which suffer stress deriving from fringes of subnormal occupations, can benefit from the adaptation and implementation of strategies and recommendations suggested in the study.

The research conducted follows the guidelines formulated by ICLEI using low-emission strategies for urban planning, such as: high density, mixed use of the territory and the focus on green transport like walking, traveling by bicycle and public transport. Based on these principles we developed projects that include planned consolidation, taking advantage of underutilized areas, the requalification of spaces, using living spaces, creating bike lanes and pedestrian footpaths as vectors to leverage the economic and social growth on a sustainable basis.

As can be seen in the presentation area (item 1) AP3 is one of the regions with the highest population density of substandard housing in Rio de Janeiro city. These areas known as subnormal occupation fringes, or favelas, occupy much of the territory of AP3 and exert strong pressure on both formally urbanized areas and on the areas of environmental preservation.

On the other hand, the slums have their own dynamics of land use occupation and informal distribution of the occupied areas, which differ from the standards set for formal areas of the city. The fact that slums do not obey the rules of construction and land use established by the government makes the environment different from the rest of the city, but the high growth rate observed in these areas proves that although they are informal and are below the normal occupancy patterns, they are extremely bright areas with great potential connection in local and regional spheres.

In these regions the formal urban planning should be revised to meet the social dynamics of creation and multiplication of territory, without repeating the previously established model, but considering local peculiarities, such as: use of small fractions of the same piece of land for more than a building, use of tops of houses as free areas for construction, mixed use of buildings for housing and commerce, leisure facilities with multiple uses (sports, dances, parties, cultural events, religious services and other), operating 24 hours trade site, musical and cultural outdoor events among many other multiple uses that the environment of slum areas provides its dwellers.

Furthermore, planning should take into account the importance of preserving the environmental assets of the region to encourage the process of recovery of degraded areas by promoting reforestation programs in the areas of environmental protection, recycling and sustainable garbage disposal and reuse of rainwater, installation of organic pits, gardens and community orchards cultivation, ecological paving of roads, permeable paving, mapping and solution of the points of leakage and infiltration of water, protection and replanting of riparian vegetation, cleaning and protection of springs and streams.

Regarding creative economy planning should consider the potential in the region seeking to use and invigorate urban voids, encouraging local and international tourism activities with the installation of small connection cores and the training of local guides, fostering the opening and continuation of bars, restaurants and small hotels (hostels), sponsorship of cultural and sports events, economic incentives to micro and small entrepreneurs, subsidizing cultural, sporting and leisure activities.

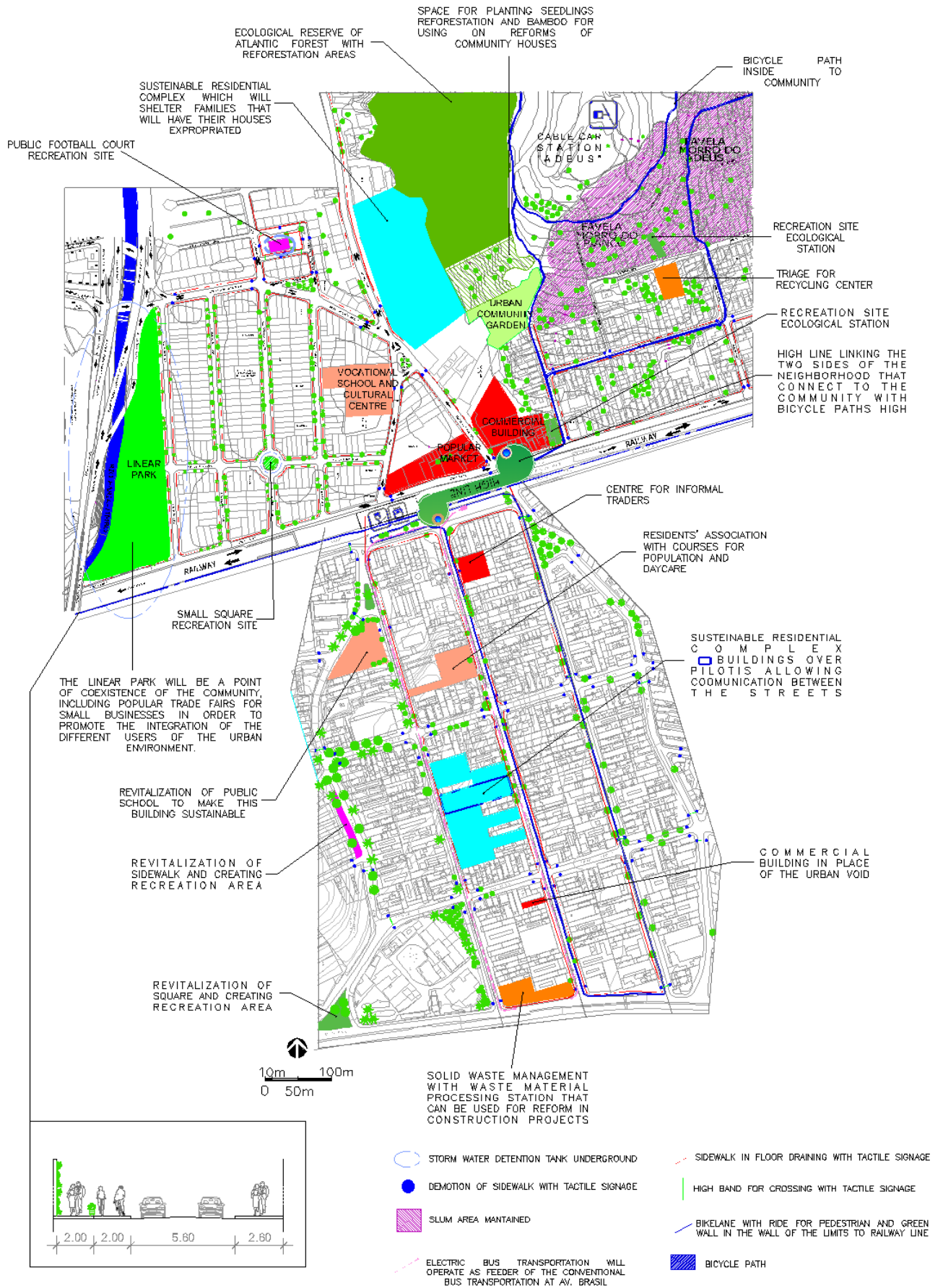


Figure 21: Map with new proposals seeking sustainability.
Source: Own Elaboration based on SMU, 2015

Even in the free carbon economy sector, we should encourage the use of passive energy programs and less energy-intensive building materials for the construction and renovation, reforested wood, laminated bamboo, recycled steel and glass and many others such as green bricks, low-emission cement, whose use in large scale could contribute to significant reductions in emissions of greenhouse gases (GHG).

Under the aspects mentioned urban densification would be appropriate to create conditions for the development of areas such as *Morro do Adeus*. It is usually developed in isolated and unrelated experiences with the neighbourhood itself and the city. Planning in this sense should be promoted "in cascade", i.e. it should be generated and expanded from the hills (where the slums and areas of environmental preservation are located) until you reach the formal district in the flat areas of the neighbourhood. With this movement, neighbourhoods could build dynamic exchanges with positive repercussions across existing regions now set apart from each other as a divided city and with no continuity.

The proposal comprises a plural, participative and connected planning, which seeks to contemplate the differences without imposing the rules "copied" from the formal planning, because these rules can hardly be replicated in areas of "free" occupation as the slums are configured. In this sense, sustainable planning for regions with strong urban and environmental conflict must obey local peculiarities adding the solutions adopted by the social experience to low carbon economy standards, strengthening innovation rules and concepts and integrating participatory planning to global chains of value.

As an example of the planned actions, some urban actions between the slums of Complexo do Alemão and the Bonsucesso neighbourhood are indicated in the intervention map (figure 21): High Line and Linear Park, small square recreation centre, urban community garden, ecological reserve with reforestation area, vocational school, solid waste management, and others.

Conclusion and Recommendations

The study found that while the region of AP3 in Rio de Janeiro city is provided with urban infrastructure in their formally established areas, there is a disconnection between the formal planning and actions developed in subnormal areas of the region. On the other hand, the lack of maintenance and the lack of social participation in the planning process contribute to the waste in the allocation of resources, with the consequent degradation of the urban environment.

In this regard, the present study was based on a thorough diagnosis of the unsustainability points that exist in each subarea of the neighbourhood, including the slum areas, seeking to establish a common line of action between the parties that today coexist separately.

Identifying the points of unsustainability, the urban planning scale was reduced to the level of city block. Thus, each section has been thought for the operation of the city block in the overall context, which approximates the project to the needs of local users without repeating intervention models dissociated from regional reality.

The first benefit suggested in the study was the variety of uses planned and its connection with the practices of green mobility as a way to streamline urban spaces using less fossil energy for displacements due to less dependence on motorized transport, resulting in the reduction of GHG emissions.

Another highlight in the proposed plan is the recovery of ecological reserve, which should act as a limiter and urban space controller promoting the improvement of environmental conditions in the region, which currently suffers from pollution and the absence of green areas. In this sense, the engagement of the local population is essential for the recovery of conservation areas and the proliferation of green areas in the city.

As an incentive to low-carbon economy the rational use of available environmental resources for the construction and renovation of buildings has been proposed. In this respect areas will be created for cultivation and production of bamboo and certified wood, low-emission cement production with the installation of waste recycling centres for civil construction, and installation of a ecological brickⁱⁱ production centre. All initiatives will be organized in

partnership with the private sector and may represent an equivalent economy of 0,03tEP / m² built or about 0.13 tons CO₂ eq / m² (CRUZ, 2015) to be built in AP3.

Ultimately, the creation of urban connection poles, which are currently installed where there are urban voids, aimed at strengthening the appreciation of the participatory planning and creating a permanent exchange between multiple experiences developed. All initiatives taken in subnormal areas could be replicated in formal areas of the neighbourhood, and vice versa. That is, the planning provides for the permanent connection between different areas of the neighbourhood, with multiplying actions that can be replicated in other districts of the city and other cities, leveraging local action to global levels.

The proposed actions, in general, require more social effort by inviting people to participate in the planning process, so that society can take ownership of the city.

The expected results are the spread of popular participation as driver of great changes in the urban environment, thereby contributing more effectively to preserve the environmental heritage and the development of the urban environment on a sustainable basis.

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ⁱ This research was developed from the diagnosis of sustainability prepared by the UNISUAM postgraduate group as part of the requirements for obtaining the title of specialist.

ⁱⁱ The Ecological brick eliminates the need for any firing process, reduces the waste in the construction site and it can be produced in less time, starting from the soil.

Toward the Urban Transition of Kragujevac: A New Life of Old Urban Generators

peer-reviewed paper

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After more than two turbulent decades of recent history, marked by the gradual break-up of Yugoslavia, international economic sanctions, internal political conflicts and a general social and economic crises, the cities in Serbia have been redefining their position and role in accordance to a new European development framework. Instigated on both institutional and non-institutional level, these changes have been visible in social, economic, environmental and spatial spheres, marking the beginning of the latest transition phase.

The focus of this paper is the city of Kragujevac, the fourth largest city in the Republic of Serbia, well-known as one of the most important industrial centers of Serbia after the WW II. The crises during the 1990s caused a significant economic decline, although after the 2000s and democratic changes, the general conditions were improved, attracting new investors and accelerating local economic development.

Considering the current situation and recently adopted "Integrated Urban Development Strategy for the Inner City of Kragujevac" (2012), this paper will elaborate two possible approaches toward the further transition, regeneration and development of selected urban spaces, based on the concept of temporary use and the increased interaction between the city and innovation processes. The presented proposals resulted from the work on master-theses, conducted under the supervision of professor Aleksandra Stupar at the Master course 'Integral Urbanism' at the University of Belgrade, Faculty of Architecture (2013/14).

1. Introduction

In spite of their growing importance in global networks of power, the contemporary cities have been facing numerous problems caused by a huge gap between their ambitions and real socio-economic conditions. The imposed development imperatives frequently collide, triggering a number of side effects – from illegal settlements, informal economy and urban disorder to social exclusion, conflicts, pressure and risk. Although recent strategies, plans and programs declaratively contain all necessary ingredients for democratic, technologically advanced and ecologically beneficent environment, the anticipated progress, social cohesion and flexibility frequently remain out of reach, challenging all spheres of governance, as well as the applied professional knowledge.

The methods of eradication, translocation, rehabilitation, adaptation or questionable 'beautification' of urban tissue represent typical answers to both growing social dissatisfaction and/or the pressure of global capital, while cities continue to be a testing ground for new approaches to environmentally advanced future. Focusing on neglected or devastated urban areas, such as outdated harbors, ex-industrial sites or former nodes of military or transportation infrastructure, urban interventions introduce modern generators of 'vibrancy', usually related to culture, business, technology, tourism and, most recently – environmental correctness, while the scale, objectives, methods and instruments could vary, depending on local circumstances.

Considering the complexity of almost endless list of variables which could direct urban development of every city, the case of Kragujevac (Serbia) represents an interesting example of fragile urban prosperity and shifting socio-economic conditions affecting current situation in this urban node. On its way toward a successful urban transition, the city adopted the "Integrated Urban Development Strategy for the Inner City of Kragujevac" (2012), a joint initiative/project conducted by the GIZ/AMBERO-ICON, the city of Kragujevac, local institutions and citizens. This Strategy represents a good platform for further development initiatives and interventions in/on urban tissue and it was, therefore, used as a realistic framework for the master projects/theses on the Master course 'Integral Urbanism' at the University of Belgrade, Faculty of Architecture (2013/14). Based upon program guidelines from the Strategy, the master projects used both academic/scientific approach and the knowledge from practice providing a new insight into development problems of the city and suggesting conceptual solutions to detected problems. The interaction between practice, research and education has produced interesting and up-to-date outcome and this paper presents proposals from two theses exploring the possibilities of the local economic development from the perspective of the temporary use of spaces and the multileveled relationship between city and innovation processes. The selected generators of further urban transition mutually upgrade the city image by using creative and knowledge economy, recreating and regenerating a productive and well-balanced city network able to merge global(ized) imperatives with local possibilities and expectations.

2. The theoretical background

Contemporary cities, described as postmodern, hybrid, intransitive and creative places, continuously upgrade their settings and activities. Efficiency, attractiveness and knowledge are recognized as mantras of every development document, while the flexibility of proposed solutions has to allow fast response to accumulated pressures, challenges and growing (re)fragmentation of urban environment. Therefore, every city traces its development upon an extensive list of regeneration and transformation programs which could be radical or moderate, driven by a selected 'theme' and focused on future or nostalgia. Being 'innovative' has also become a competitive advantage which could be recognized in different areas of urban life - from different phenomena, spatial typologies, various strategies, (in)formal processes, movements and activities, to the latest technologies and their amalgamation with urban hardware and software (Stupar, 2012). Considering the specificities of local context, this paper will focus on two spheres - culture and technological innovation, as possible generators of urban regeneration in Kragujevac.

2.1. The (con)temporary places of culture

Culture, as an important driver of urban regeneration, is essential to city attractiveness. Creative industries support economic strategies that allow the development and creation of new jobs, especially in times of economic crisis, but they also demand adequate places interesting to highly educated and creative people. The physical setting of cultural flows becomes, therefore, an indirect source of economic success and a catalyst of social development. Using culture as a tool for positioning and branding of a city has resulted in the creation of identity and social cohesion, encouraging community development and civic participation, as well as attracting various economic investments directed to both tangible and intangible resources (i.e. style, brand, design etc.).

Rapid changes in cities question traditional models of planning and architectural practice based on static models. Among the emerging types of urban spaces, there are those considered as temporary, provisional or ephemeral. Occupied in a certain period of time, often without a permanent character, they are mainly linked to informal processes. Arising from creative appropriation, these flexible spaces follow the changes of cities, easily adapting

to different scenarios of development. The conditions and causes for creating the temporary places could be very different. They could be the outcome of specific needs of a local community, emerging business/start-up companies or creative groups, resulting in improved quality of the city or a particular area which is currently not profitable. Consequently, the concept of temporary use refers to the temporary activation of free or unused land or buildings that do not require an emergency development plan. Creating a unique (but unstable) quality of temporality this concept actually prepares the selected site for some other activity which will last longer (Haydn and Temel, 2006). Although the concept of temporary use is generally not considered as a part of the natural cycle of urban development and is often associated with the crisis or the lack of development vision, there is an increasing number of successful cases all over the world. For example, the dynamic scene of Berlin's nomadic clubs and temporary events proves that the temporary use can represent an inclusive and innovative part of modern urban culture (Studio Urban Catalyst, 2003). Furthermore, the research conducted within the project Urban Catalyst (2001-2003) reveals potentials of applied mixed-use patterns consisting of arts, culture, education, leisure, sports, housing, manufacturing and trade. They attract heterogeneous groups of users, from start-up companies, migrants, refugees, to part-time activists and associations who are working in the same field or cooperate in a flexible way (Hentilä, 2003). Adaptive re-use of urban spaces (i.e. industrial heritage or other declining areas) also enables various, mostly vulnerable social groups to take action with a relatively modest investments. Creating a synergy they shape a new arena for collective learning (Hentilä and Lindborg, 2003). The existence of temporary use is directly related to the economic context of urban areas, acting as a catalyst for urban development. Berlin and London are among the best examples of cities that have taken advantage of temporary use for the development of small enterprises in order to regenerate economy. Berlin is currently experiencing an expansion of micro-entrepreneurship and 'culturepreneurs' (Lange, 2006), a specific type of entrepreneurship that experiments with new social, economic, and socio-spatial practices.

2.2. Setting the innovation nodes

The transformation of places which stimulate creativity and respond to future challenges has become an essential part of our urban reality. With increased economic and political power supported by local governments, cities have become incubators of innovation and change. Innovation also provides adequate means for positioning the city in contemporary global trends, using various forms of creation and networking to enable progress, stimulate economic development and prevent negative population migration.

According to Joseph Schumpeter (1934), innovation is the main driver of long-term economic growth and social change. He defined the concept of innovation broadly, claiming that it includes new products, production methods and sources of supply, as well as the exploitation of new markets and new ways of organizing companies. Most scientists and experts form definitions and arguments concerning innovation around these principles, emphasizing that innovation represents an essential element for the formation of values and the development of modern society (Solow, 1956; Mansfield, 1972; Romer, 1987; Nadiri, 1993; Edquist, 1997; Agarwal et al., 2003).

In a post-industrial knowledge economy growth depends not only on the chain of production and procurement, but also on other factors, such as human and intellectual capital. Scott and Storper (2003) state that "human capital is formed *in situ* on the basis of the education, training, learning through practice and a wider process of socialization" representing a dynamic combination of factors that often require a certain amount of spatially specific face-to-face interaction.

Despite the forecasts predicting the "death of the place and the distance" due to increased ICT networking, a local character still survives as an essential feature of economic and social life. The connection between locally-specific resources and regional level shows that capacity related to the character of a company and a learning processes can lead to regional (and global) competitive advantages if they are based on local capacities and capabilities

(Malmberg and Maskell, 2002; Wolfe, 2003). The continual existence of institutional support, built structure, knowledge and skills shapes a solid framework for innovative development. Cities contribute to economic development and prosperity supporting the creation of knowledge by linking entrepreneurship, people and institutions. Encouraging the exchange of ideas, they also facilitate localized knowledge spillovers and enable innovation.

There are two prevailing explanations of why cities are essential for innovation: the theory of agglomeration and specialization theory. The agglomeration provides a stimulating environment for entrepreneurship locating companies, providing access to a wide range of highly-trained and professional staff and allowing the exchange of ideas and information (Marshall, 1920). On the other hand, highly specialized economy provides comprehensive collaboration within the company, better matching of labor and labor mobility within companies, as well as the possibility of sharing supply chains. These two types of economies in the cities are not exclusive, and often coexist, especially in large urban areas. Innovation is successful due to the development of institutional cohesion and the creation of local, social and cultural conditions that lead to economic growth. Such institutions include local governments, scientific organizations and institutions, the representatives of business organizations, consulting firms for economic development and research centers.

Innovation district, used as a trigger of economic development, represents an area based on cooperation between higher education institutions, public sector and private industry, as well as science and technology. Ensuring the inflow of investments, it aims to support interdisciplinary partnerships/mutual benefits, which is the main characteristic of the knowledge economy. The research conducted by Michigan Municipal League in innovation districts in Pittsburgh, Boston, Portland and Toronto, 22@ Barcelona and smaller scale districts like Kendall Square and Cambridge, indicates common features (concepts), regardless of financial or thematic framework. Although some innovative districts are based on certain sectors, they all focus on individuals that create new opportunities, products and services. Consequently, the innovation district, according to studies above, should include:

- At least one university which is crucial for education and entrepreneurship networking;
- Programs for connecting business incubators with investment possibilities;
- Infrastructural investments;
- Public-private partnerships;
- Affordable housing;
- Mixed use;
- Open space accessibility and green infrastructure (Michigan's Urban and Metropolitan Strategy, 2012).

The emergence of innovative districts presents a new model based on the principle of cluster, including all the benefits of city locations. Since open, innovative economy requires closeness and integration, knowledge transfer takes place smoothly within and between clusters, companies, workers and institutions which support the knowledge economy. The growth of open innovation and networks enables the creation of ideas, as well as the collaboration and cooperation between various sectors (NESTA, 2009). These trends have influenced the change in urban planning and design of places which serve as catalysts of innovation. In general, innovation districts rely on redesign and conversion of buildings and business premises, supporting collaboration and open innovation. They also provide physical and social platform for the growth of entrepreneurship - incubation spaces, collaborative spaces, social networking, competitive products, technical support and supervising.

3. Kragujevac: generating the change

In this section the context of the city of Kragujevac will be presented, as well as two proposals which resulted from master-theses based on concepts and ideas elaborated in the previous part - the temporary use of derelict ex-industrial and ex-military spaces, and the

establishment of new, competitive innovation nodes/districts, generated from existing university and research nuclei. Due to its specific socio-economic background, identified problems and potentials, as well as the proposed official development strategy of the city, Kragujevac represents an excellent urban polygon for testing and applying locally adjusted variations of these concepts. The first project 'Regeneration of neglected spaces by applying the temporary use concept' (author Biljana Grujičić) - is focused on the improvement of the cultural and tourist offer. It is structured around the concept of temporary use which stimulates urban renewal and regeneration integrating art and cultural strategies into neglected urban spaces of abandoned industrial areas. The second project - 'Innovation district Kragujevac' (author Aleksandar Grujičić) - uses a link between cities and innovation, as a ground base for economic growth.

3.1. The context

The city of Kragujevac, as the administrative center of Šumadija County, is located in central Serbia, 140 km southeast from the Serbian capital Belgrade. Its historical importance could be traced back to 1818, when it became the capital of Serbia, liberated from Ottomans. During that period, the city experienced a rapid urban development, establishing first gymnasium in Serbia, as well as the first court, first theatre and other public facilities. The industrialization of the country also started in Kragujevac, with the first military cannon being made in the military factory "Topolivnica" (1853). The period between two World Wars was also intensive for the city, which became the most important military and industrial center in Yugoslavia.



Figure 1. The position of the city of Kragujevac
https://commons.wikimedia.org/wiki/File:Mapa_Srbije.svg

After the Second World War, the process of urban renewal was conducted following the economic development which positioned Kragujevac as the center of the Yugoslav car industry. During this period, large investments were directed to activities related to manufacture, housing, public and infrastructural facilities. In the mid 1970s the population has exceeded 100.000, but the crisis during the 1990s caused a significant economic decline, resulting in abandoned and devastated industrial areas in the city centre. The overall urban identity was changed leading to more spontaneous and uncontrolled urban development. After the 2000s general conditions of the city were improved, opening new possibilities and attracting investors (for ex. Fiat) which enabled acceleration of local economic growth.

Today, Kragujevac has almost 200.000 inhabitants and according to the official planning documents it is marked as an urban node of national interest. However, the latest phase of development, characterized by increased population and the higher concentration of facilities

and activities in inner-city areas, has caused numerous problems, especially in the outdated traffic infrastructure. Simultaneously, the attractiveness of the central city area is reduced due to the inadequate urban connectivity, poor and insufficient maintenance of public spaces and architectural heritage. Therefore, an urgent revitalization and modernization of devastated central and northern areas was needed in order to activate urban potentials and increase overall competitiveness of the urban space.

The "Integrated Urban Development Strategy for the Inner City of Kragujevac", adopted in 2012, represents an important document which aims to adjust and improve current infrastructure of the inner city zone by using local and other available potentials for the future development. Sector goals and guidelines were based on the analysis of the current situation which also determined the target zones and their anticipated (sustainable) improvements. The strategy is based on five key-issues:

- Urban structure and the city appearance (revitalization of abandoned facilities and public spaces in inner-city areas in order to reshape urban identity);
- Infrastructure and traffic (rehabilitation and regulation);
- Economy and tourism (reactivation of abandoned sites and upgrading of tourist supply);
- Education and social services (extension, interconnection of facilities);
- Culture, leisure and recreation (preservation of cultural heritage, new events and upgrading of sports facilities).

Following the main trends of contemporary urban development, the recommendations of the Strategy included imperatives of accessibility, environmental quality, sustainability and public participation.

Considering all these elements, as well as the characteristics of the identified target areas, the students were obliged to select and apply some of the up-to-date development/generative concepts which could be recognized in contemporary cities (especially those with similar background, size and problems), developing their own proposals/projects. Having in mind that the whole process was synchronized with the city authorities and planning institutions from Kragujevac, the main idea was to create a set of solutions to identified problems, which could be later used as an input for future activities - from short-term/immediate actions, to long-term programs of urban transformation.

3.2. Redefining the cultural landscape

The central area of Kragujevac is divided into several parts, which are morphologically and functionally diverse. The highest potential for the application of the concept of temporary use could be detected in abandoned industrial facilities and ex-military zones to the west and northwest of the city center. In close proximity, on the south bank of the river Lepenica, there is the site of the former complex of "Zastava" factory. The northern part of this zone is an integral part of central urban area and a part of it has been bought by the city of Kragujevac in order to be reused for cultural and educational purposes. These spatial segments have a low level of urbanity.

From 2001 to 2009 there was an increase in the number of unemployed in industrial sector, while the number of employees in commercial and service activities did not change. However, the absolute number of unemployed is quite high. After the breakup of Yugoslavia, Kragujevac detected a decreased number of tourist visits, while 2005 represented a turning point which marked an upward trend in the number of both domestic and foreign tourists. However, the network, capacity and the quality of facilities of existing cultural institutions is inadequate. Considering all these elements, the central zone of Kragujevac could be used as a polygon for the application of the concept of temporary use which would raise the attractiveness of the location via the reactivation of abandoned industrial complexes, temporary installations and cultural events.

Based on the criteria of proximity to industrial heritage, concentration of open public spaces and the scope of the inner-city area, three sites/generators have been recognized for positioning the projects of temporary use: A) Vojno-tehnički zavod (Military-Technical

Institute), B) Donji (Mali) park (Lower (Small) Park), and C) area 'Prodor'. The location of the Military-Technical Institute is the central place for five temporary initiatives: "Open Library", "Urban Gardens", "Movement" (open-air cinema), "Art Colony" and "Magic on Ice" (open-air skating rink). The area of Lower Park is used as an intersection of paths linking Military-Technical Institute with 'Prodor'. The aim of this project is to reactivate abandoned buildings and open spaces, to increase quality of cultural activities and regenerate the site while preparing it for long-term use.



Figure 2. The areas selected for the application of the concept of temporary use

The project for the Military-Technical Institute is named "Industrial resolution", metaphorically representing major activities, while the area of Lower park should serve as a display for the projects of visual arts guiding users/pedestrians toward the meeting point in the city centre, at the end of the area 'Prodor'. These projects include a so-called 'Reading room', 'Meeting point', 'Kinetic wall', 'Anti-selfie' and 'The house of tea'. The culmination point of this direction includes temporary pavilions which would change over the season, according to a design theme launched by the Military-Technical Institute.

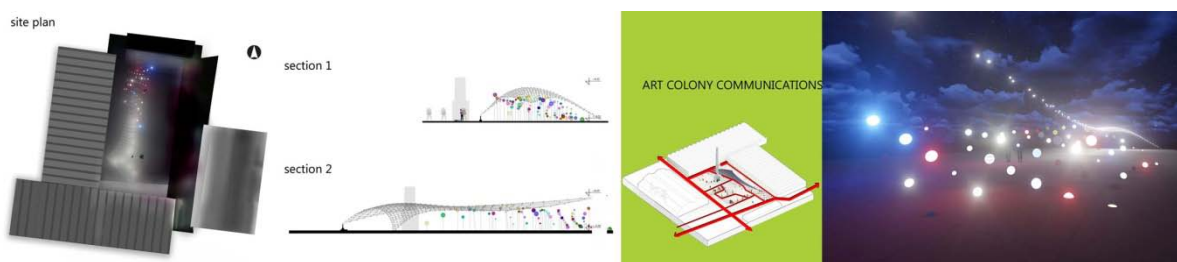


Figure 3. Temporary project "Art Colony", location A) the Military-Technical Institute

Establishing temporary spaces in Kragujevac would lead to a specific place making and the creation of a local identity rooted in the cultural heritage and modern tendencies. Temporary use tends to improve the general conditions of the surrounding, creating a positive influence on the anticipated permanent land use, its further development and future investments. It would create and upgrade new public spaces, stimulating collaborative practices.

3.3. Innovation District Kragujevac

Developing the innovation district in the central zone of Kragujevac requires an analysis based on the general concept of innovation district and the data about current land use, the existing housing stock, economic structure and the disposition of educational institutions. According to the "Integrated Urban Development Strategy for the Inner City of Kragujevac", housing occupies 40.2% of the central zone, while industry covers 20.3% and open green areas 3.8%. This structure is suitable for the development of an innovation district because industrial heritage could be transformed into new facilities for innovative industries. Existing residential buildings could also have a very important role in providing additional housing units or it could be upgraded to mixed use. Underutilized areas provide opportunities for complex activities and higher density. The anticipated positive trend in population growth by 2030 should provide the necessary human capacity for technological innovation. The strategy also states that the general development of abandoned industrial sites has a high potential (due to planned transformation of business and commercial activities). Thus, the regeneration of brownfields opens a possibility for introducing innovative content/facilities (offices, research institutions and laboratories) and combining it with residential and commercial buildings.

The structure of employment (49% in manufacturing and 50% in services and commercial activities) indicates a high importance of manufacturing sector, within which the process of innovation manifests the most. This arrangement naturally affects the innovation capacity of the city, while the dominance of small businesses represents a potential for connecting various activities able to form a network for the exchange of knowledge and innovation. However, the University of Kragujevac is seen as a key actor able to instigate networking with local entrepreneurs in order to create more defined research links, related to business activities. Furthermore, a large number of students within the region is considered to be an indicator of superior regional innovation potential and a guarantee of intensive interaction between young innovators and local or international companies.

The project of the Innovation District Kragujevac proposes a spatial concept based on a cross-linking of specific points around the central zone. This type of connection defines four categories of spaces:

- revitalized industry, as a larger zone which is a source of innovation and encouragement;
- educational institutions which provide human capital and are directly related to industry;
- system of interlinked educational and commercial facilities;
- green infrastructure, which supports user interaction, affects social capital and knowledge transfer.

The Innovation District represents a double node of the anticipated innovation network, which uses the advantages of high accessibility to all elements. Since the selected area currently mostly consists of single-family houses, the available free space has a sufficient capacity for future merging of educational/research/entrepreneurial activities.

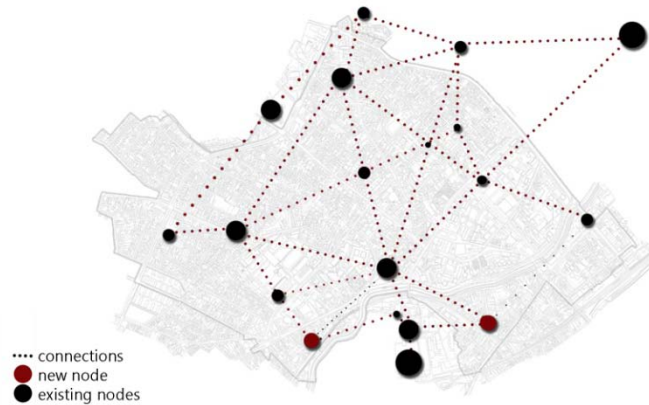


Figure 4. The proposed innovation network

Zone A is dedicated to technological innovations (i.e. IT companies). The connectivity is established via overlapping activities - for example, academic/educational institutions and IT sector. Zone B hosts innovation companies focused on environmental issues. Green areas are dominant in this zone, promoting ecological imperatives. Eco-design companies are also positioned in this area, as well as experimental adaptation units and institutes and laboratory for research on climate changes.

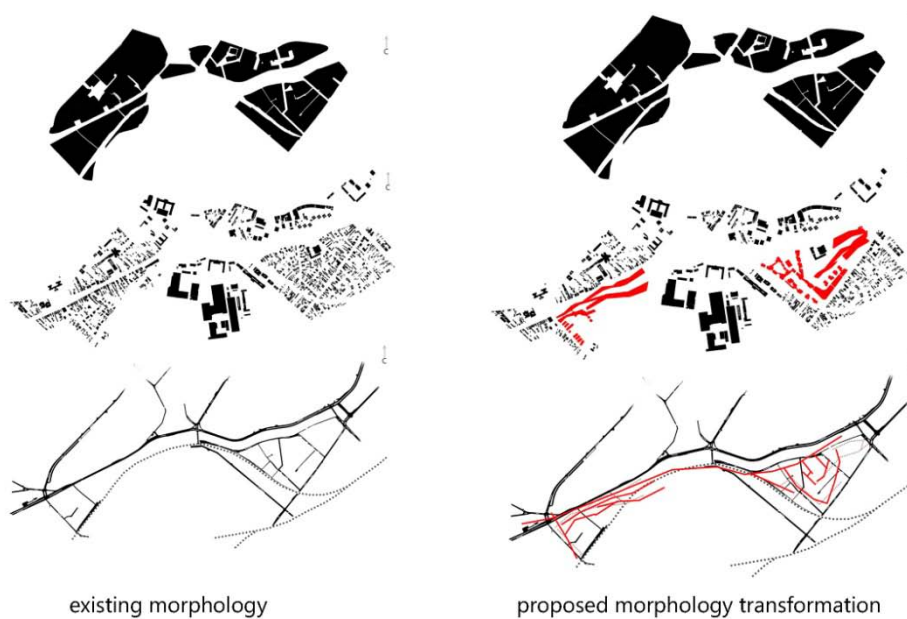


Figure 5. The morphology of the Innovation District

The project keeps existing block structure, while several places promote formation of macro-blocks in order to redefine inner communication. The buildings are transformed into longitudinal formations, while existing typology is preserved on the outer edges in order to maintain low density. Inner communications also allow integration with the river and the railway corridor.

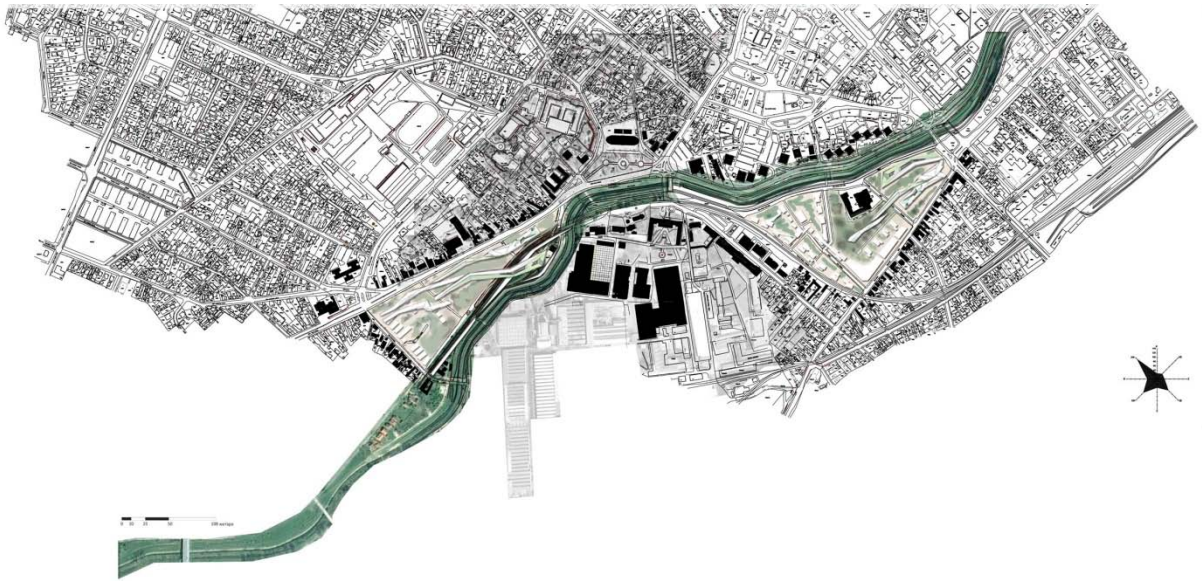


Figure 6. Innovation District Kragujevac project- composition

This project recognizes and suggests the necessity of formulating a strategy on innovation, which would represent a framework for interdisciplinary collaboration. Creating a cluster of resources enables the city to face and keep up with global competition, where encouraging close connections between the industry, creative, education and public sector improves the Kragujevac micro activities, upgrades urban identity and promotes local economic development.

4. Conclusion

The process of continuous transition represents a necessity for every city eager to position itself in the global and regional hierarchy, but the boosting of competitive advantages usually demands enormous resources and skillfully implemented strategies. The frictions generated between ambitions and growing problems have generated several new or modified development concepts which could ease some tensions and bridge the gap between uncertain conditions, turbulent reality and anticipated visions. The application of the concept of temporary use and the activation of innovative district(s) are recognized as promising drivers of urban development and the city of Kragujevac could certainly benefit after considering some of the elements introduced by presented master-projects. Although currently in a domain of speculations and paper-architecture, these proposals are based on the officially adopted development strategy and their possible outcomes could contribute to a new urban identity. The ideas elaborated in these projects could also influence a higher attractiveness of space, providing future investments in the inner city region.

Obviously, the link between education and innovation could be established on many levels. Therefore, it is always interesting to have another perspective on emerging trends, allowing a flexible and inspiring knowledge exchange in which everyone gains - from students and professionals, to entrepreneurs and local community. However, the problem of implementation remains, reminding us that urban development represents just one of many indicators of social (dis)balance and its economic and technological premises.

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Understanding neighbourhood with an activity-based approach to scientifically measure and evaluate its performance

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1 Introduction

Regeneration practice in the UK has the history of about 30 years. Historically, practice has ranged from economic policies, through physical design and place making strategies to more complex initiative to shape and organise urban spaces as a social phenomenon in order to change life experience of the urban poor (CREW 2012). Since 2012 the National Planning Policy Framework (NPPF) in England emphasises on the local character of identified spatial locations to meet socio-economic and environmental requirements of sustainable development. The locations are neighbourhoods. More importantly, it is stated that planning decisions “address the connection between people and places and the integration of new development into the natural, built and historic environment” (Department for Communities and Local Government 2012, p.13). An appraisal of a decade regeneration practice in the UK shows that it has not delivered expected results and displaced problems elsewhere (Nisha and Nelson 2012). It, however, benefits the middle and higher income groups. The main identified reason is the incompatibility of the objectives of the regeneration schemes and the local social needs (Gosling 2008; Madanipour 2006; Nisha and Nelson 2012). Madanipour (2006) argues this issue makes some to think there is a dichotomy between any development and social factors. Regeneration has been “inconsistent in delivering effective, socially inclusive and equitable outcomes, raising concerns over its potential to cultivate life and character into declining urban spaces” (Nisha and Nelson 2012, p.14).

This paper is a part of the wider research about regeneration neighbourhoods with an activity-based approach. The research intends to inform designers, planners and policy makers about how to measure, evaluate and model the function of neighbourhood in the city, and how to maximise the certainty and reliability of urban policies, service programmes and regeneration proposals in neighbourhood. The main contribution of the research is its activity-based approach. This paper as a first of paper series introduces this approach, and focuses on the key concepts and the clustering method. The future publications by the author will bring more insights into the other aspect of the wider research. The case study is the Brunswick neighbourhood in Manchester, UK. The regeneration of this neighbourhood has started since January 2014. After this introduction, the case study and the aim of its regeneration are presented, followed by the data collection method in the third section. The fourth section has two sub-sections: first, the concepts of the activity-based approach for understanding neighbourhood, and second, the delineation of eight activity attributes to redefine activities with the K-means clustering technique. The paper concludes how the analyses with an activity-based approach contribute to various actions and decisions in the regeneration process of neighbourhood such as the Brunswick neighbourhood.

2 Brunswick neighbourhood

The Brunswick neighbourhood covers 29 hectares with the population of 3,540 in 2011 (HACT and OCSI 2013b; Solutions for Brunswick 2013). This gives a very high density of 122.1 people per hectare. It is located in the south of the city centre and is part of the Ardwick ward in the central Manchester (Figure 1). The Ardwick ward in general plays a reception role for the new migrants in Manchester (Manchester City Council 2006). In 2012, the population turnover rate per 1,000 people was +11, in a sense that 456 people moved into the neighbourhood and 445 people moved out (HACT and OCSI 2013a). Hence, the neighbourhood is a place for the black and minority groups by about half of the population.

The regeneration of the Brunswick neighbourhood has been an agenda for the Manchester City Council since 2007 (Manchester Partnership 2012; Manchester City Council 2007; Manchester City Council 2013). Before the regeneration starts, it was classified as one of the 5% most deprived neighbourhoods in England (Department for Communities and Local

Government 2011). In 2013, about half of the population claimed the Council Tax Benefit and 14.5% claimed income and/or employment support benefits (Valuation Office Agency (VOA) 2008; HACT and OCSI 2013a). At the same time, more than half of the population was economically inactive and about a third of the adults did not have the right level of qualification and skills to get a job. 12.6% of all residents had limiting long-term illness and only a third had healthy eating. Just under 60% of all houses are council homes, while only about 5% of all houses are worth more than £52,000. In average, there were 63.5 crime incidents per 1,000 people in Brunswick.

The vision to regenerate the Brunswick neighbourhood is: a transformed and successful neighbourhood with better linkages with the Oxford Road Corridor in the west, the city centre in the north and Ardwick Green in the east. Brunswick will be a neighbourhood of choice for existing and new residents with a wide range of high quality housing, shops and services within a safe and attractive environment (interview with the project manager in 2013). Neighbourhood of choice is a concept in the Manchester planning policies that seeks to transform neighbourhoods to “areas where people choose to live and work, which attract new higher earning residents while encouraging local people to stay in the area and benefit from this renaissance” (Manchester City Council 2007, p.8).

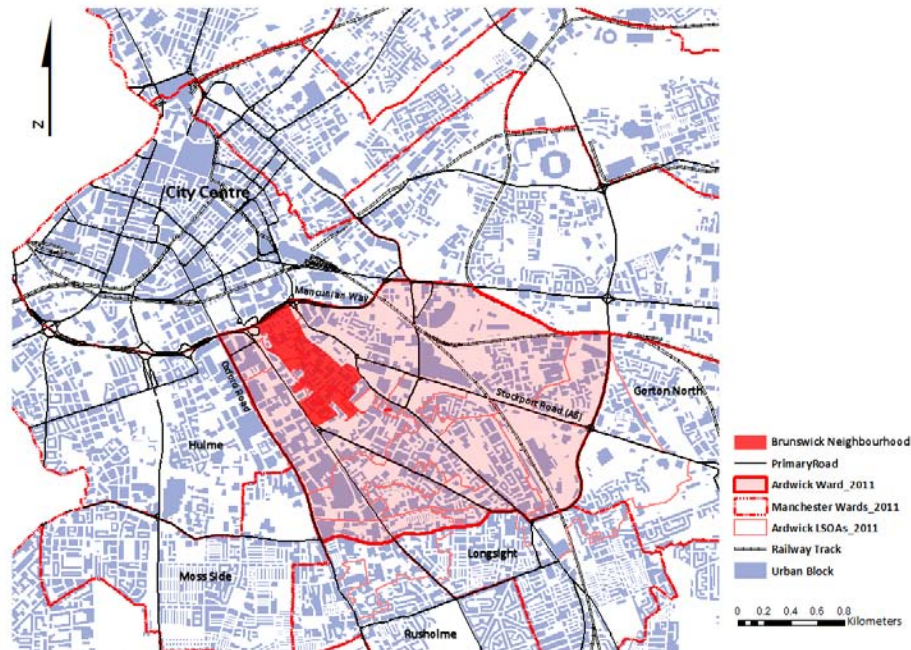


Figure 1: geographical location of Brunswick in the Ardwick ward

3 Diaries as a data collection method

Surveys are the common methods of collecting data of daily activities in literature (Jiang et al. 2012; Harvey and Taylor 2000). Participants are recruited as diarists to record their daily activities in diary booklets or via an online toolkit (Lee et al. 2000; McNally et al. 2003). The same method with a booklet was tested in the Brunswick neighbourhood. Three factors contributed to the failure of this attempt. First, low-skilled residents did not have competency to read maps. Second, every single activity from chatting to a neighbour to going to work was important for research at the neighbourhood scale. Many daily activities did not usually happen discretely. Hence, filling activity sheets was confusing and complicated for the residents. Third, the residents thought activity recording was a time consuming task and an extra pressure on their daily chores. Consequently, the researcher filled the diaries via structured interviews with the residents. The time target was a week period. Mostly, the residents were interviewed twice in a week to capture almost all daily activities from their short-time memories. The diaries comprised information about the social characteristics of

the interviewee and his/her household members, as well as about his/her house. The data of each activity comprised the information about time (the point at which activity was conducted including weekday/weekend and morning/afternoon, duration of activity, and position of activities in the daily schedules), about place (the geographical location of conducting activities and routes to destinations), and about actors (with whom activities were performed, whether there was any social interaction in destination, and who could conduct the activity instead of the interviewee). In the end, 18 residents were interviewed and 298 activities of 52 individuals (including the interviewees and their household members) were recorded. Table 1 shows the characteristics of the interviewees and the individuals. The residents aged below 16 years old and above 69 years old could not be interviewed because of the ethical regulations at the University of Manchester.

Table 1: age and gender distribution of the research sample

	Research Sample			Brunswick neighbourhood	
	Interviewee characteristics	Individual frequency	Individual percentage	Frequency	Percentage
Age					
under 16	N/A	21	40.4%	825	23.3%
16 ≤ age < 35	7	13	25.0%	1267	35.8%
35 ≤ age < 55	7	12	23.1%	981	27.7%
55 ≤ age < 70	4	6	11.5%	290	8.2%
70 and over	N/A	0	0.0%	177	5.0%
Gender					
Female	15	23	44.2%	1682	47.5%
Male	3	29	55.8%	1858	52.5%
Total	18	52	100.0%	3540	100.0%

4 Activity-based approach and neighbourhood research

4.1 Key concepts of the activity-based approach

Activity-based approach in general began from research on human behaviour and then it was particularly found in modelling travel behaviour (Chapin 1974; Hägerstrand 1970; Hägerstrand 1989; Jones 1983) and the cost analysis of economic activities (Scheinberg et al. 2010; Kurdve et al. 2015). By definition, *activity* is a physical and/or social interaction of an individual with environment (Rindt et al. 2002). People travel based on their demand to participate in a set of activities; participation in these activities comprises people's preferences and desires (Clarke 1986; Bowman and Ben-Akiva 2001; McNally and Rindt 2008). The activity set form *activity agenda* for an individual to participate, and the analysis of a particular activity and movement should be conducted in the context of the agenda. When the activity agenda is formed, the individual faces spatial-temporal constraints existed in different locations at different time, as well as personal constraints. Moreover, activities on the agenda have a series of attributes such as timing, duration, locations, frequency, transport and institutional considerations and inter-personal attentions. Based to the constraints, the person modifies the attributes of activities, and decides which ones to participate, where, with whom, at what time, for how long, in what priorities, with which mode of transport and from which route. The outcome of this decision is called *activity schedule* (Doherty and Miller 2000). *Activity pattern* refers to the collection of activities and trips actually performed by the participant during a day (Dong et al. 2006). Hence, activity patterns show the decision processes and the constraints, which influence the formation of the patterns, as well as the complex characteristics of the built environment. Finally, *activity episode* is a distinctive set of the continuous activities starting from home and ending at home during a day (Rindt et al. 2002).

A diary of a Brunswick resident whose workplace was in the Brunswick neighbourhood for a day was as follow: he went to his workplace at noon and used the minibus to pick up people for a class at 2 o'clock. These people lived in Grove Village and Victoria Park [two

neighbourhoods in the south of the Brunswick neighbourhood]. He brought people to the class, participated in the class for 2 hours with the others, dropped the participants off to their homes, returned the minibus, and finally went home. In the evening he shopped at the Tesco Local [local supermarket] on the corner of the Brunswick Street with his wife for about twenty minutes and went back home.

The activities of this resident were picking up and dropping off the people living in other neighbourhood, training at class and shopping. The resident had two activity episodes, as it is shown in Figure 2. The first episode contained three activities and the second one contains an activity of shopping. His daily activity pattern comprised both episodes. The constraint of his working environment was that the class happened at the fixed time, and also he needed to use the minibus at his workplace to pick up/drop off the other participants. This situation made him to decide to have training in the afternoon and then do shopping at night. He also needed to leave his home much earlier at noon, and to get back home not straight after the class. As the local supermarket was very close to their homes, he and his wife walked to Tesco. These descriptions shape the activity schedule of this resident. If this resident had a plan to do shopping in the morning instead of the evening in the first place, his activity agenda would be to do grocery shopping first and then to go to the work in the afternoon. He might have changed his agenda because of his wife not being able to make it in the morning, or the opening time of the supermarket that day.

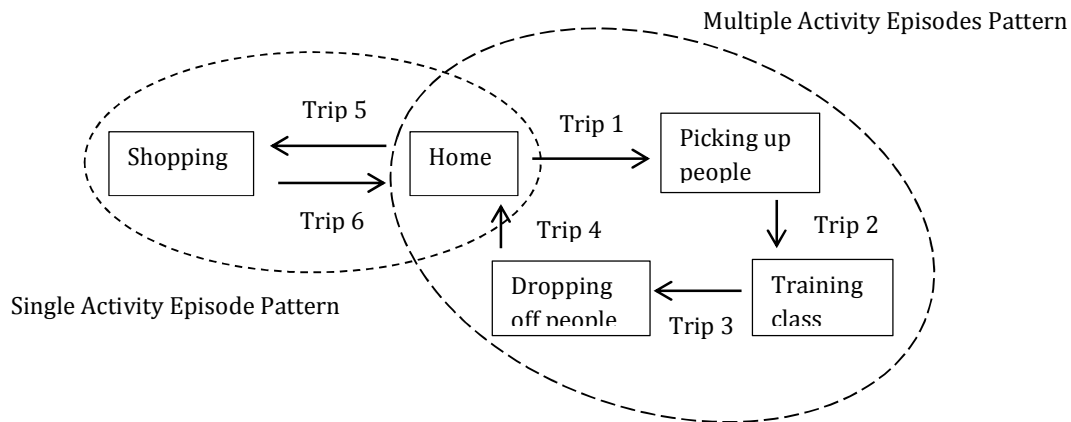


Figure 2: activity episode patterns of the daily activity schedule of a Brunswick resident

4.2 Clustering activities

In order to identify the activity pattern of the Brunswick residents and its links with the socio-demographics of residents, recent studies about grouping activities have two streams of research: first, grouping activities by type such as work, school, leisure and shopping (e.g. Davidson et al. 2007; Gan and Recker 2008; Beckx et al. 2009); second, grouping activities by their characteristics, which have effects on forming activity scheduling, such as frequency, duration, location and time (e.g. Delespaul et al. 2004; Doherty 2006; Mokhtarian et al. 2006; Akar et al. 2012). The former studies attempt to divide activity types into three categories (Doherty 2006; Mokhtarian et al. 2006): mandatory activities such as work and school that are fixed in time and space, maintenance activities such as shopping, banking, and medical appointments, and discretionary activities such as leisure, social events and family trips that are assumed to be more flexible. The latter stream of research argues that activity patterns are structured based on the activity attributes.

Regarding urban research, there are not distinctive boundaries between mandatory, maintenance and social activities in our environment due to the characteristics of activities. They occur in an interwoven pattern. For instance, a person who has a meeting with a

colleague in a park chooses to meet his colleague from the nearest bus stop. They talk to each other while walking to the park and then spend an hour outside a coffee shop in the park. In other words, they interchange the activities of walking, sitting and talking. Three aspects of activities contribute to this complex pattern (Mokhtarian et al. 2006).

First, the ability of *multitasking* shapes the daily life of people and their choice of activity. For instance, an employed mother in Brunswick prefers to work in the neighbourhood area although she can drive to the major employment hubs in Manchester. She is working part time in the local primary school. Her preference is due to the ability to be in the place where her sons are studying. She would like to know about new subjects that her children learn at school, to monitor her children's progress, and to get involved in the social activities at school while she works. By doing this, she is able to save time for her household obligations, and to be with the other members of her family.

Second, the activity patterns do not happen in a discrete set of activity episodes via an iterative process. They represent the *interaction trajectory* by breaking big chunks of obligatory and fun activities into smaller ones. For example, visiting the community, visiting a family member, shopping from a superstore, working for a couple of hours, shopping from the local stores, doing household chores for an hour, going back to work for another couple of hours, doing the rest of housekeeping, and going out for her children performance in the evening were the sequence of the daily activities of a Brunswick resident. In this pattern, shopping from the local store is interposed between two obligatory activities at work and at home because the store is located on the way to home. At the same time, the activity of shopping did not happen in one location.

Third, *people's perception* of different activities is varied. For some people's workspace is where they can interact with those who share the same values. Thus, it is not only an obligatory activity; it is a place to chat and socialise. In this sense, work has discretionary aspects. Therefore, *the multi-attribute nature of activities increases overlaps and multitasking*. Eight attributes of duration, spatial flexibility, temporal flexibility, personal flexibility (1-3), transport dependency and planning time were observable from the diaries of the Brunswick residents. They were defined and measured as follow:

Duration: measured as the duration of each activity in minutes, expressed as the difference between the start time and the end time of conducting an activity including travel time.

Temporal flexibility: measured as whether a certain activity has been recorded at different time of day. This type of flexibility was considered as a dummy variable. If the same person performed grocery shopping at different times, the temporal flexibility for this activity was valued 1. At the same time, if another interviewee performed this type of shopping at different times, the temporal flexibility for this activity was valued 1 for both residents.

Spatial flexibility: measured as different locations considered for a certain activity. Likewise to temporal flexibility, it was considered as a dummy variable. Value 1 showed the same activity recorded in different locations either performed by the same person or other residents.

Personal flexibility (1-3): measured as three means. Personal flexibility 1 was about whether another person either between family members, friends or community could take responsibility to do an activity for an individual. For example, a resident took care of her mother on weekends. In case she was busy that time, she would have asked her sister to do it. Personal flexibility 2 was about whether the activity conducted with other people, specifically family members and friends. Personal flexibility 3 was about whether an individual expected to socially interact with other people during his/her participation in an activity. All three means of this flexibility were similarly measured as dummy variables.

The first and second types of personal flexibility could be coded from the data in the diaries. The following analytical process measured personal flexibility 3. The activity participation of the Brunswick residents happens in different social contexts. By assuming how a resident communicates during his/her participation in an activity, six forms of social interactions can

be identified (Table 2). A participant in activities such as shopping and jogging might see many people and have very short casual conversation with these people. The participant does not necessarily know them and their communication is not the purpose of the participation. In this sense, it is assumed the individual is in the public context of city. If a resident is forcefully in a location because another person would like/need to participate in an activity and the resident's participation in that activity terminates as soon as the other person leaves, the resident will be in the public context of another person. Similarly, in this social context, communication with other people is not anticipated or certainly desired. The social interaction of the residents (personal flexibility 3) in the public context of city and in the public context of another person was valued 0.

Performing activities with family acquaintances and friends is the only private context, which a resident absolutely intends to communicate and socially interact. Likewise, participation in an activity within which other people who have a common vision and a sense of belonging – i.e. community – also contributes to social interaction. The former is called the private context and the latter is the context of community. Furthermore, the places like working and educational environments oblige their participants to communicate with their colleagues and peers. Equally, going to the public services such as health centre, bank and beauty centre results into the one-to-one social interaction between the participant and the service provider. Therefore, the social interaction of the Brunswick residents in these four contexts was valued 1. It is important to note that the participant could have family member(s) or friend(s) with himself/herself in any context. This information is measured in the attribute of personal flexibility 2 and did not have any effects on measuring personal flexibility 3.

Planning time: measured as whether a certain activity was routinized or pre-planned at least a week ago. As a dummy variable, value 0 was an indicator of spontaneous or less-than-a-week planned activity.

Transport dependency: measured as motorised modes of transport were used in conducting a certain activity. Walking and biking were valued 0 for this dummy variable.

Table 2: six social contexts in measuring the attribute of personal flexibility 3

Individual (+ family/friend) in the public context of city	
Jogging/walking/biking	Getting takeaways
Looking for jobs	Going to park/museum/library
Shopping	Swimming
Window shopping	Visit Christmas market for fun
Individual (+ family/friend) in the public context of another person	
Children performance	Children playing/Baby group classes
Take food for children	Dropping off/picking up children
Children swimming lessons	
Individual (+ family/friend) in the private context	
Visiting family, in-laws and friends	
Have a day out with family and friend	
Individual (+ family/friend) in the context of community	
Boxing/football	Coffee morning
Circuit training	Parents' reps meeting
Praying	Vocational classes and skills
Voluntary	Funeral
Individual (+ family/friend) with one-to-one interaction with another person	
Visit GP/dentist/midwife	Legal advice bureau
Banking	Administrative documents
Barbershop	Post
Individual (+ family/friend) in the context of obligation	
Work or College	After school clubs

Reclassification of the activities of the Brunswick residents was run with the K-means clustering technique. K-means is a partitional algorithm, which generally speaking clusters data points as a partition of the data. Here, if n is the number of activities (data points) with d -dimensional characteristics (eight attributes of activities), an $n \times d$ matrix is the input to K-means. The full description of the K-means algorithm and the configuration process can be found in Jain (2010) and Moore (2001). K-means clustering is a feature in many statistical applications including SPSS, STATA, R-statistics and MATLAB.

5 Discussion

Diaries counted in 298 daily activities. By eliminating the activities with the same attributes but performed on different days, the participants reported 203 one-off activities. These activities can be categorised by type in nine groups of shopping, leisure, services, social, work and/or school, just for kids and others (Table 3). In England, the scale of the wards in the cities is the focus of many local planning documents. Therefore, exploring how much the Ardwick ward attracts the daily activities of the Brunswick residents gives some insights into the performance of the facilities and services available at this scale. Figure 3 compares the proportions of 298 activities in each group inside and outside the Ardwick ward. One quarter of all activities is the participation of adults in the just-for-kids' activities in which they do not engage with the other people. Although the adults' engagement with the community through participatory just-for-kids' activities is much less in the ward, all of this type of activity are conducted inside the Ardwick boundary. Another type of activity, which only happens inside the Ardwick ward, is non-obligatory work/study. The sample presents the Brunswick residents mostly prefer to conduct two types of activity outside the ward, shopping and obligatory work/study. The residents' preference in shopping from outside the ward is only 1% higher than the shopping places available in Ardwick; however, the working and studying opportunities outside Ardwick are about 6% higher. Figure 4 displays the proportions of one-off activities inside and outside the Ardwick ward. The variation of shopping and obligatory work/study activities outside Ardwick is significantly higher than inside according to this figure. Above 15% of isolated shopping activities happen outside compare to above 11% inside. Isolated obligatory work/study activity type is about 6% more likely to happen outside. On the other hand, the ward accommodates more proportions of isolated leisure and social activity types. 6.4% of leisure activities and more than 11% of social activities happen inside compare to 3.4% and 9.4% respectively outside. Similar to the analysis of all activities, the majority of non-participatory just for kids happen inside Ardwick. However, the main activity type in this figure is shopping on contrary to the previous figure.

Five configurations of K-means clustering were run with SPSS to find the interactions between the attributes of the activities conducted inside and outside the Ardwick ward:

- I. Configuration of temporal, spatial, and personal (1-3) flexibilities
- II. Configuration of temporal, spatial, and personal (1-3) flexibilities and duration
- III. Configuration of temporal, spatial, and personal (1-3) flexibilities and transport dependency
- IV. Configuration of temporal, spatial, and personal (1-3) flexibilities and planned activities
- V. Configuration of temporal, spatial, and personal (1-3) flexibilities, duration and planned activities

In K-means clustering, the values of 3 and 4 as the numbers of clusters ($K = 3$ and $K = 4$) were valid for the configurations. The Mean Square Errors (*MSEs*), produced after each run, indicated how much each attribute had effects on forming the activity clusters. The lower *MSE* an attribute has, the highest effect it had on the differentiation of the clusters. To visually illustrate this effect, the radar graphs (Figure 5) are produced with the equation of $1 - MSEs$. Evidently, different configurations resulted in the similar activity clusters. Four activity clusters were identified in the Ardwick ward, and three clusters in the outside of the ward.

Table 3: activity groups based on their type

	Leisure	Services	Social
Shopping			
Grocery shopping	Boxing class	Visiting midwife	Visiting friends
Getting takeaways	Circuit training	Banking	Visiting own family
City centre shopping	Jogging	Visiting dentist	Attending the church for pray
Shopping from charity shops	Walking	Visiting GP	Visiting relatives
Shopping basic needs	Going to park	Getting prescriptions from GP	Visiting neighbours
Shopping from markets	Visiting museum	Going to barber shop	Going to coffee morning meetings at school
Buying petrol and gas	Swimming	Meeting with Legal advisor & solicitor	Participating in children performance
Having dinner in restaurants	Biking	Going to library	Meeting with parents' reps
Having coffee in coffee shops	Window shopping/visiting city centre market for fun	Printing and paper works	Chatting with other parents
			Going to funeral
Work/school			Other
Obligatory	Non-obligatory	Non-participatory	Participatory
Working	Going to parenting skills	Dropping off and picking up children	Going to children play classes
Going to college and studying	Volunteering at school	Bringing food for children at school	Looking for jobs
	Volunteering at church	Dropping off friends' children	Dropping off and picking up people for vocational classes
	Going to vocational classes		Participating in after school clubs
	Going to groups' meetings		Going to school shows

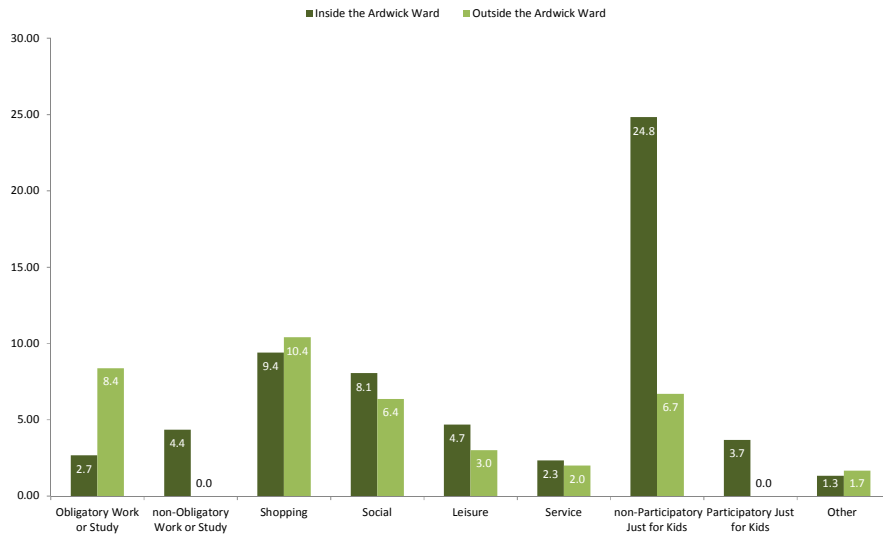


Figure 3: residents' participation in all activities inside and outside Ardwick (%)

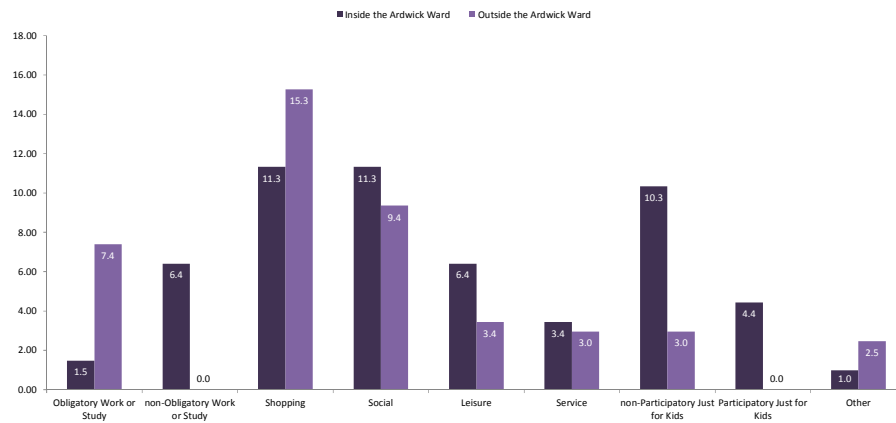
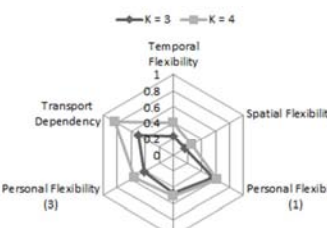
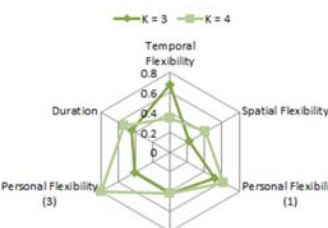
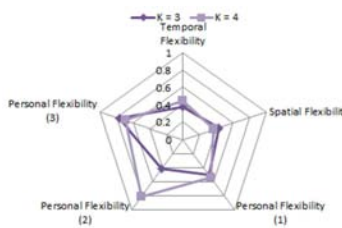
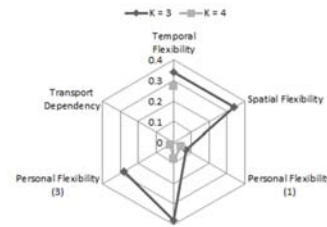
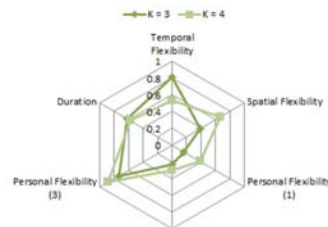
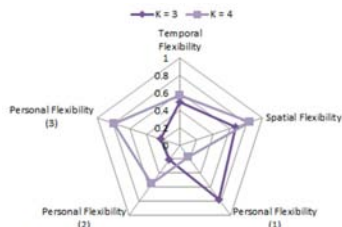


Figure 4: residents' participation in one-off activities inside and outside Ardwick (%)

Inside-Ardwick activities



Configuration I

Configuration II

Configuration III

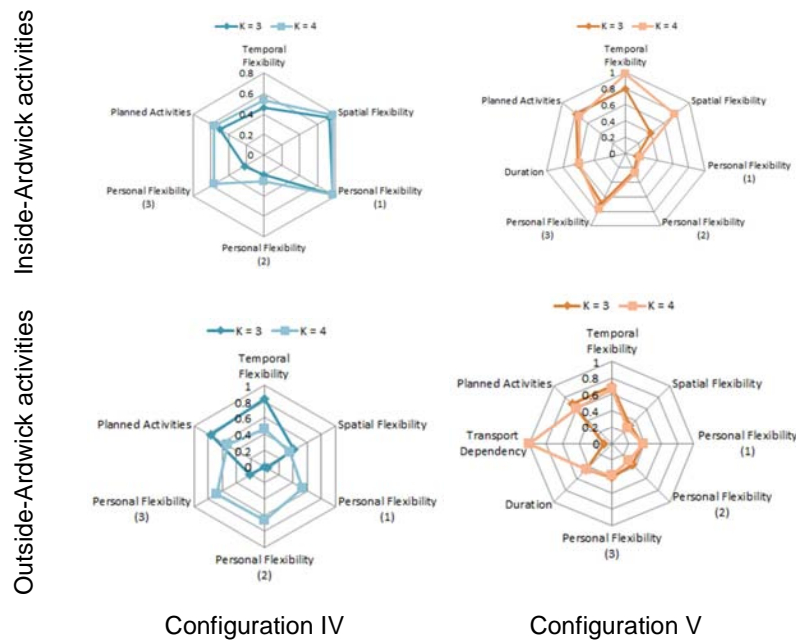


Figure 5: the effects of the activity attributes in forming the clusters

The activity clusters of inside Ardwick are:

Cluster 1: short activities which are completely planned/routinized; fixed in time and place, and being attended with family member(s)/friend(s); do not contribute to social interactions with people in the place

Cluster 2: long and planned activities which are fixed in time; contribute to social interactions with people in the place

Cluster 3: spontaneous activities which are fixed in place but flexible in time; encourage social interactions with people in the place

Cluster 4: spontaneous and individualised activities which are flexible in time and place; do not encourage social interactions with people in place

The activity clusters of outside Ardwick are:

Cluster 5: short and completely planned/routinized; fixed in time and place, and being attended with family member(s)/friend(s); motorized modes of transport are usually needed to get the destination; can be conducted by others and do not contribute to social interactions with people being in place

Cluster 6: very long, individualised, and almost planned/routinized; fixed in time but flexible in place; motorized modes of transport are needed to get the destination; contribute to social interactions with people being in place

Cluster 7: spontaneous, and flexible in time and in place; do not encourage social interactions with people in place.

Only one activity cluster in Ardwick (Cluster 2) and one activity cluster outside Ardwick (Cluster 6) accommodate the social interaction of the Brunswick residents. Cluster 3 partially encourages this interaction. Spatial flexibility contributes to social interaction according to the clusters. Transport is not necessary to conduct the activities inside the ward, while it is fundamental for the short and planned activities of Cluster 5 and very long and planned activities of Cluster 6. Similar short and planned activities happen inside and outside the ward and form Clusters 1 and 5. The spontaneous and flexible activities of Clusters 4 and 7

are also comparable. The spontaneous activities which are fixed in place only happen inside the Ardwick ward. The analysis of the activity types in relation to the activity clusters (Table 4) shows half of the shopping, social, leisure and service-related activities happen outside the Ardwick ward. Shopping happens at various places, while about 40% of leisure activities are spatially fixed. The leisure activities conducted by the Brunswick residents demonstrate various set of attributes. Some are spontaneous and either spatially fixed or flexible (Clusters 3 and 4), some last for a long period of time and planned in advance (Cluster 6), and some are spatially and temporally flexible outside the ward (Cluster 7). The non-obligatory work/study and participatory just-for-kids activities belong to long and planned activities which are fixed in time (Cluster 2). This means various places provide these activity types within Ardwick. More than three-fourth of the non-participatory just for kids activities happen inside the ward. The analysis of the activity clusters in relation to the activity types (Table 5) shows that the majority of short and routinised activities (Clusters 1 and 5) happen when the adults conduct the activities for their kids and do not participate themselves. Social interaction is limited to the obligatory and non-obligatory work/study, and the participatory just for kids activities. Surprisingly, some spontaneous activities are social and do not encourage social interaction (Cluster 7). The original data shows some visits to the neighbours or the family members were due to the sudden or obligation for care.

Table 4: percentage of the activity types in the activity clusters

	Clus. 1 N = 79	Clus. 2 N = 41	Clus. 3 N = 27	Clus. 4 N = 35	Clus. 5 N = 26	Clus. 6 N = 35	Clus. 7 N = 52
Obligatory work/study	-	24.2%	-	-	9.1%	66.7%	-
Non-obligatory work/study	-	100%	-	-	-	-	-
Shopping	-	-	-	47.5%	1.7%	1.7%	49.2%
Social	-	20.0%	37.5%	-	7.5%	10.0%	25.0%
Leisure	4.3%	4.3%	39.1%	13.0%	-	17.4%	21.7%
Service	-	-	23.1%	30.8%	7.7%	7.7%	30.8%
Non-participatory just for kids	78.7%	-	-	-	18.1%	3.2%	-
Participatory just for kids	-	100%	-	-	-	-	-
Other	44.4%	-	-	-	11.1%	-	44.4%

Table 5: percentage of the final activity clusters in the activity types

	Clus. 1 N = 79	Clus. 2 N = 41	Clus. 3 N = 27	Clus. 4 N = 35	Clus. 5 N = 26	Clus. 6 N = 35	Clus. 7 N = 52
Obligatory work/study	-	19.5%	-	-	11.5%	62.9%	-
Non-obligatory work/study	-	31.7%	-	-	-	-	-
Shopping	-	-	-	80.0%	3.8%	2.9%	55.8%
Social	-	19.5%	55.6%	-	11.5%	11.4%	19.2%
Leisure	1.3%	2.4%	33.3%	8.6%	-	11.4%	9.6%
Service	-	-	11.1%	11.4%	3.8%	2.9%	7.7%
Non-participatory just for kids	93.7%	-	-	-	65.4%	8.6%	-
Participatory just for kids	-	26.8%	-	-	-	-	-
Other	5.1%	-	-	-	3.8%	-	7.7%

6 Conclusion

This paper aimed to introduce the key concepts and a simple modelling technique of the activity-based approach for the purpose of neighbourhood studies. It is the first part of the publication series about regenerating neighbourhood with an activity-based approach. The key concepts of the activity-based approach provide the fundamental aspects of understanding the performance of neighbourhood spaces. It is assumed, activities are the outcome of the interaction between people and places. Exploring activities result into more comprehensive picture of neighbourhood as the patterns of activity participation shows the characteristics of actors, the constraints and the characteristics of environment. The arguments through the attributes of the activities offer the opportunity to quantify the performance of neighbourhood. Accordingly, it is possible to evaluate participations at various scales such as the ward and the city, to link the attribute-based definition of activities to different functions and assess the services provided, and to monitor the activities of the participants in order to identify their needs and the constraints of their participation in the other attribute-based activity clusters.

The Brunswick regeneration scheme aims to link Brunswick to the wider area and provide high quality housing and services for the current and future residents. The future publications will show how to link the activities of the Brunswick residents to their social profile, how to evaluate the service provision of a local agency, how to model and estimate the outcomes of the regeneration plans, and how to provide an evidence-based arguments to the issues mentioned in policy documents, community consultation reports and planning proposals of the neighbourhood regeneration projects.

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Ecosystem service-based green space allocation planning: a new way to construct urban spaces

(ESP Method to Ensure Ecosystem Service Delivery in Urban Areas)

Fisqa TASYARA; Indonesia

Synopsis:

Many studies have shown that the amount of green open space has a positive correlation to the quality of the living environment and of urban population. Green open spaces can act as service providing units (SPU), providing ecosystem services to improve microclimates, absorb pollutants from the air, reduce noise levels, and reduce surface runoff volume. These contribute to sustainable environments. But is simply increasing the amount of green open space enough to increase urban living quality? Not necessarily so.

First: the production of ecosystem functions is different in each SPU due to the different physical characteristic, the temporal condition, and for certain services, to the distance between the green spaces and the source of the problem it regulates.

Second: ecosystem functions become ecosystem services when they are actually used by or provide a benefit to the human population. This implies a strong relation between demand and supply of ecosystem services (why?).

Third: delivery to beneficiaries has a very important role in ecosystem services. When the benefit of an ecosystem function cannot be delivered to the public it is not considered an ecosystem service. The benefit can only be delivered when there is a strong spatial relationship between the demand and supply of ecosystem services. This spatial relationship can happen when the supply and demand physically overlap, or because of an overlapping flow path. This flow path is heavily influenced by the distance between problem source, green space, population, meteorological condition and the urban structure and shapes.

Ecosystem service-based green space allocation planning is a method to construct urban spaces. They are allocated not only by the availability of land, but also on the physical characteristics of the location and spatial requirement for the green space to deliver the ecosystem services it supplies and demanded by the urban population. This approach takes into account the possible flow path of problems to be regulated by green space, the flow of ecosystem services, and the movement of the people to the ecosystem service locations.

Keywords: ecosystem services, urban planning; urban parks, park allocation planning

1. Introduction

1.1 Urban problems

Since the 1950s. the United Nations has detected an exponential increase of urban areas and urban populations. In 2014, 54% of the world's population lives in urban areas that only comprise less than 3% of the land surface of the earth. This proportion is projected to increase to 66% by 2050 (UN DESA, 2014). This population growth is commonly, if not automatically, followed by an increase of built-up areas and number of vehicles. These create problems such as an increase of temperature, air pollution, and noise disturbances which reduce the life quality of urban residence.

Urban problems are usually generated locally, therefore the most effective way to deal with them are commonly through local solutions (Bolund and Hunhammar, 1999). According to

Mas (as referred by Chiesura, 2004) the amount of green spaces, especially urban parks, has a positive correlation to the quality of living environment and health. Researchers found that urban parks can improve microclimate, absorb pollutants from the air, reduce noise levels, and contribute to sustainable environments (Honjo and Takakura, 1986; Givoni, 1991; Avissar, 1996; Jacobs, 1996; Huang and Chen, 2002; Yang, 2003; Chiesura, 2004; Lam, Ng, Hui and Chan, 2005; Neema and Ohgai, 2010; Cohen et al., 2014). Such benefits, and many more, are known as ecosystem services.

1.2 Ecosystem services in urban areas

Ecosystem services are the benefits people obtain from the ecosystems around them. They can either be tangible (such as food and fresh water) or intangible (such as air quality maintenance and water regulation) directly or indirectly from ecosystem functions (Constanza et al., 1997, Millennium Ecosystem Assessment, 2003). Ecosystem services are different from ecosystem functions. Ecosystem functions refer to the biological or system properties/processes of ecosystems. Ecosystem functions become ecosystem services only when it provides benefit to the population (Constanza et al., 1997; Serna-Chaveza, 2014). In other words, ecosystem functions become ecosystem services when they are actually used by populations. Figure 1 illustrates the connection between ecosystem, ecosystem functions, ecosystem service, and ecosystem service's demand.

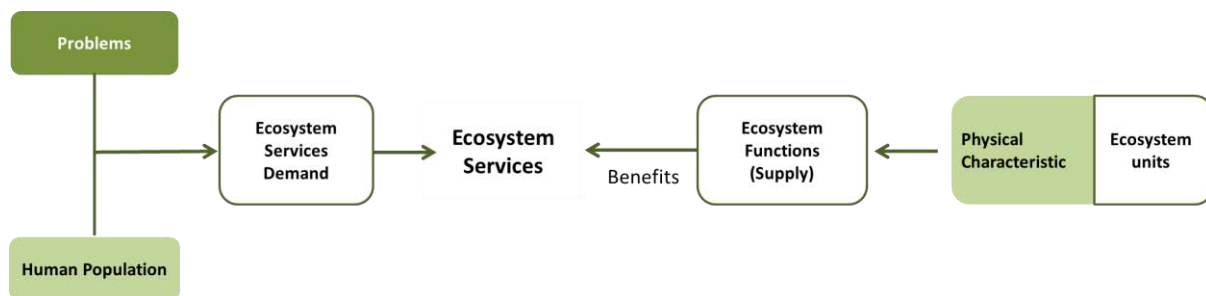


Figure 1: Relation between supply and demand of ecosystem services (Tasyara, 2015)

Park's provisioned functions are ecosystem services only when they are utilized by and benefitted human population.

Constanza et al (1997), Bolund and Hunhammar (1999), and Zanin et al. (2005) argued that, as an ecosystem unit, an urban park has the potential to provide services of direct and indirect impact on human health and security. As previously explained, these services include regulating services (microclimate regulation, air pollution regulation, noise reduction, and run-off reduction) and cultural service (recreational service).

Numerous urban adaptation strategies have been proposed to increase the provisioning units of ecosystem services to answer the increasing demand in urban areas (Givoni, 1991; Gill et al., 2007; Bowler, 2010). For example the 'green city movement' in Indonesia (source?). The general idea is to increase the amount of ecosystem services by increasing the abundance and coverage of vegetation in urban areas. However, although creation of green spaces is the most commonly cited individual adaptation to climate change activity (Carbon Disclosure Project, 2012) and large budgeting has been assigned to the development and management of urban parks, most countries (especially the less-developed countries) still take the benefits of urban parks for granted.

The ecosystem services provided by the urban parks are often not delivered to the population that actually need the services. This condition happens because of a spatial mismatch. Or in simpler words; the park is not located at a suitable location. These

mismatches happen because there is a knowledge gap about ecosystem service delivery and the effect of park location to the services it provides. Many urban decision makers still believe that any addition of urban parks would provide citywide benefit. Such understanding leads to development of parks without considering the location in relation to the demand (population and/or hotspots of ecosystem problems). Commonly, planning standards only specify the amount of area required and their proximity to settlements (Yeh and Chow, 1996). However, they seldom specify *where* the public facilities should be located in relation to the problem they attempt to address.

Most studies on urban ecosystems focus on the benefit of green open spaces in comparison to their adjacent brown (built-up) areas (Kuttler and Strassburger, 1999; Lam et al., 2005; Yin et al., 2011; Cavanagh et al., 2009; Cohen and Potcher, 2012). For ecosystem services, most studies focus on identifying where the services are generated (Tallis, et al., 2013). In many cases however the actual delivery of services (especially regulating services) to specific parts of the population is affected by the location of the service providing unit (SPU) to the beneficiaries and the problem sources (Tallis, et al., 2013). Many studies have shown that urbanization-generated problems such as air pollution and noise disturbance decrease after a certain distance from the source (Klepeis et al., 2009; Venkatram et al., 2009; Vailshery, 2013; Merbitz et al., 2012). But there are only a handful of studies that focus on the implication of location to the quality of ecosystem services provided by urban green spaces (Yeh and Chow, 1996; Neema and Ohgai, 2010). Even fewer studies propose methods to select the optimum location for the development of green open spaces.

This paper aims to specifically explain the effect of a location selection to the ecosystem service provided by a park and to find an alternative location for a new service providing unit. Section 3 gives a more detailed explanation about the factors that determine the production ecosystem services, their demand, and their delivery. The method and framework to allocate urban parks based on ecosystem service production and delivery is discussed in section 4, followed by the conclusions with a special focus on further research needs in section 5.

2. Methods and results

This paper is an exploratory study to develop the framework for (I) explaining the factors that determine the production of ecosystem services, (II) ecosystem service's demand formation, (III) linkages between the supply and demand of ecosystem services, and the (IV) methods for park allocation planning. The following key questions have been of special relevance for the development of the concept on location planning of a park as an SPU:

- What factors determine the provisioning of ecosystem functions (supply) by an urban park and how spatially variable are they?
- What factors determine the demand of ecosystem services by urban populations, and how spatially variable are they?
- What is the spatial relationship between the supply and demand of ecosystem services?

Querys on the Web of science database were done to select articles on ecosystem services, ecosystem service assessment methods, and the five prominent ecosystem services that can be supplied by urban parks. This returned 488 unique records. The articles were filtered based on the criteria in table 1, which lead to 144 articles. A snowballing method based on the references list in those 144 articles was implemented to reduce literature gap that might

be created due to the limitation of the database. This extended search added 54 more articles.

Criterion	Possible/searched entries
Type of region where the case study is located	Urban areas
Type(s) of Ecosystem service (ES) are analysed	Gas regulation, micro-climate regulation, disturbance regulation, water regulation, cultural/recreational values
Does the paper explicitly mention “urban ecosystem services”?	Yes/no but mention at least one of the services
Does the paper deal with ES potential (supply) or demand and provisioning?	Only supply, demand and provision, only demand

Table 1: Filtering criteria

From 144 articles found in the literature search, only 34 articles explicitly mentioned ecosystem services. This shows that even though the awareness about the benefit urban parks provide is increasing, they are still not directly connected to the provision of ecosystem services. The articles that specifically mention ecosystem services mostly only approach the concept from either the supply (66%) or the demand side (29%). Only 36% consider the relation between supply and demand of ecosystem services.

The selected articles did not mention park or SPU’s spatial requirement explicitly. However, they did mention the ability of ecosystem functions and problems to disperse from their sources. The park location requirements can be concluded based on these conditions. (explained further in section 3).

3. Synthesis

3.1 Factors that determine the ecosystem functions production by an urban park

As an ecosystem unit a park can filter noise and air pollution, regulate heat, act as a sink for surface runoff, and provides recreational space. These functions are formed by the ecosystem processes, by the vegetation, soil, and water in the park. These are again influenced by the size of the park and the soil type in the of the park. Those factors can also be called the determining factors for the ecosystem functions of a park (see table 2).

Functions	Determining Factors						
	Site Size	Site design	Percentage of Green coverage	Types of vegetation	Soil type	Time of day	Season
Air Pollution	V	V	V	V	-	V	V
Noise	V	V	V	V	V	-	V
Heat/microclimate	-	V	V	V	-	V	V
Surface Runoff	V	V	V	V	V	-	V
Recreation	-	V	-	-	-	-	-

Table 2: Factors Determining Ecosystem Functions (supply) (Tasyara, 2015)

Apart from the soil type, the factors are generally non-location specific and can be realized anywhere depending on the design, as seen in table 2. The soil type varies in each location, which can influence the types of vegetation to be used in a park. It also determines the ability to absorb noise and air pollution, and the water filtration and retention ability of a park (further elaborated in appendix two). However, the technological development in geology and park architecture lowers this dependency, which also lowers the spatial variability of this factor.

3.2 Factors that determine ecosystem service demand

The level of demand for an ecosystem service is determined by the four following conditions: (I) presence of problem(s); (II) severity of the problem(s); (III) presence of population suffering from the problem(s); and (IV) the vulnerability of the population to the problem(s). A demand is formed only when both problems and population are present. The more severe the problem and the larger the vulnerable population suffering from the problem, the more prominent the demand for ecosystem service as illustrated in figure 2a-c.

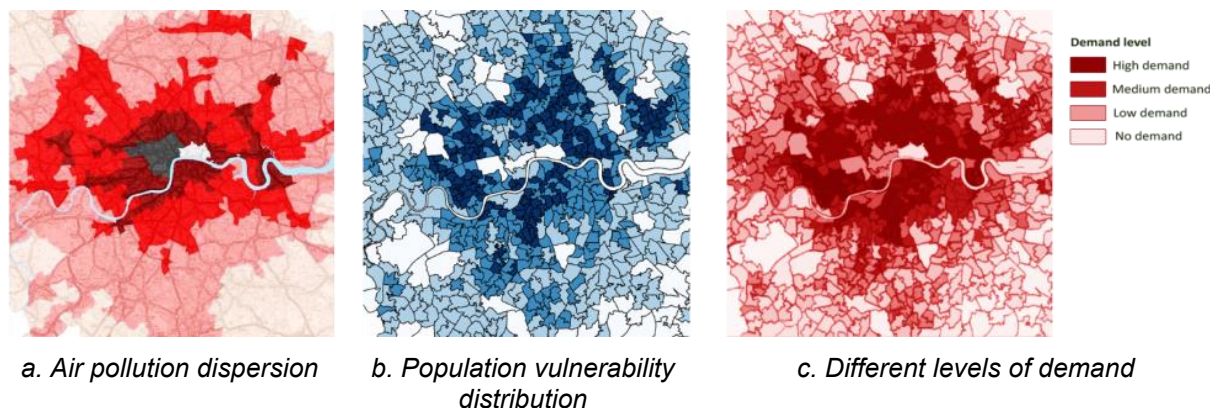


Figure 2: Demand formation (missing a legend for the blue colors)

(Image source for a and b: Camden Friends of the Earth (<http://www.camdenfoe.org.uk>), c: Tasyara (2015))

The four conditions mentioned above vary spatially. The presence of problems and their severity are determined by the sources which can be centred at (a) specific location(s) or spread throughout the landscape. The presence and the amount of a population and their vulnerability also vary in each location. There are also other factors that determine the severity of a problem, and the vulnerability of the population (summarized in table 3 and 4).

Problem	Determining Factors					
	Production at source	Topography/ Slope	Soil type	Land use	Time of day	Season
Air Pollution	V	V	-	V	V	V
Noise	V	V	-	V	V	V
Heat/microclimate	V	V	-	V	V	V
Surface Runoff	V	V	V	V	-	V
Stress level	V	-	-	V	V	-

Table 3: Factors determining problem severity (Tasyara, 2015)

Apart from the soil types and season, the determining factors in table 3 are not location specific. Those factors can be provided at any location and affected by the design of the park itself. The influence of each determining factor is often not a standalone effect, but a combination of two or more factors. For example, site size influences the design implemented in the park and the season influences the percentage of green coverage in the park (leave shedding in winter at temperate countries or during the drought in tropical countries). More explanation on how those factors determine the provisioning functions (supply) of ecosystem service can be found in Tasyara (2015).

Problem	Determining factor							
	Population density	Socio-economic status	Age	Gender	Special needs Populations	Education	Economic activities	Building densities
Air Pollution	V	V	V	V	V	V	V	V
Noise	V	V	V	V	V	V	V	V
Heat	V	V	V	V	V	V	V	V
Surface Runoff	V	V	-	-	V	-	V	V
Stress level	V	V	V	V	V	V	V	V

Table 4: Factors determining population vulnerability (adapted from Cutter, et al., 2013; Rodrigues-Loinaz, et al., 2015)

Vulnerability varies geographically, over time, and among different social groups, as seen in table 4. Social vulnerability is partially the product of social inequalities. It also includes spatial inequalities, including the characteristics of communities and the built environment, such as the level of urbanization, population character, and economic condition, that contribute to the social vulnerability of places.

3.3 Factors that determine the delivery of ecosystem services – location requirement

Based on table 2, 3 and 4, we can conclude that demand varies spatially, while supply – as long as it is not strongly controlled by soil type - can be realized almost anywhere. However, in ecosystem services, the delivery is important, and the delivery can happen only when there is a strong spatial relationship between problem source, the park, and the beneficiaries.

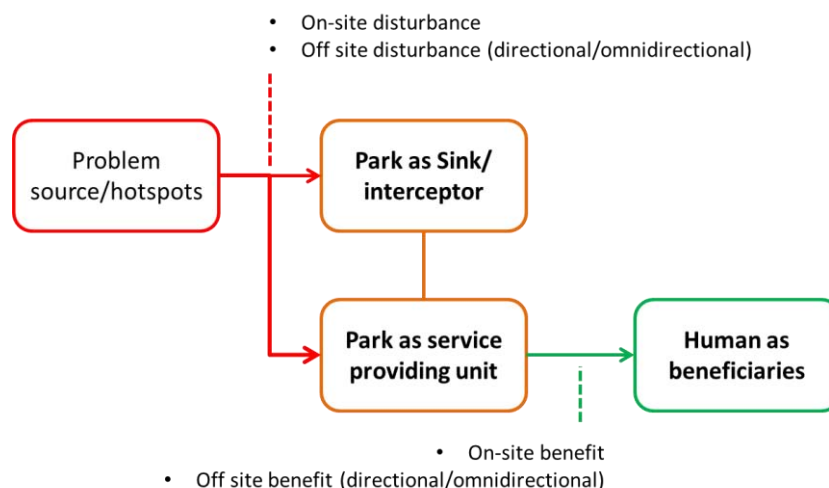


Figure 3: Relationship between the supply and demand of ecosystem services (Tasyara, 2015)

There has to be an overlap between the people with the problem to create demand, also between people and the park or the ecosystem functions that are provided by the park (for people to obtain benefit and for the park to become an ecosystem service provider). Fisher et al. (2009) and Syrbe & Waltz (2012) explain this overlap with the term “spatial relationship”. According to Fisher, et al. (2009) and Syrbe & Walz (2012) there are three possible spatial relationships; on-site (in-situ), off site without directional bias (omnidirectional), and off-site with a directional bias (directional). The off-site relationship can happen because a carrier

disperses the problem or function out of the source in a certain flow path. The spatial relationships are created by the overlap between the sources or the carrier flow path (of ecosystem functions or problem) with people as illustrated in figure 3.

A problem source can produce on-site or off-site disturbance. Usually when the problem is dispersed off-site, a park can act as a sink that intercepts the problem carrier before it reaches a population and at the same time produces ecosystem functions which benefit a population. This benefit can be delivered either on-site only or off-site (by a carrier) to individuals. When the problem stays on-site, the park acts mostly as a service provider, not as an interceptor. When the functions and problems disperse off-site, the relationship is determined by how it disperses from the source and to where. When neither the service, nor the problems disperse from the source, then people's movements determine the ecosystem service delivery.

There is a contradiction about the location requirements for the five services focused on this research. First, we can see it from the supply side. When a park can produce an off-site benefit, the park can be located at a distance from the people. The distance is determined by the function dispersal characteristic (e.g. the flow of cool wind). When the benefit can only be provided on-site the park has to be accessible by people. Second, from the demand side; to regulate disturbances that happen off-site, a park should be located in the location that can intercept the problem. The dispersal characteristics of the problem (e.g. air pollutant's mixing height and distance) determine the effectivity of the park to intercept the problem. To regulate problems that are locally generated a park should be located in close proximity to the beneficiaries. However, when we want to allocate a park to provide ecosystem services we need to see from both the supply and the demand side, which lead us to table 5.

Service	Ability to disperse/travel			Benefit received	Park location (spatial) requirement
	Function	Problem	People		
noise regulation	no	yes	not expected	Off-site	proximity to problem source
air pollution reduction	yes	yes	Optional	On and off-site	proximity to problem source and physical accessibility
surface runoff reduction	no	yes	not expected	Off-site	proximity to beneficiaries
heat reduction	yes	no	Optional	On and off-site	proximity to beneficiaries and physical accessibility
recreation	no	no	expected	On-site	physical accessibility

Table 5: Overview of the transport ability and location requirement for a park to provide ecosystem services to people (Tasyara, 2015)

Looking at the contradicting location requirement, it would be more realistic to limit the goal of park planning by focusing on the provision of ecosystem services that have similar requirements (e.g. a park to regulate noise and air pollution, or a park to reduce surface runoff volume and heat). We can base the goal on the actual demand.

4. Ecosystem service-based allocation planning

Once the required ecosystem service and the level of demand have been determined a park can be allocated as a service providing unit. This can be determined based on the nature of the problem and the number of people vulnerable to and suffering from this problem. Second, we need to know how the demand is formed; does the problem disperse from the source by a carrier or does it happen on-site? Third, we need to know how the service can be

delivered; does the ecosystem function disperse from the source out of the park, or do we expect people to travel to obtain the benefit from the ecosystem functions? The answers will determine where the park should be located. These questions can be illustrated more clearly with the framework in figure 4.

This framework can be divided into three main steps: the first is to determine the demand hotspots, second step is to determine potential locations, and then the third step is to further exclude or pinpoint the most appropriate location. In the first step, we need data about the occurring problem in the area and the vulnerabilityⁱⁱ of the population. When we overlap those data, we can map the demand in an area and pinpoint the locations with the highest demand for ecosystem service(s). This demand map acts not as an end-product, but as an input for the next step.

In the second step, we determine possible locations around the demand hotspots that can be developed as a park. These possible locations should include not only open spaces owned by the government, but also privately owned leftover or brown spaces. The locations can be selected simply by listing open spaces in the region, with buffering methods in GIS application, or any other Geo-spatial methods. After we have this list of possible locations, we need to narrow down the options based on a set of physical criteria that determine the supply production. We need to exclude any locations that do not fulfil the criteria, and then we will have a map with potential locationⁱⁱⁱ.

In the third step, we take the selection process further by answering three consecutive questions which also act as adjustment points: “does the problem disperse from the source?”, “does the function disperse from the source?”, and “are people expected to travel?”. The answers determine the methods needed to be applied to the location selection.

In condition ‘a’, when the problem does not disperse from the source, usually the demand is generated at the same site as the source (*on-site/in-situ* spatial relationship). This problem can be regulated by a park which is located where it is highly demanded, or in a close proximity to the area with the highest demand for the service to ensure site access. But when the problem disperse from the source (condition ‘b’) then the park can still be placed at a distance from the people to intercept the problem before it reaches the population. In this case, the location of the park has to be adjusted based on the problem spatial flow analysis. The flow analysis is needed to provide information about the spatial relationship between the problem and the people, which include:

- How the problem disperses from the source to the people;
- Direction of the transport (directional or omnidirectional); and
- The effect of the transport to the severity of the problem.

This information will determine whether it should be located closer to the problem source or to the people, direction from the source and people (e.g. upwind or downwind), and the physical structure needed to be included in the park because different physical structures are needed for different carriers. The physical structures that disturb wind movement may not disturb water flow and vice versa.

After finding out whether the problems disperse from the source, then we need to know whether the functions disperse from the source to become service (by providing benefit) to people. When the function can only provide benefit on-site/can’t disperse from the source (condition ‘c’) then the park should be located based on the result of the previous query (condition ‘a’ or ‘b’). However, when the functions disperse from where they are produced

(condition 'd'), then the park location should be adjusted based on the flow analysis of the ecosystem service. The flow analysis will provide information about the spatial relationship between the park and intended beneficiaries which include:

- How the function disperses from the source;
- The direction of the dispersal (directional or omnidirectional); and
- The dispersal distance.

This information will determine how far away the park can be located from the population and the direction of the park from the source and people (e.g. upwind or downwind). This condition will expand or reduce the options for park allocation.

The last question to be answered is "Are people expected to travel?". When ecosystem service can be obtained off-site, people's mobility is not expected (condition e). However, for certain ecosystem services (e.g. recreation), people have to travel to a park (condition f) to get the benefit on-site. In this condition then the location should be adjusted according to an accessibility analysis. The accessibility analysis can also be accompanied by an analysis regarding people's willingness to travel so that the location still be in accordance with people's preference.

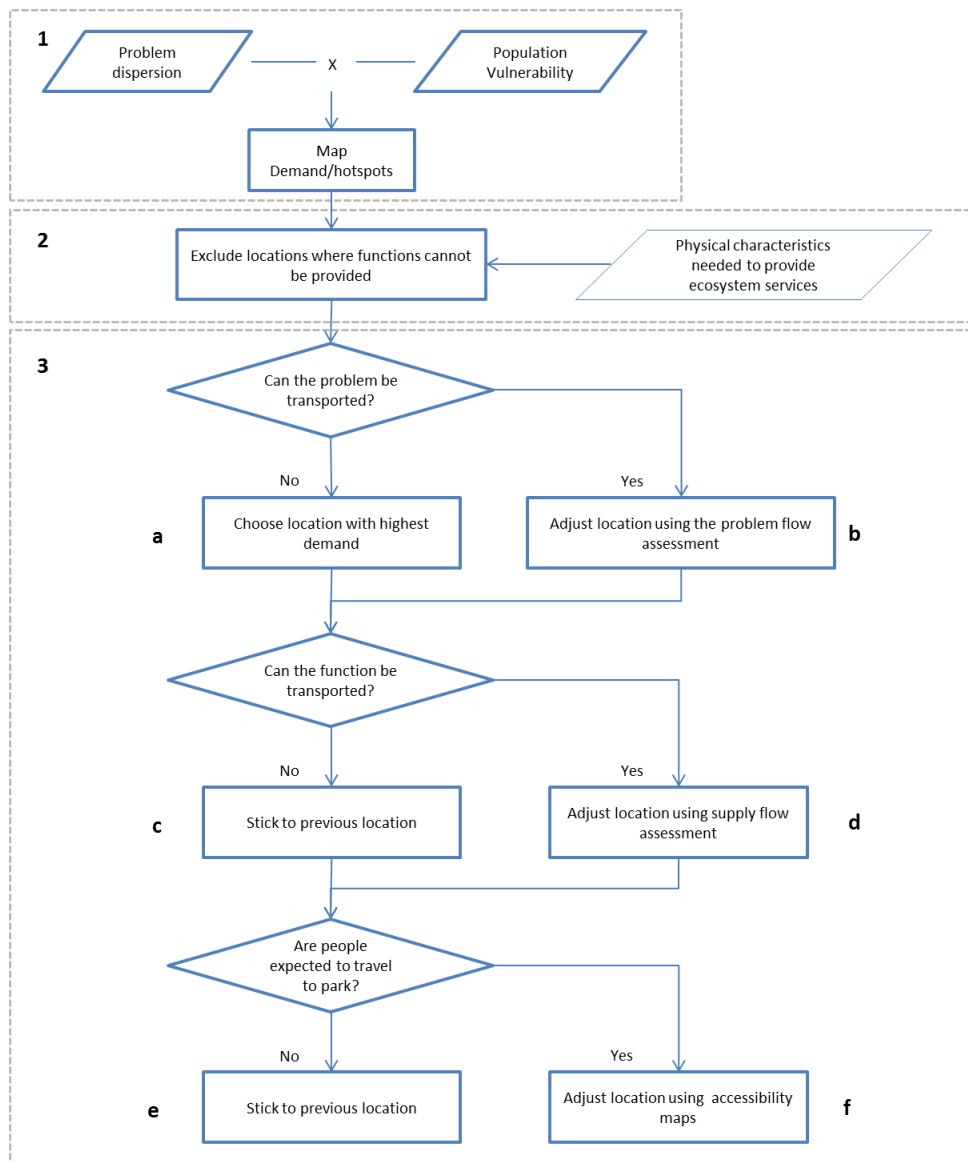


Figure 4: Park Allocation Planning Framework (Tasyara, 2015)

This framework incorporates many spatial planning techniques and spatial analysis. The spatial analysis can be done with the application of GIS in the raster format. The raster data model is the more suitable technique because the structure of raster data is grid cell based which can easily delineate suitable sites. Raster data also facilitate the carrying out of a weighted overlay on numerous layers. There are other spatial analysis methods that can be used either to analyse the demand, or to model the expected provision ecosystem services.

5. Concluding Remarks

Ecosystem service is a complex matter, and planning the allocation of a park as an SPU needs analysis of many components in different layers and scales. Three key findings are important for park location selection:

1. The concept of ecosystem service has a strict coupling to human utilization where ecosystem function has only become a service once it is actually used or consumed by people as beneficiaries (Serna-Chaveza, et al., 2014; Millennium Ecosystem Assessment, 2003);
2. The benefit received by people is often valued differently, depending on the context (Tallis, et al., 2013). This context is determined by human needs and demand for this service by the society (Paetzold, et al., 2010) which are determined by the problem severity and the population's vulnerability;
3. Ecosystem services are provided by an urban park to the beneficiaries (people) either on-site or at off-site by a carrier (Serna-Chaveza, et al., 2014) along a flow path.

This research has tried to dissect the determinants of the five most relatable services to urban areas that can easily be provided by parks, an asset long considered more of its aesthetic value than anything else. The service to mitigate microclimate, attenuate air pollution and noise disturbance, regulate surface runoff, and to provide recreation are affected by the distance between the park and the service demand. Each ecosystem service has different distance requirement to be able to deliver its benefit which create a spatial contradiction.

This report proposed a framework that planners and decision makers can implement to select suitable locations for urban parks based on the spatial requirements to be able to provide ecosystem services. However, this report advice for the allocation planning to limit the goal of park planning by focusing on the provision of ecosystem services that has more similar spatial requirements. It should also be noted that this framework is compiled based on literature reviews. There needs to be further research to test this framework on an actual case. Other than that, there are other factors than location that determine the condition of services provisioned by parks, such as the physical structure of the park itself (the size, the vegetation used, etc.) and the physical structure of the area surrounding the park (see table 3) Nevertheless, the proposed method still provides a new insight on the park allocation planning and ecosystem services; which is to plan supply based on its demand.

End notes:

ⁱ Recreation/cultural service can be combined with any other services and will only affect the location selection slightly because the delivery of the service depends highly on people's access

ii Weight is assigned to each factor that determines the vulnerability of the population. We can analyze the vulnerability value of a location/population with software such as the Weighted Linear Combination in ArcGIS.

iii In this report “possible location” is described differently from “potential location”. The term “possible” used in refer to vacant lands that can still be developed as a park while the term “potential” is used in refer to the condition that the land is not only possible to be developed as a park but also fulfil the physical criteria to provide ecosystem services

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A NEW PLANNING CULTURE COOPERATIVE PLANNING PROCESSES CASE STUDIES IN VIENNA, AUSTRIA

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51ST ISOCARP CONGRESS 2015



Fig. 1: Cooperative planning workshop "Altes Gaswerk Neu Leopoldau," a former gasworks site

1 SYNOPSIS

Cooperative planning workshops have replaced planning studies and master plans in Vienna. In the last four years the city has experienced a transformation of its planning culture from a closed to an open process. The zoning process is no longer an act of planning reserved for professionals, e.g., planning department staff and selected expert consultants, followed by political debates, but has become transparent and opened up to include citizens, neighbors and interested professionals. A new format was created to structure the work: the "cooperative planning workshop." These recent changes in the planning culture have had a positive impact on the public debate, yet the results vary in their quality and are sometimes controversial. The analysis of the various types of planning workshops will be followed by a proposal for an ideal scenario, based on the experiences of the author as an active member of several of these recent workshops.

2 INTRODUCTION

The paper will analyze recent cooperative planning workshops that have replaced planning studies and master plans in Vienna since 2011. Before, whenever a zoning change was required, the planning department either contracted a study or launched an invited urban design competition, depending on the size of the area. Since 2011, Vienna has experienced a

change of its planning culture from a closed to an open process – cooperative planning workshops are publicly announced and applications are reviewed by an independent jury. This transformation occurred, on the one hand, for political reasons, on the other hand, due to international trends. While the openness and transparency of these new procedures are generally viewed positively and considered as a step forward, the results vary widely. Sometimes they produce a solid base for the following competitions, at other times they lead to controversies or are criticized for their weak quality, mostly due to inadequate time allowance for the planning process. On some occasions only a few days were reserved for complex sites, leading inadvertently to a certain level of superficiality and lack of understanding for the area. At other times, too many stakeholders were involved in the process and influenced the working team by pushing for their required minimum building mass, which often contradicts respect for the context and desired qualities of the public realm.

3 COOPERATIVE PLANNING WORKSHOPS – THREE CASE STUDIES IN VIENNA

Currently, in the City of Vienna, as in many other European cities after Stuttgart 21 and the financial crisis of 2008, urban planners and architects can no longer conceive a comprehensive master plan for an urban area and then hope to see it implemented as planned. The era of long-term master planning has long gone. It has been replaced by a more open system that addresses flexibility for future changes of developments. Participatory processes of all kinds, largely structured so that they are inclusive for all stakeholders, planners, community members and politicians, have developed. In these processes the planners retreat into the background; they are invited to develop creative ideas in discussion groups and interdisciplinary working groups. The advantage of this process is clearly the inclusion of all parties, as well as the amicable and open atmosphere in which all issues are discussed before the planning process starts. The potential disadvantage of this type of process is that with the disappearance of an “author,” a sense of responsibility also vanishes. Several recent planning projects that were organized as a “cooperative workshop” ended without a clear result. In the absence of agreed-upon planning and urban design guidelines, the following architectural competitions sometimes were not based on univocal terms and therefore did not deliver results that used the full potential of their designers.

This new trend is analyzed and illustrated with several planning workshops in Neu Leopoldau, $\frac{1}{4}$ 2, Stadtpark in Vienna and one current project in Klosterneuburg, Lower Austria.

3.1 “Altes Gaswerk Neu Leopoldau”



Fig. 2: Current situation on the former gasworks site “Neu Leopoldau” (photo Silja Tillner)

Site condition and strategy: On the former gasworks site “Neu Leopoldau,” the expectations at the beginning of the process were not yet specific, because the land was owned by a semi-public entity. The site of the former gasworks was long used by the Vienna Energy Department and was industrially zoned. Once the use for the gasworks ended, the site became available for development, but due to severe contamination it was obvious that a successful reuse depended on the prior clean-up of the land. Moreover, the accessibility to the site by public transportation as well as by car is not yet adequate to accommodate new residents and new trips. The adjacent neighborhoods have very low density and consist mostly of small-scale single-family homes. The neighbors were alerted by the prospect of new development and worried about noise pollution and traffic congestion. Currently, the site is burdened with a high level of noise pollution due to freight trains on one side and a bus terminal on the other.

Due to this challenging context and the high level of public interest, a regular planning process would have faced many obstacles. The decision to start a “cooperative planning workshop” instead enabled the planning department and the semi-public owner, Wien Holding, to gather all the stakeholders and interested parties in the same process as the professionals. A group of three architects and urbanists was selected after a highly competitive open call for applications. The requirements, besides having had experience with interactive participatory planning processes, included the personal social competence of the team members and the quality of the proposed strategy.

Process and result: The planners envisioned a large variety of building typologies in a lively, mixed-use neighborhood that is car-free thanks to decentralized parking in three garages at the edges. The proposal was developed during the course of eight-day workshops over a period of three winter months that were held on-site in a large, loft-like hall with no heating. The eight historic buildings on the site are mostly protected monuments and were to be incorporated into the urban design.



Fig. 3: “Neu Leopoldau” workshop location on-site in a protected historic, loft-like hall (photo Silja Tillner)

To ensure that they retain their character, a strategy was developed to exclude them from future economic development pressure with a utilization concept that allows for creative or public uses thanks to affordable rents. The planners could work freely in a truly cooperative manner. Local politicians and delegates of the neighborhood association also participated and several invited guest critics commented on the proposals in presentations at the end of the day. There was an intermediate public presentation for all the neighbors, which was attended by approximately 100 people. Their comments were incorporated into the work and the final results presented to the public, where it was met with great acceptance. The three teams worked cooperatively on several alternatives, but prioritized them and agreed upon the final recommendations for the site. After the workshops had been completed, zoning was changed and the site divided into 23 smaller lots with varying densities and building heights. The architectural competitions will start at the end of the summer of 2015.²⁾



Fig. 4: The “Neu Leopoldau” site was divided into 23 building lots and 3 parks (green). The historic buildings (brown) are surrounded by open space (yellow).²⁾

Conclusion: The project has so far been a success, because the semi-public landownership allowed for some flexibility with regard to the expected rate of return on investment and removed the developmental pressure from the historic buildings. The cooperative planning method will continue in the second phase of the architectural competitions, where selected teams will cooperate across the site borders and the public will stay involved. Nevertheless, the period of time and the number of workshops were barely sufficient to absorb all the complex site conditions and develop a high-quality proposal; it would have been desirable to have more time for in-depth planning.

3.2 “Trabrennbahn - ¼ 2 Plus” Trotting Course

Site condition and strategy: The attractive site at the edge of the green “Prater” was formerly popular for its trotting races, which attracted huge crowds. Since the late 1960s the public lost interest in this sport, the stands were closed and subsequently fell into disrepair. Today, few owners keep their horses in the stables and use the trotting course, causing financial problems for the club, which then agreed to reduce the course in size and sell part of its land to a private developer. The prestigious setting of the site and the zoning for “recreation and sport” were the reasons why the city required the private developer to finance a cooperative planning workshop rather than contract a master plan.



Fig. 5: "Trabrennbahn - ¼ 2 Plus" trotting course with the closed stands and the green "Prater" in the background (photo Silja Tillner)

Process and result: The result was to divide the area into five neighborhood clusters that will be developed in phases over the next five to ten years. Although each cluster is generally mixed-use and should have active ground floor uses, each area has a main emphasis, e.g., working and temporary living, high-end residential and leisure at the "Prater's edge," residential and cultural uses in the former stables, a creative work environment for start-up companies in the former stands, affordable housing of varying sizes with schools and kindergartens. The whole neighborhood shall be car-free on the surface, but with an underground garage. The proposal was developed during the course of four two-day workshops over a period of two summer months that were held on-site in a former stand with great atmosphere and no cooling, allowing for 34-degree indoor temperatures. The historic stables and stands on the site are mostly protected monuments and were to be incorporated into the urban design. Since they occupy large portions of the site and are in a dilapidated condition, the initial goal of the developer was to have most of them removed. This caused some controversy and no common decision could be reached on this point. Consequently, several alternative scenarios were developed. The whole area was rezoned to mixed-use and the clusters without historic buildings were the subject of subsequent architectural competitions, where the winners only partially followed the recommendations and urban design guidelines.



Fig. 6: "Trabrennbahn - ¼ 2 Plus" trotting course, aerial view of the site (red), planning perimeter (yellow) and the location in Vienna ³⁾

Conclusion: The project has so far been a success because the site owner is also the developer who is based in this area and follows high quality standards in his developments. Therefore, the developer and his team took a high interest in the process and the outcome of the workshops and were actively engaged throughout. The three teams worked cooperatively on several alternatives, but prioritized them and agreed upon the final recommendations for the site. 3) The number of workshops would have been sufficient, had the city representatives not ruled out high-rise buildings at a late point in the process. As a result, not all of the urban design guidelines were clearly understandable and therefore partially ignored. The fact that the stakeholders and the property owners were part of the planning process did somewhat impede the independent design work of the planners, who were urged to submit the calculated amounts of square footage because the land had already been purchased. Two architectural competitions for the areas without historic buildings were already held in 2014, and the winners awarded contracts; construction started in 2015.

3.3 “Eislaufverein”– Ice Skating Rink / Intercontinental Site



Fig. 7: “Eislaufverein” site with summer use and the proposed tower (red), Wiener Zeitung, 11.7.2013

Site condition and strategy: The prestigious and exclusive site of the Hotel Intercontinental, an early 44-meter high-rise building from 1964 at the edge of the Stadtpark and the historic city centre with a large ice skating rink next to it, makes this probably the most attractive development site in all of Vienna. The developer and owner of the hotel was able to buy the adjacent 6000 m² site between the hotel and the concert hall “Konzerthaus Wien,” where for decades Vienna’s only centrally located ice skating rink has been located. Although it is somewhat odd to find this type of usage in such a setting, it is heavily used by citizens and especially schoolchildren. Since the site was owned by the Federal Government, the change of ownership could not be influenced by the city of Vienna. Once it became clear that massive development – potentially even a high-rise – was feasible, the city demanded that the private developer finance cooperative planning workshops and a subsequent architectural competition.



Fig. 8: "Eislaufverein" site in winter with the proposed tower and the new square, EG-WertInvest Hotelbeteiligungs GmbH, 26.05.2015 ⁴⁾

Process and result: Three workshops were held and three different teams of architects developed competing strategies. The question whether to safeguard the existing high-rise building and place the new development in context or tear down the hotel and plan entirely new buildings in its place, either a high-rise with open space around it or a medium-rise, occupied the teams supported by university professors throughout the process. Although members of the public could not participate in the workshops, they were interviewed beforehand. Finally, the architects proposed alternatives, but could not agree on a prioritization. The cooperative planning workshops ended with no clear result and in a somewhat competitive atmosphere.

Conclusion: The subsequent mistake was to launch the two-phased architectural competition in spite of this undefined urban design strategy. A decision should have been taken with regard to erecting a new high-rise building on this sensitive site and risking the loss of the UNESCO World Heritage status before starting a more detailed planning phase. The question of demolition or rebuilding and of the appropriate height was delegated to the competing participants. The architects not only had to deal with these tricky questions, but to also fulfill a complex program that was far too detailed. The results varied widely but were, for the most part, not convincing. The jury selected six projects for a second phase and finally a winning project that kept the hotel and placed a second higher tower next to it. Protests arose when the result was presented to the public and have yet to subside. The reasons are, on one hand, the height of approx. 80 meters, which would cause the loss of the UNESCO World Heritage status, and the old-fashioned appearance of the high-rise building's design, on the other hand. Other protests focus on the fact that the tower will house luxury apartments. In any case, the positive aspect is that an attractive public plaza will be created next to the tower and the ice-skating rink will be kept and incorporated into the design. Also on the positive side is the fact that the developer and site owner meticulously followed all the recommendations that the City of Vienna gave to him and organized all the workshops and competitions accordingly. Therefore, the result of the international competition should be binding.

4 COMPARISON OF DIFFERENT TYPES OF COOPERATIVE PLANNING WORKSHOPS

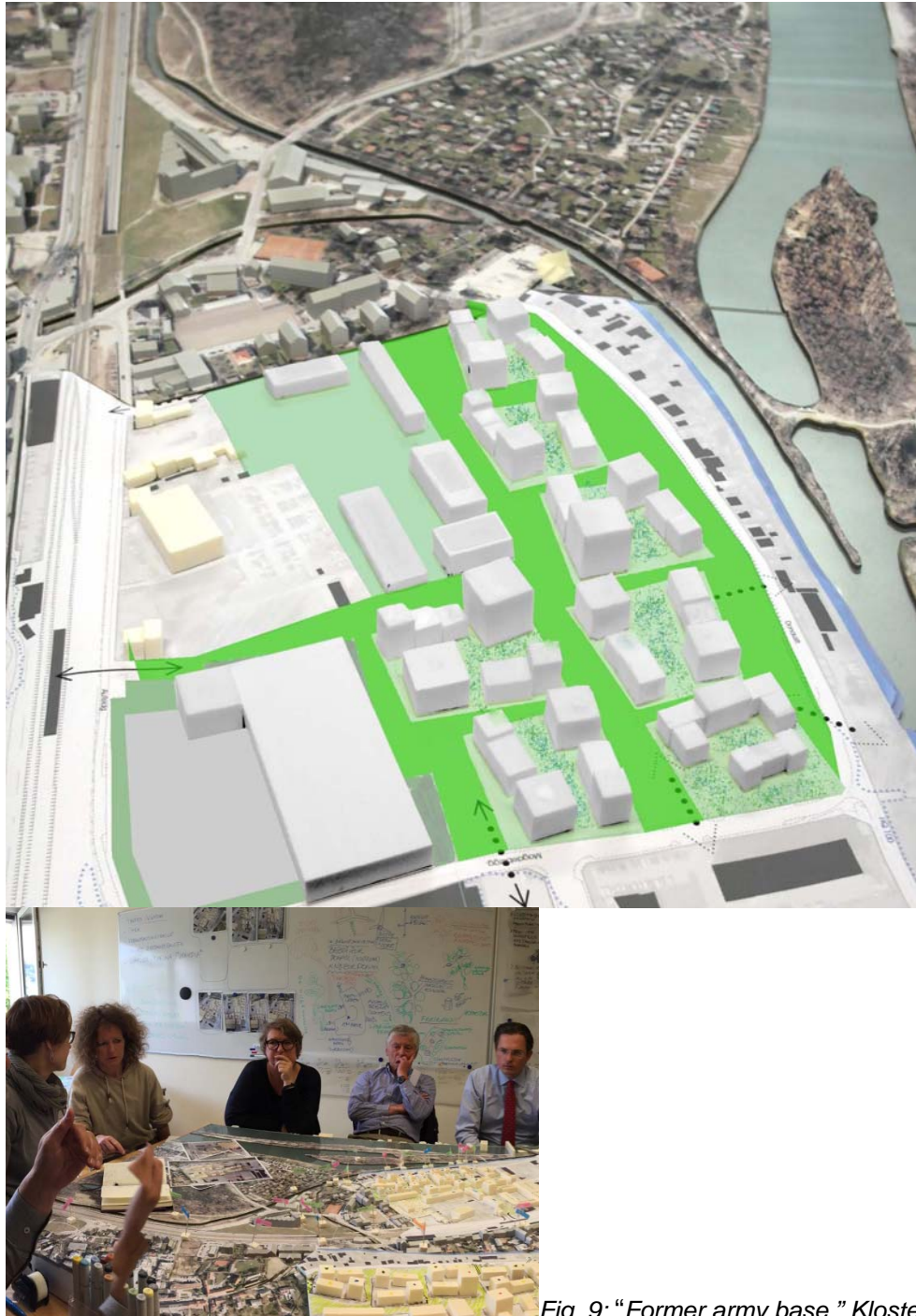


Fig. 9: "Former army base," Klosterneuburg⁵⁾

4.1 Competitive or Cooperative?

The main difference lies in the selected type of cooperation among the team members. The clients and the jury members often prefer a competitive approach, for the application as well as for the actual workshop. The clients believe that through competition they will achieve a wider variety of results; the professional jury members believe that through an urban design competition the application process is more open for younger and inexperienced architects/planners. The analysis in the study¹⁾ by Robert Temel, for which he interviewed different participants of the first nine cooperative workshops from the end of 2011 until the beginning

of 2013 in Vienna, clearly shows that the workshops without competition not only led to higher satisfaction with the process among all the participants, but also to better results. The reason for this is that the participants, after having worked cooperatively on testing different alternatives, unanimously selected one preferred solution and developed guidelines for the following zoning and architecture competitions. In the competitive workshops, on the other hand, the participants start into the process from the beginning with an individual design concept. This idea is often contradictory to other possible solutions, but nevertheless defended until the end of the workshops. Frequently, no clear result is achieved because of this. Decision-making is thus postponed to the architecture competitions – as was the case at the Ice Skating Rink / Intercontinental site at the Stadtpark.

The author's personal experience through active participation in the "Trabrennbahn - ¼ 2 Plus" Trotting Course, the "Altes Gaswerk Neu Leopoldau" and the "Kasernenareal Klosterneuburg" workshops is congruent with the findings in this study. "Cooperative Planning Workshops" are more successful when they are driven by team spirit rather than individuality.

4.2 The Role of Stakeholders and Clients

Another difference lies in the ownership of the site. If the land is still publicly owned, planners have much more freedom to search for the appropriate density and building typology, hence, the best solution for the site. If, on the other hand, the land is privately owned, planners and architects usually face higher pressure to achieve a minimum of gross floor space on the site and develop economical building typologies. It is therefore preferable to hold the workshops before actually selling the land in parcels, as happened in Neu Leopoldau. The site of the "Trabrennbahn - ¼ 2 Plus" trotting course had originally been publically owned, but was sold before the new planning philosophy was implemented.

4.2 The Timeframe for the Process

Time is never sufficient. One obvious disadvantage for the planners is that necessary planning time is reduced to a minimum in these workshops. There have been cases where complex sites were supposed to be planned in only three days. The clients, on the other hand, prefer the rapid process, as they achieve the zoning faster and with fewer controversies, especially with less opposition from the neighbors, who are often opposed to rezoning ambitions when they are not involved and do not feel well-informed.

5 PUBLIC PARTICIPATION OVER A LONGER TIME PERIOD – HOW TO KEEP INTEREST ALIVE THROUGH PHASED IMPLEMENTATION AND SMALLER PROJECTS

Generally, planning and urban design projects that are focused on the public realm and are not immediately linked to building projects quite often face a long timeframe until implementation actually starts. Therefore, strategies that can secure support for these projects over a long timeframe have to be developed. Public awareness is high when projects begin with public meetings, participation processes, etc. But if the process continues too long, with little or no sign of pending implementation, dwindling public interest is the consequence. Once formerly active community members have retreated from the process, it is difficult to rekindle their enthusiasm. Therefore, it is advisable to include in the overall plan smaller projects that can be implemented quickly and without problems. The planners must actively search for these situations on the site in order to successfully organize their separate implementation.

5.1 Strategies to Start with Small-Scale, Short-Term Projects as a Way of Actively Engaging the Community

One strategy that can help start immediate implementation is to plan on several levels and for parallel processes. Short-term measures that can be realized quickly and with small budgets are to be conceived along with an overall planning concept for the mid- and long-term.

The advantage of this strategy is that first steps can be approved and financed more easily than in large-scale projects, where the public debate and the political agenda can delay implementation ad infinitum. These exemplary projects not only have a high quality of their own, but also act as “scouts” and represent the overall planning concept.

The public, the client and the planners can readjust the concept after the first experiences have been made. Since community participation has become quite common as a way of accommodating different needs in a changing society and increasing identification with the neighborhoods, the test case can actually reinforce and deepen community involvement.

6 CONCLUSION AND FUTURE RECOMMENDATIONS

Recommendations for the future processes are proposed based on the experiences gained by the author and the recent evaluations by the City of Vienna.

- Cooperative Planning Workshops should not be competitive, but cooperative. The plans should be developed with team spirit, alternatives should be tested, but in the end one preferred solution should be recommended by the team.
- The allotted timeframe for the workshops should be generously calculated and depend on the size and the complexity of the site.
- The roles of the team should be clearly defined at the beginning; especially the role of the moderator should be neutral; currently, moderators often participate in the design process, too, thereby risking their neutrality.
- The desired qualities of the result should be discussed and defined at the beginning of the process, e.g., a lively, car-free, walking neighborhood with ecological, energy-efficient buildings.
- The future application of the workshop results should be presented by the client.
- An intermediate phase after the cooperative planning workshop is advisable in order to draft a plan in due time before the zoning is finalized. The team should either be commissioned with this task or at least be involved in this process. As it is now, the team of architects and planners is usually no longer involved in the further developments of their proposals.
- Architecture competitions should only be started if potentially controversial topics are resolved beforehand, e.g., density and height should be defined.

The new tool of “temporary zoning” should be applied for difficult sites in order to allow the planning authorities to revoke zoning changes in case the desired qualities are not delivered.

In order to not only conceive but also implement long-term planning projects that improve the public realm within the built-up city fabric, the active engagement of the community has clearly become necessary. However, the “incremental planning” process additionally helps to maintain public interest and heighten public enthusiasm while allowing ideas to be tested and the plans adapted, if necessary.

The applicability of this strategy of incremental planning to similar challenges is self-evident. In times of dwindling city budgets and growing media attention, authorities and planners no longer have the time to develop elaborate plans.

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Working within the *human* context

Tine VAN HERCK & Peter CASIER, PTA, Belgium



Figure 1: logo PTA

1 Practice based research

What should be the attitude of a designer in today's society where all certainties threaten to disappear? How to contribute something small to society in order to create a stronger tissue, a safety net, a solid foundation. How to pursue a *Joie de vivre* for the users, passers and ourselves ...? What is or could be the role of the designer in this complex world. Those questions are inherent for the practice of architecture, urbanism, an urban design and planning.

In this frame of questions and ambitions, we search for a human based design process. The developing of the method is a research through design, based on the practice of **PTA**.

This practice based research has the goal to develop a method that can be used for **real assignments**, with clients, budgets, realistic programs and restrictions. It is a method based on and made for everyday projects.

2 Method for a *human* based design process

Before introducing the method, we underline that the proposed method is a possible designer attitude. It is not our intention to develop an objective instrument of quality control. There will always be different kinds of architects with different attitudes and interests, which is good.

2.1 Scale indifferent

The method can be used to projects of different scale : from interior architecture to landscape strategies. It is scale indifferent. We think this is important because we believe in **multiscale and transdisciplinary projects**. The distinction between disciplines and scales ((interior) architecture, urbanism, urban planning, ...) is blurring.

2.2 Human context

This paper is an introduction to the (re)search. With the human based design process we aim to attribute something to the human context. We introduce the term human context as : **people alone or in all kinds of compositions** : a couple, a family, a neighbourhood, an age group, a city, a region, ...

Human context means people and **society and all its processes** and actuality.

The human context is in the centre of the presented design method. The method for a human based design process can be summarized in a diagram (fig.2).

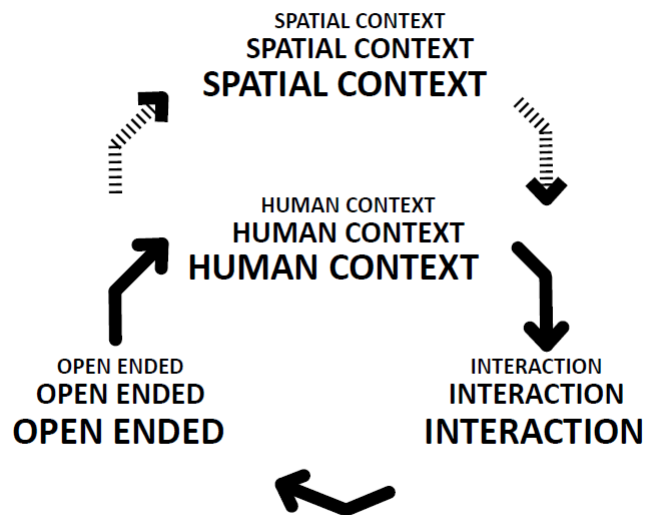


Figure 2: diagram

All assignments, indifferent their scale start from the **spatial context**. The method insist in analyzing the spatial context in different scales and adds the human context as a major precondition of the design process. A good analysis of the human context combines objective and subjective elements, findings and interpretations, text and images, and is the base for a human based design process. There is attention for the different scales and for the dimension of time.

All the relevant information of the human and spatial context can be put together in a **biographical frame** of a plot/ neighbourhood/ This frame is the starting point of the design process and it is the foundation of the project. Relevant aspects of a human context can be:

- To much public space causes little of contact

- Elderly and their integration in society
- Braindrain in a panoramic landscape
- People of all ages living together in the city
- ...

2.3 Interactions

Starting from the human context, the method proposes to seek for interactions. It can be interactions of all kinds : between people, between generations, between functions, between inside and outside, between private and public, between rural and city, between human and animal, between present and future, The interactions can be situated within the scale of the assignment, but they can also be on a very different scale.

The designer is tempted to search in each design process for assignment relevant interactions. We believe that incorporating interactions of all kind attribute to the human context. This is due to the fact that an interaction enlarges the human context of the project.

We illustrate with some examples :

- an open facade for a private housing building augments the liveliness of the public space;
- connecting different neighbourhoods in an art trial (**fig.3**);
- interactions between generations in a masterplan (**fig.4**);
- incorporating a public bar at the ground floor of a private office building;
- ...



Figure 3: Art Trial Foto Kanal, Brussels



Figure 4: Masterplan Huis Perrekes Geel

2.4 Open ended thinking

Afterwards or simultaneously the designer is asked to take into account **what we don't know yet**. The method believes in open ended thinking. Today's society evolves very quickly in contrast with building or planning processes which generally keep taking several years. The design has to take this into account and leave enough room for adaptation or evolution.

For example this aspect can be incorporated by :

- creating multifunctional spaces, using flexible structures, ...
- designing basic buildings with room for a self-expressing infill, ...

But this aim can also be achieved by :

- rethinking the use of heritage in a flexible way (**fig.5**)
- incorporating a timeline in the design and making it evolutive
- ...



Figure 5: Vision on development heritage

The open ended design method resulting in an evolutive design, is illustrated by the project of PTA for the Cadix square in Antwerp. The design incorporates the idea that the current and future inhabitants can rethink parts of the park in function of evolving needs and wishes (fig.6).

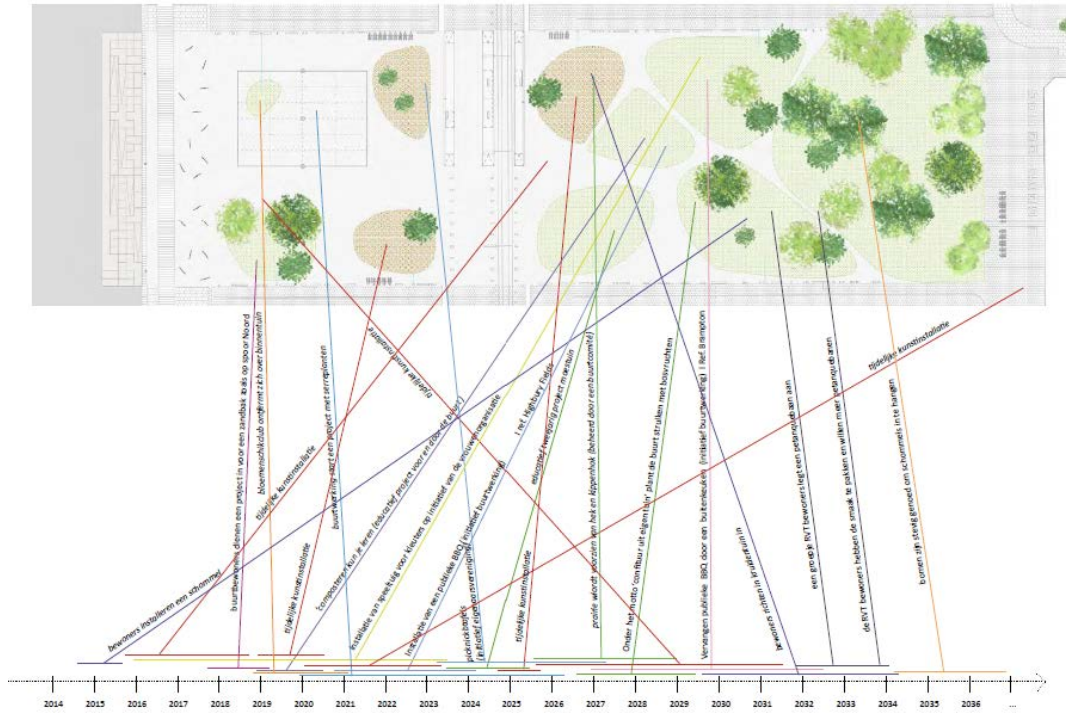


Figure 6: Cadix square Antwerp – evolving design

3 Evaluation

The goal of the proposed method is to attribute something to the human context. The design can differ from type and scale :

- a visible and open community centre inviting neighbours to meet
- a cohousing project where people enjoy life (fig.7);
- a art trail trying to break trough prejudices of bad neighbourhoods;
- a masterplan in which the interface between private elderly housing and public space has been maximalized to integrate those people in society (fig.8);
- the project for the cadix square in wich people are activator of transformation (fig.9).



Figure 7: Cohousing project (© Bart Azare)

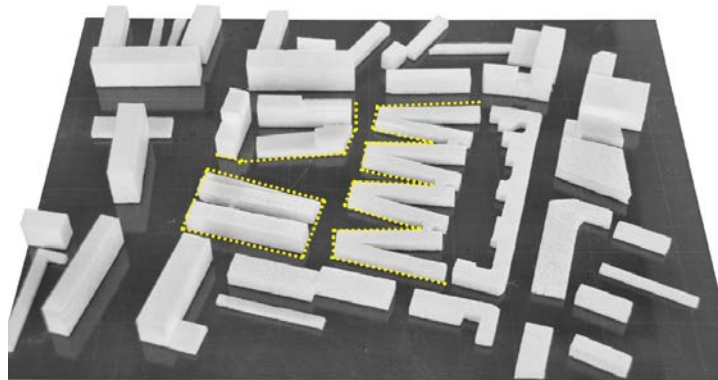


Figure 8. Masterplan Extra Muros Eldery housing

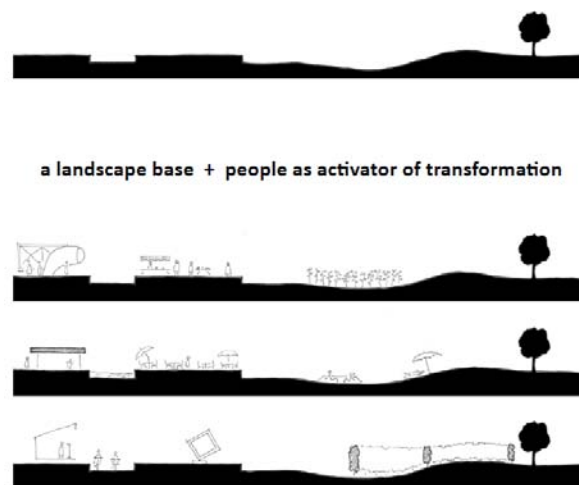


Figure 9. Cadix square Antwerp – concept scheme

An Italian architecture critic Bernardina Borra wrote about the design for the Cadix square (fig. 10):

*'Cadix is a neighbourhood in progress in the old harbour district Eilandje in the north of Antwerp. Massive housing projects are planned and population will multiply in a few years. The park/square is designed to be evolutionary just like the neighbourhood itself. A tram line will cross the square and the former warehouse will be re-used as a covered public space. The landscape gradually turns from park into square in order to collect different potential open space use according to inhabitants wishes and seasonal changes. Around the square are planned new housing, a school, and services for elderly people. The area will cater a diverse social mix in terms of origin and age of the people using the open space in different modes and times of the day during the whole year.'*¹



Figure 10. Cadix square Antwerp – overview

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Curating complexity in systems transitions

51st ISOCARP Congress 2015

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*“esperti locali ed internazionali
sono stati i nostri canali
imprese e cittadini
nel lavoro sono stati vicini
terra, acqua e sole
piu fatti e meno parole”*

Fragment of a poem composed by participants during the workshop in Rome.

1. Introduction

Engagement of local actors and stakeholders in urban areas is increasingly considered a prime leverage point for transitions towards sustainability (Loorbach, 2007; Vandebroec 2012). In practice it is a field imbued with complexity and conflict and awkward to navigate. While planning practitioners increasingly accept complexity as a fundamental challenge within the transition processes, they struggle with tools and approaches that accommodate it. Drawing on the notion of the curatorial from art and design, we are exploring a novel approach that engages directly and constructively with complex problems evident with multi-scalar, multi-actor and multi-dimensional urban planning projects.

Our approach proposes a novel and practical method to compress this diversity within time and place - such as during multi-party stakeholder discussions - in what we call a “curatorial approach to system transitions”. This paper describes the theoretical basis of this approach and why it is a relevant lens in which to approach complexity and conflict in urban areas. We also present empirical evidence from its application to a real-world sustainability transition related to the governance of a large urban asset in the city of Rome.

In Section 2 we identify three problematic qualities evident in urban planning situations that give rise to complexity. Section 3 shows how this complexity can be addressed and presents the theoretical basis and a process method of our curatorial approach. Section 4 describes a case study in which we applied this method to a participatory planning problem related to the Parco Agricolo Casal del Marmo in the Lazio region in Italy. We notably describe the context of this case, the implementation of the curatorial cycle and the main results of a participatory workshop. Section 5 concludes.

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2. Problem statement: The complexity of urban transitions

Deliberate strategies to effect 'sustainable transitions' in urban areas have recently been a subject of intense research within the field of Transition Management (Geels 2010, Loorbach 2007). It is now widely recognised that conflicts and complexities common in sustainability transitions are increasingly questioning traditional scientific methods developed in specialised disciplines and call for more integrated, adaptive and creative frameworks. Armitage et al (2008), who explored complexity in sustainability transitions, notes that "social-ecological complexity" should be addressed through new ways of managing knowledge and a diversity of scales and actors. We will now analyse in more detail the relevance of diverse knowledge, actors and scales for the case of urban sustainability transitions.

Knowledge: The interdisciplinary literature at the intersection between the natural and social sciences has emphasised the importance of interdependencies between different dimensions of sustainability interventions (Ostrom 2007). For instance, it is crucial to understand how economic behaviour is affected by physical interventions. Practices in urban planning, however, reflect the disciplinary specialisation of professionals so that economists, architects, agronomists, engineers, sociologists, urban planners and so on lack practical tools permitting meaningful dialogues on specific projects (Buchanan 1992). While there is an increasing consensus for the need of interdisciplinary approaches to urban transitions, cooperating across disciplinary boundaries is still confronted by incommensurate semantics, work approaches and demands extremely time consuming methodological and conceptual translations.

Actors + Stakeholders: Planning processes involve a wide range of actors that have to be concerted, convinced or consulted. There has been a surge in tools and methods to select and integrate many of these actors in planning processes, most recently under the banner of "Participatory Design Workshops" (Cox et al 2015). Most of these tools have led to disappointing results. A lack of political will and institutional entropy provides rocky terrain for methods and tools to take root, resulting in overstrained time and resources of different groups, in what is referred to as 'participation fatigue' (Kaszynska et al 2012). There is also a more general concern that a focus on "key stakeholders" overemphasised economic and political power over alternative criteria such as being personally affected by the planning processes, professional and lay knowledge about the site or civic leadership in the concerned area. Drawing on empirical studies of common-pool resources that are often structurally similar to urban assets, one of the design principles advocated by Ostrom (2008) is to authorize most of the individuals affected by a resource regime to participate in making and modifying the rules of the regime. This creates the need for frameworks that allow the incorporation of a more complex set of stakeholders into planning processes in a meaningful and operational way.

Scales: Changing urban form typically affects functioning at multiple scales. Scales are deeply intertwined so that interventions at a particular scale need to understand and anticipate interrelationships with lower and higher scales (Omann and Spangenberg 2002). Moreover, without a nuanced understanding of the different nature of scale levels, policy

making can easily become fragmented and inconsistent resulting in confusion and distrust (Swyngedouw, 2005). These can also be interpreted as scales involving time, ranging between the immediate and long term futures of the space. This complexity constitutes one of the core themes of the planning profession and has inspired visual and conceptual tools to address multi-scalar problems. However, in practice planners face time constraints and relatively narrow mandates so that multiple scales often continue to be a poorly resolved issue.

3. A curatorial approach to system transitions

3.1 Complexity is not chaos: adopting a systems perspective

Due to the different drivers of complexity that characterise urban sustainability transitions, urban planning situations typically accept no clear problem definition. The staggering quantity of interconnected variables and relationships also means that they normally defy conventional scientific methods based on reductionism. As a consequence, they resemble “Wicked Problems” found in societal contexts involving issues such as environmental, economic, or public policy within a pluralistic society where there is no objective definition of a public good (Rittel & Webber 1973). Churchman (1967) has described such problems as “ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values”.

Complexity should, however, not be confused with chaos and there are several longstanding academic traditions that have successfully addressed complex social problems. One of the most powerful ways to capture complexity is through thinking through systems - from the Greek *systema*, “organized whole, a whole compounded of parts” - that adopts a holistic perspective in order to examine how the elements of a system “stand together”. While system thinking was long crowded out by theological explanations of observed complexity, it reappeared in Western philosophy during the Enlightenment, as in Goethe’s lifelong struggle to understand “what keeps the world together in its core”. In the 1970s, system thinking revolutionised the understanding of complex biotopes such as forests or oceans by framing them as intelligible “ecosystems” (Duvigneaud 1975). Around the same time, MIT scientists applied system thinking to global biophysical developments and charted “the limits to growth” beyond which global production systems would become unstable (Meadows et al, 1972). Historically and intellectually rooted in engineering science, system analysis is today an academic discipline in its own right, while other disciplines have developed specific theories on monetary systems, mobility systems, legal systems or approaches to systems thinking.

The mainstreaming of sustainability as overarching policy goal has led to an increasing necessity for holistic approaches in order to understand the interrelationships between economic, social, environmental and cultural systems at different scales. Emphasising the connectedness of biophysical and anthropogenic systems, many authors refer to their nexus as “social-ecological systems” (Dietz et al 2003). Although it is rarely adopted in urban planning and spatial design, we argue that a “system perspective” provides considerable mileage for dealing with the different forms of complexity associated with them. It invites the participants in a planning situation to consider how different particulars (such as a new building, a new economic activity, a new park etc) together form a whole.

The kind of systems encountered in urban planning situations are, however, intrinsically different from “hard” systems applied to natural science and engineering. The presence of multiple types of knowledge and actors mean that the understanding of social-ecological systems requires dealing with multiple overlapping perspectives as any specific discipline or body of knowledge will always be partial and provisional (Brown et al 2010, Midgley 1991, Moulaert and Van Dyck 2013). As such, dealing with the transition of social-ecological systems is a natural bedfellow with inter- and transdisciplinary approaches and practices. They defy overly rational approaches and tools and call for a plurality of voices, lenses, and instruments. This is notably due to the fact that key elements of the system - its stakeholders and their knowledge - are not exogenous to the analysis of the system. They can for instance decide on the goals and the rules of the system and, on a more fundamental level, assign *meaning* to the system. The curatorial approach we present in the next section offers an innovative and conscious effort to adopt system thinking in a setting in which the meaning of the system is subject to interpersonal dynamics that are part of the planning situation.

3.2 The curatorial as a framework for systems

While much has been written about potential tools for tackling wicked problems, considerably less is written about influential roles that can facilitate these, as individual approaches or assemblages, within a participatory setting. Roles like organiser, facilitator, or moderator tend to reflect the logic of tame problems that can be ‘fixed’ through analytical decomposition and are not relevant for wicked problems; additionally, roles, such as these, and associated tools, carry with them considerable institutional baggage (Van den Broeck 2011). With this in mind, we argue instead for a curatorial role, a position that deals with complexity and conflict using multiple approaches, methods and logics.

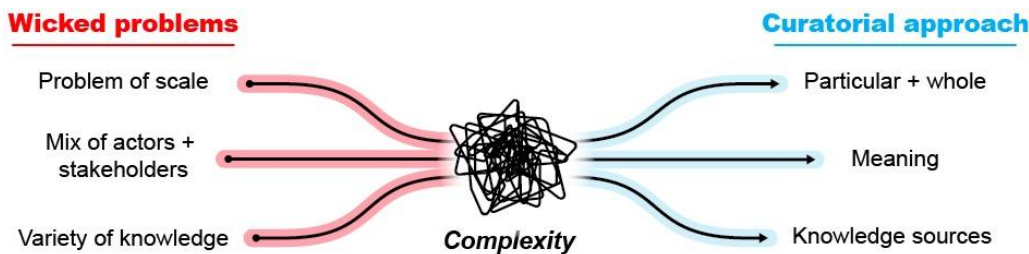


Figure 1: Challenges of wicked problems + the basic aspects of curating

The Swedish curator Maria Lind (2010) defines the curatorial, as “...a way of thinking in terms of interconnections: linking objects, images, processes, people, locations, history and discourses in physical space like an active catalyst generating twists, turns and tensions.” In today’s art and design world, the curator plays an important role as translator and mediator between the artefact and different audiences. He/she is intimately connected to the artefact itself and deeply concerned with the output of the translation, actively giving it form but plays a role which is neither the cultural producer nor the audience. The curator, having been provided with institutional or cultural legitimacy, has a wide arsenal of techniques for engaging audiences and translating the story of the artefact and its significance.

3.2.1 Three Guiding Principles of Curation: We argue that framing urban planning situations as wicked problems and adopting a curatorial approach with systems at its heart, provides considerable mileage for moving forward, untangling stand-offs and making such problems accessible to relevant actors. This can be derived by looking at three guiding

principles that characterise *our* curatorial approach to system transitions: 1) a focus on 'meaning', 2) knowledge emerges and is transferred from multiple sources, which need not be analytical or cognitive, and 3) an oscillation between the particular and the whole.

1. *Meaning:* At the heart of the curatorial is an affinity and partiality for the subject matter. It is not value-neutral. It assumes a position of relationality, whereby the curator recognises his/her own subjectivity in the process of their work. The term curator originates from the latin *cura*, to care for. The role of the curator, originally, was a caretaker of objects and artefacts and today the curator is concerned with what the artefacts 'mean' to different audiences. We adopted both of these roles, a deep consideration and care for the context and its potential futures as well as translators--helping communicate the context's meaning according to local stakeholder positions.

We argue that taking a disinterested position as neutral facilitator does a disservice to the context, rendering analysis and propositions as scientific, concerned more with what 'is' than what 'could be' and limiting the different means to explore the problem and possible solutions. By situating the organiser's role as deeply 'caring' for the context and its outcome, it refocuses discussions and interactions. To do this, we invoke strategies that aim to penetrate below the levels of 'interest' and 'position', to reach points of significance. These strategies include addressing emotive and experiential facets of stakeholders through visual, creative, experiential and reflective modes of action.

2. *Multiple ways of knowing:* In line with the a systems perspective, the curatorial affirms that there are multiple ways of knowing—equally so, this is paired with a multiplicity of forms of communication. System transitions not only require tapping into the different bodies of specialised knowledge associated with the canon of academic and professional disciplines but also require uprooting accepted knowledge hierarchies--the thinking which has given us these problems in the first place-- such as giving preferences to art over science, or a designed artefact over a policy document.

Multiple ways of knowing also implies a considerable amount of demystification of the problem being addressed, whereby individuals learn to see and accept their own perspective as part of a much the broader discourse. This can bring about a greater openness to a variety of ways of knowing and an active integration of types of knowing through action, as found in problematisation (Miciukiewicz et al. 2012). We seek to combine multiple forms of knowing and expression, as a way of tapping into the wholeness of our experience as humans, accepting intangible feelings, dreams, nostalgias, or sentiments as valid and useful for the workshop process.

Expression is made meaningful and real through processes of reification, which is the translation or congealing of ideas into 'things' such as artefacts, relationships or even concepts such as 'justice'. The materiality or concreteness involved provides a milieu for inquisition and exploration enabling negotiations among participants with very different interests or skills. Afterwards we are left with an artefact that represents the moment of codification when the knowledge of the group is synthesised into a material and symbolic system, which is embedded with the consequent social, political, cultural and institutional negotiations inherent in its production, what Gherardi and Nicolini (2000), call a "complex form of social and technical bricolage". From this, the artefact or concept, with all its implicit

combinations of knowledge, embodies a new context of use and thus also a new starting point within an on-going process upon which dialogue is sustained.

3. Elements within a whole: To work with complexity, it is necessary to work between the individual elements that constitute the whole. Dan Hill (2012) refers to this as skipping between the 'meta' (the big picture) and the 'matter' (the material detail). Taking from the curatorial and systems thinking tradition, we contend that the particular and the whole cannot be understood without the other, therefore, moving towards systems transitions requires change to occur at the individual *and* structural levels. The curatorial draws the agency from the individual level into the systems level, through this oscillation of scales.

3.2.2 Curatorial Cycle (the workshop structure)

Time constraints remain a considerable challenge in the context of stakeholder meetings. Motivating relevant stakeholders to sit together is a difficult task, often requiring factors such as incentives (“what’s in it for me?”), which are difficult to sustain for longer periods. Another important challenge is communicating the urgency of the problem at hand—the need to act and overcome pre-existing barriers in knowledge creation and shared action.

We recognise the impediments and opportunities of short-term workshops. We frame scenarios as interventions, creating a spatial/temporal break, disrupting habitual patterns of thinking on the subject matter. We seek to use features such as time and risk as an intrinsic part of the workshop — a compressed multi-experiential event evoking strong emotions, memories, ideas, and beliefs. Our curatorial approach aims to limit what commonly are long and drawn out ‘negotiations’ over entrenched stakeholder positions. In this way discussions can be much more frank, open and direct.

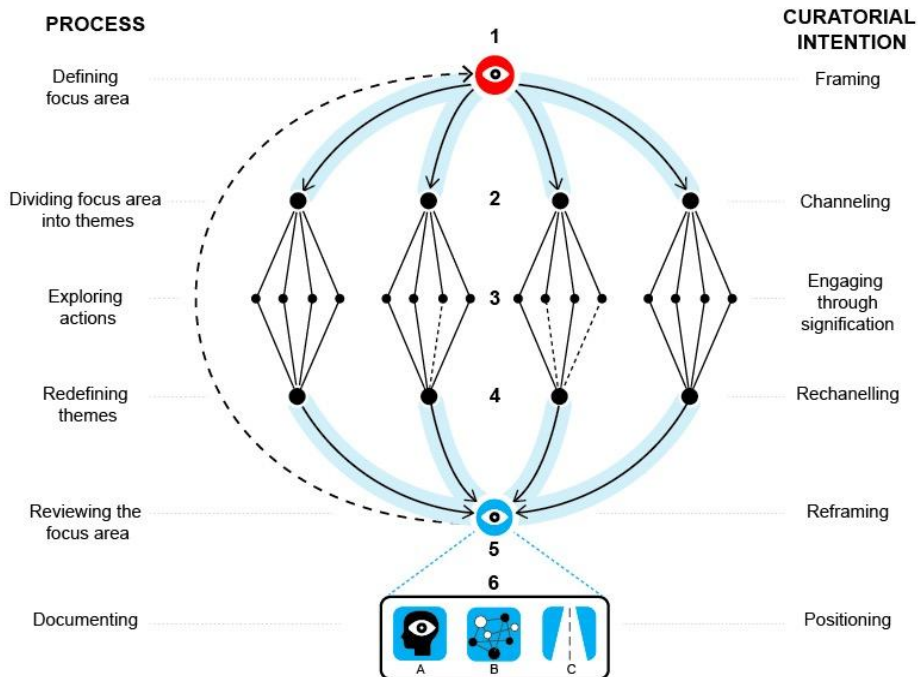


Figure 2: The workshop cycle; the curatorial frames the steps in the process

The workshop process functions as a six step cycle. The first Step (1) opens up the discussion and frames the focus area - this can be seen as divergent thinking and can be quite abstract. The following three Steps (2-4) involve splitting the focus area into smaller themes that invokes emergent thinking. Specific problems can be discussed in detail to test the concept defined in the focus area. It also explores action areas that may be explored further after the workshop. The fifth Step (5) uses knowledge gained in Steps 2-4 to review ideas noted in Step 1 through an exhibition of the work produced - this is a moment where the themes are compared and the vision tested. These five Steps are what we, in the context of a workshop, call a curatorial cycle, which can occur numerous times over the course of the workshop. Once the general focus area has been defined, it is possible to refine a vision and define specific actions. The final Step (6) evidently involves documenting the process and defining further steps forward.

1. Framing

- > *Process*: to begin bringing together different ideas, worldviews, hopes and fears.
- > *Curatorial intention*: to start with the holistic vision of problem area, which is a curated working hypothesis. This is the basis for exploration using different means available, such as artefacts, images, research material or presentations, which set the tone without directly addressing the specific context.
- > *Outcome*: The basic building blocks of a coordinated vision that allow for discussions to funnel towards specific issues.

3. Engaging through signification

- > *Process*: to personally reflect and identify concrete actions, artefacts or conditions for addressing a part of the problem.
- > *Curatorial intention*: to create the conditions for individuals or small sub-groups to personally identify with the problem or solution and to find a unique voice within the wider discussions.
- > *Outcome*: The emergence of specific action points for a small part of the larger problem.

5. Reframing

- > *Process*: Bring the groups to a point of exchange to review and refine the vision.
- > *Curatorial intention*: Negotiation of knowledge(s) through bringing together tensions, juxtapositions, complementarities et to catalyse responses and resonance with the proposed vision.
- > *Outcome*: A closer consolidation of particular proposed solutions within the vision.

2. Channelling

- > *Process*: Break down the vision of the problem as a system composed of multiple tangible problems, which can be individually addressed.
- > *Curatorial intention*: to predefine the themes before the workshop in order to channel the focus of the participants.
- > *Outcome*: Participants are not lost within the complexity of breaking down a large problem. Instead, this activates discussions and accelerates the collaborative process towards pre-determined useful themes.

4. Rechannelling

- > *Process*: Integrate different particular solutions within a larger body of solutions.
- > *Curatorial intention*: valorising leverage points.
- > *Outcome*: A deepened knowledge of how the particular parts fit within the whole.

6. Positioning

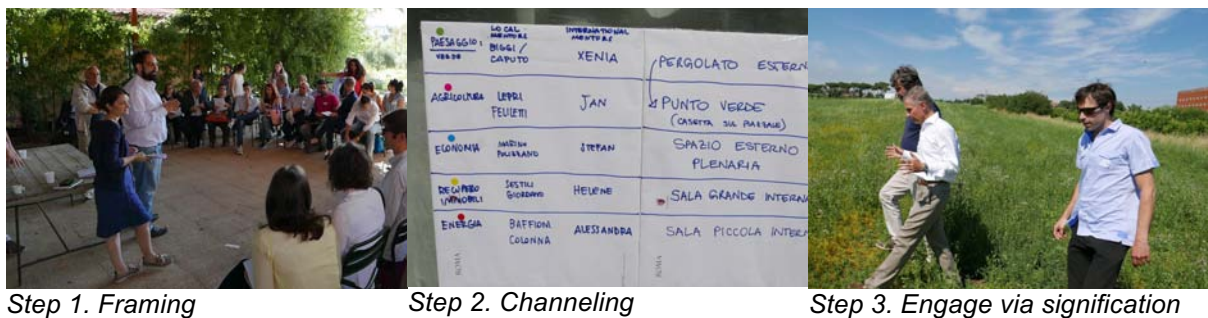
- > *Process*: Document and communicate the ideas from the previous steps into a meaningful and memorable form.
- > *Curatorial intention*: To support multiple voices and expressions in translating different ideas into a visual representation.
- > *Outcome*: a visual representation that incorporates the complexity of the problem and the nuances of the multiple solutions provided.

4. Curating a system transition in the Parco Agricolo Casal del Marmo

4.1. Genesis of the project

The area referred to as “Parco Agricolo Casal del Marmo” is a 460 ha site situated in the North-West of Rome. Most of the Parco was left fallow after real estate speculation progressively crowded out agricultural uses since the 1970s (Suchiarelli 2002). The site is zoned ‘collective interest area’ as an ‘agricultural park’ - a political decision that translated into a considerable financial loss for landowners seeking to develop the land (Bollettino Ufficiale 2014).

In October 2014, the authors were approached by the regional public business innovation agency (BIC Lazio) and the local municipality (Municipio XIV Roma Capitale) to consider the Parco Agricolo in the context of our work on TURAS, a European research project on sustainable and resilient cities. The site clearly fits Rittel’s description of a wicked problem (2012). Firstly, the problem statement was ill-formulated, information was confusing, including outputs of previous participatory planning actions for the site (Associazione Comitato 2012). There were likewise numerous clients and stakeholders with conflicting values; we were asked to work with local and regional agencies with different agendas and interests in the site and also had to consider a wide range of other private stakeholders such as the landowners. Part of the local business community and civil society has also (potential) interest in the development of the Parco. Finally the ramifications of a project at such a large scale within the political and economic hub of the city of Rome has implications for social and natural systems at different scales.



Step 1. Framing

Step 2. Channeling

Step 3. Engage via signification



Step 4. Rechanneling

Step 5. Reframing

Step 6. Positioning

Figure 4.1-4.6: workshop steps

4.2 Applying the curatorial cycle in a three-day participatory workshop

In this section we describe how we applied the curatorial cycle described in Figure 2 (section 2 above) to the “wicked problem” we faced at the Parco. Our first action was to create a curatorial situation. We achieved this by suggesting to the local authorities that the complexities of the Parco’s development could be addressed by compressing a large variety of viewpoints and forms of knowledge in time and space, a compression that took the form of a three-day, on-site, hands-on workshop with around 60 participants from the area that was organised in June 2015. The workshop also includes five external international experts that help provide inspiration. The overall architecture of the workshop was structured in the form of the six steps of the curatorial approach presented above.

Step 1. Framing. Our working definition of the overall problem area of the Parco embraced a non-neutral and political stance: we decided to engage with the local stakeholders and the site in order to help co-constructing a meaningful vision. We wanted to promote a positive vision that would suggest to the local and regional decision makers that the Parco could play a completely different role in the urban system. While the representatives of the local municipality shared our non-neutral assessment from the beginning, we further curated the narrative to help narrow the focus of the workshop. We clearly stated in all communications that the purpose of the workshop was to “create a community-based food system” of which the Parco was to be the heart.

We then further framed the workshop experience through a mix of visual artefacts, physical exposure and presentations. For instance, we prepared and exhibited on the site of the Parco a series of large photos and descriptions of community-based food projects from different contexts across the globe. Day 1 started with a guided walk around the site. This was followed by short presentations that again focused on community-supported food projects in other cities given by the five external experts.

Step 2. Channelling. Moving from the whole to the particular was achieved by channeling participants and conversations into a limited set of themes: Steps 2-4 thus took place within thematic groups composed of 10-15 participants that were predefined according to interest and expertise. This allocation was based on the municipality’s assessment of each participant’s knowledge, interests and professional training. This being said, participants were free to affiliate and follow other themes as well - and many did.

The themes were similar to the ‘principles of relevance’ that designers identify when addressing wicked problems (Buchanan 1992) including: agriculture, urban integration, landscape, energy and resources, and economy. These themes were predefined by the organisers in order to save time and ongoing discussion during the workshop.

Each theme was framed as a ‘subsystem’ of the site as a whole. During Step 2, the groups formed by each theme were given a set of clear objectives and exercises that aimed at developing systematic thinking, including intermediate objectives such as: “understanding system analysis”, “understanding system maps”, “identifying the elements of the system” and

so forth. While the themes were somewhat elaborated for the teams, it was expected that the team validated or redefined them as they saw it.

The municipality had identified two knowledgeable individuals for each group and assigned them as “coordinator” and “facilitator”. In addition, the research team (curators) assigned an international mentor to each group with the intention to provide references to community-based food systems at the sub-system level. The coordinators/facilitators were then handed over a detailed script including the objectives and suggested ways to reach them. In hindsight, group leadership turned out to be a big challenge and would likely have been more effective through self-organisation within the groups.

We found that the act of drawing a system, even a simple system (i.e how a carrot travels from farm to fork) was enough to set a common vocabulary, defined by the participants, to help integrate actors in the map-making process. This self-interpretation and “rule-making” within the group allowed a critical step forward. We observed that groups that did not start to draw a visual representation of “their” system either struggled to structure their ideas and lost time talking abstractly or otherwise resorted to a communication language that fit their predominant vocation and lead to a partial analysis (such as schematic design drawings for the landscape group). The workshop confirmed that people are rarely trained to think in systems and will clutter down, focusing on their specialisation if left to their own accord. The basic concept of systems thinking proved to be quite didactic and helped individuals to express their knowledge in a way that would be commensurate with other conversations.

Step 3. Engaging through signification. Step 3 is pivotal in our framework as it strives to create situations in which all three curatorial aspects come into play. Step 3 further splits the thematic groups into more specific issues and groups of 2-4 individuals that would be most likely to lead to meaningful exchange on a personal level (*aspect of meaning*). Second, these more intimate conversations would span a broader and deeper spectrum of human communication, and participants were encouraged to walk around the site so as to situate Step 3 in the landscape (*multiple ways of knowing* and rooting that ‘knowing’ in *meaning*). Third, the conversations were framed as a mid-point of the cycle whole-particular-whole (*elements within a whole*).

The precise content of the conversations in Step 3 was to some extent left to the groups to define, as long as these conversations were oriented towards creating a vision for the thematic sub-system that could be later incorporated into the vision for the whole system. On Day 1 most conversations focused on the values or overall objective that the development of the Parco should pursue, therefore touching not only on analytic but also on personal and emotional aspects that are difficult to discuss in larger groups. The conversations on Day 2 were directed at exploring and defining concrete actions for transitioning towards the overall vision established in Step 5 of the first cycle. Discussing specific interventions in personal conversations proved to be instrumental for keeping discussions relevant and interesting while also fostering commitment and tangible steps towards implementation, as most conversations involved specific actions that individuals wanted to be and could feel personally involved in.

We felt that Step 3 was extremely valuable for the entire workshop process and featured deep conversations about actions that are too often missing from other participatory approaches to planning. The diversity of situated conversations also rendered the work on

each theme more resilient: while not all conversations made equal progress, having many of them simultaneously on each theme ensured that the groups could build on a diverse mix of creative, constructive, visionary, and realistic conversations. Also, as the team members could freely engage with other groups, cross-pollination of ideas allowed both collaboration and competition and propelled the groups forward.

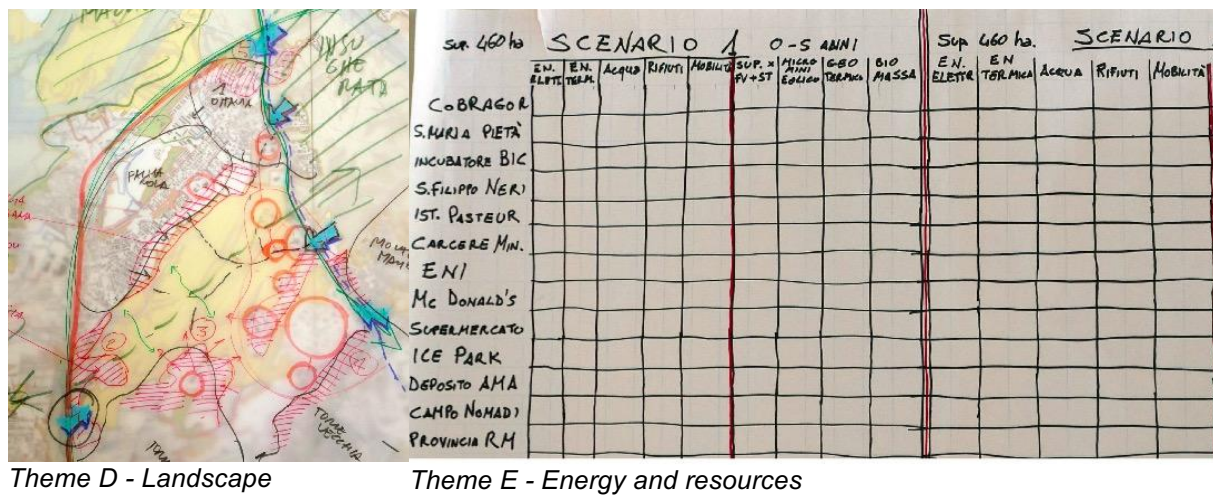
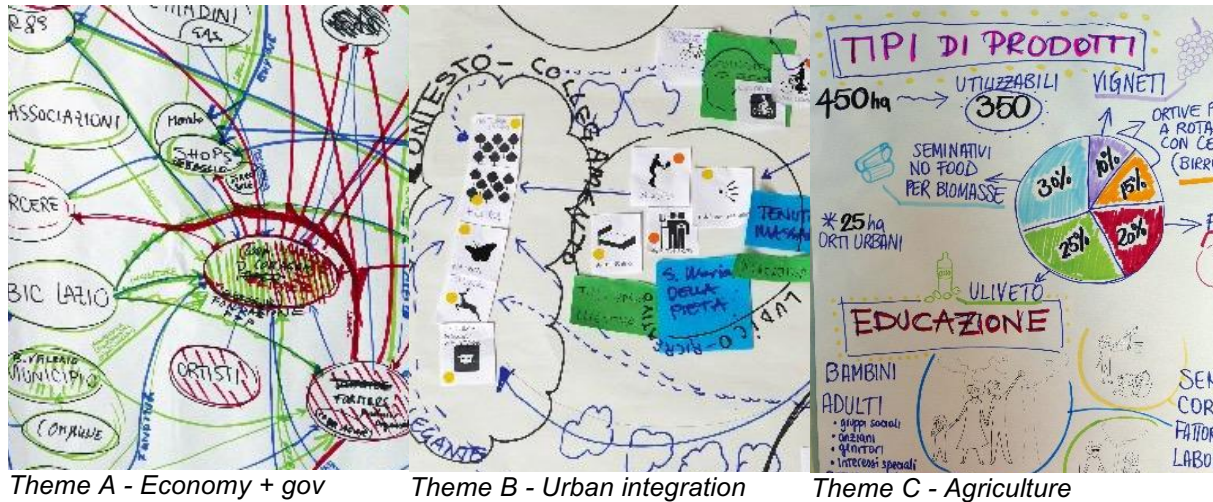
Step 4. Rechannelling. Step 4 is the last step at theme-level and serves to redefine or update the results of Step 2. We set the objective of this step as identifying the action areas with the highest leverage for transitioning the Parco's system in the desired direction. For this purpose, overlapping conversations could be merged and irrelevant or conflicting ones discussed and discarded.

Step 4 was instrumental as a bridge between the personal conversations of Step 3 and the plenary presentation in Step 5. We believe that the symmetric nature of the curatorial cycle allowed to keep the group-level discussions relevant and constructive: results from the personal conversations were presented as contributions to the thematic objectives as well as in the context and language of the framework that the group defined together prior to splitting. This meant that members of the group perceived themselves as "playing for the same team" without excluding the psychologically rewarding sensation of proposing a particularly creative or useful individual contribution.

Step 5. Reframing. In this workshop the step took the form of a plenary session in which a collage of visual material (including vision drawings and subsystem maps) was exhibited as a backdrop. Representatives of each thematic group presented in turn the main outcomes of Steps 2-4 to the plenary, again in an atmosphere of "playing for the same team" since the thematic work was framed as specialised contributions towards the overall vision for the Parco.

At the end the end of Step 5 the group naturally produced a rather heteroclite collage of ideas, concepts, propositions and partial visions. But presenting these elements side-by-side as a first step towards a more coherent vision nevertheless created the impression of an ensemble. It also provided material for fertile interactions between the thematic groups since we observed that many substantial and procedural achievements of Day 1 appeared in the work of other groups in Day 2. On any account, we believe that the exhibition of the results fostered a deep sense of ownership for both the partial results and the vision for the whole.

Many participants referred to the process as "our method" and the research team's main achievement as "having brought us all together so that we can work this out". At the end of the three-day workshop, we proceeded to Step 6 which positions the workshop output through different elements of documentation that are presented in the next section.



Figures 5.1-5.6: Examples of the styles of the maps produced for the final exhibition.

Step 6. Positioning. The following Figures 5.1-5.6 (above) shows the range of ideas developed within the groups. This is only a sample of the output however shows the diversity of the material developed by the participants and how they represented their ideation process. The groups were asked to include 3-5 'action areas' based on the most significant priorities - many of these were those explored during Step 3. The compilation of all of these diagrams helped define overlaps and the main leverage points for the project as a whole. In this case one of the main conclusions from the workshop was that an independent organisation, we refer to as a 'community interest company', was necessary to represent the vision, drive and negotiate change.

5. Conclusions

Local communities, especially in Southern Europe, experience the confluence of fiscal austerity, environmental degradation and social tensions. These crises, however, also release financial, physical and human resources that were so far oriented towards business-as-usual approaches for assets such as public land, vacant real estate or defunct industrial

sites. While the integration of such assets into community-based initiatives is becoming an increasingly popular strategy with policy makers and civil society organisations interested in sustainability, we observe narrow and shallow approaches for engaging with the complex and conflictual nature of the “wicked problems” that such transitions typically imply. This paper contributes to filling this gap by presenting the theoretical and empirical basis of what we call a “curatorial approach” aimed at locally grounded system transitions.

Our theoretical contribution proposes that real-world sustainability transitions call for a fundamental re-thinking of the role of planning professionals in participatory processes. Most urban interventions have repercussions on multiple scales, involve multiple sets of stakeholders and have ramifications on multiple dimensions of social-ecological systems. The combination of these multiplicities means that they should be regarded as “wicked problems” whose complex and conflictual nature defies standard research methods oriented towards analytical, specialised and value-neutral disciplines where outcomes are relatively clear.

The curatorial approach developed in this paper addresses wicked problems through two complementary strategies. First, by re-thinking the role of planning professionals as “curators” whose interventions are guided by the principles of creating meaning, caring for the context, fostering diverse ways of knowing, and oscillating between the particular and the whole. The curatorial here provides a unique set of instruments for dealing with different knowledge parcels as well a useful metaphor for thinking of the role of the planner in ecological projects--a caretaker and guardian. Secondly by embedding the curatorial approach in a system perspective, stakeholders are encouraged to simultaneously think in terms of individual and structural actions that are necessary for sustainability transitions. In the case of our work in Rome, the combination of these two strategies led us to develop a “curatorial cycle”, which offers an example for planners to navigate through the different steps involved in real-world system transitions.

We have applied this new approach in the context of the development of the Parco Agricolo Casal del Marmo, a site of undeniable economic, environmental and social potential situated in the periphery of Rome. The empirical evidence showed that our approach allows for stakeholders to effectively address the complex and conflictual nature of sustainability transitions. Stakeholders notably felt empowered to make meaningful contributions to the transition of the site towards becoming a hub of a community-based food system and felt confident that the inevitable *fuzziness* of the transition process could be overcome by aligning all stakeholders through a strong common vision. This is a first large-scale application of the curatorial approach, further empirical testing is nevertheless warranted so as to assess its external validity in other contexts.

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Reconnect the City of Yangzhou with World Heritage Grand Canal Landscape

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Abstract

In 2014, the Grand Canal (China) was included on the World Cultural Heritage List. As the cradle city of the Grand Canal, Yangzhou is now facing the challenge and also opportunity of conservation practice in the context of rapid urbanization. Our research uses the approach of 2011 UNESCO's Historic Urban Landscape Recommendation, based on an inventory of the historic waterway landscape system in Yangzhou through a cultural mapping, analyzes the deterioration of the historic water reaches, related heritage sites and sense of places, proposes and discusses the ways of sustainable historic urban landscape regeneration to enhance the historic cultural significance.

Key words: World Heritage Grand Canal, City of Yangzhou, Historic Urban Water Landscape, Cultural Landscape Reconstruction

Introduction

The Historic Urban Landscape approach(2011 UNESCO) is an updated heritage management approach based on the recognition and identification of a layering of values present in any historic city and the need to integrate the different disciplines for the analysis and planning of the urban conservation process, in order not to separate it from the planning and development of the contemporary city – in other words, the HUL approach seeks to reconnect historic quarters with the new city, urban conservation with the planning and development process, and the different cultural traditions and socio-economic dynamics that are present in any contemporary city.

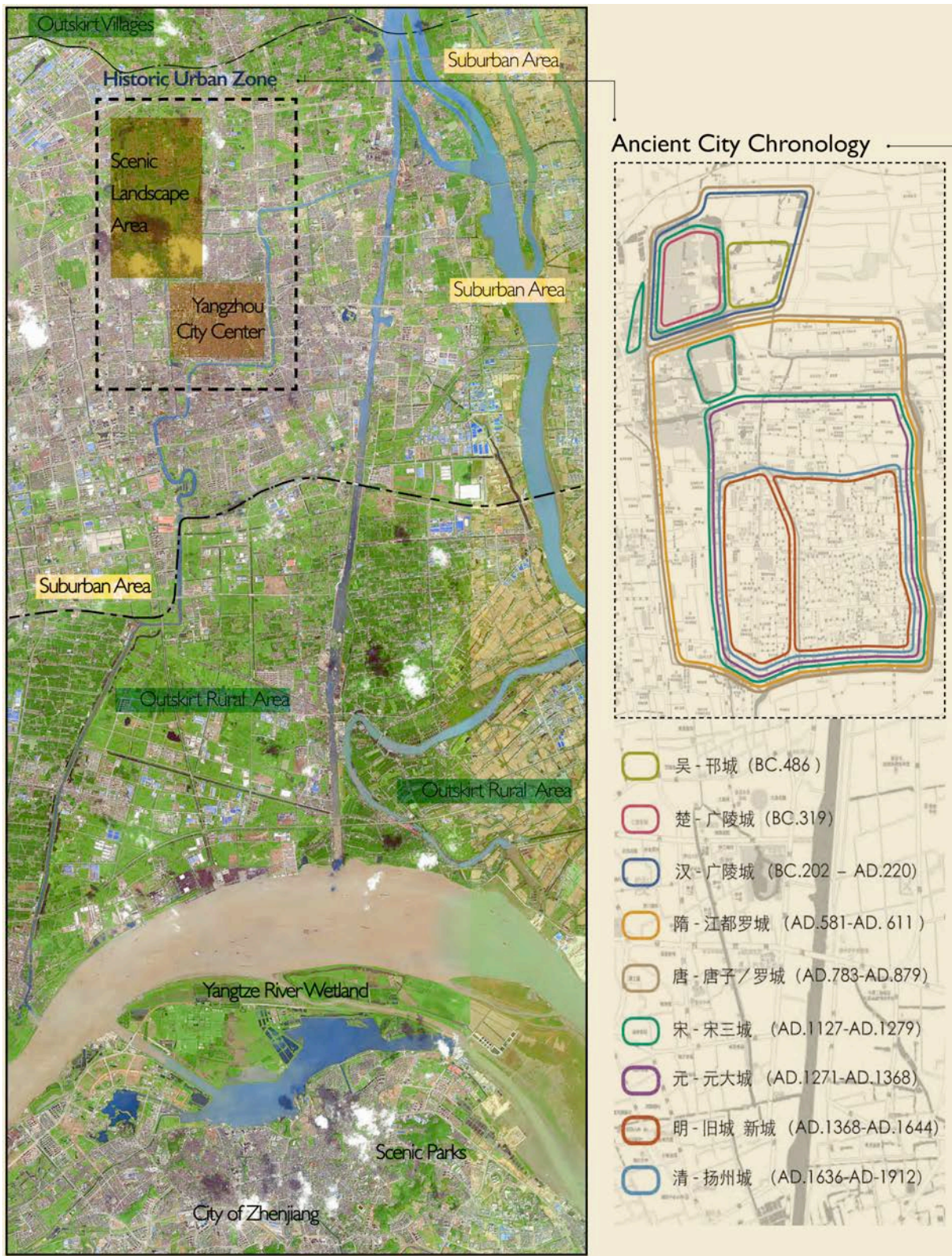


Figure 1. Satellite Image(2014 google map) of Yangzhou and Ancient City Chronology

In the case of Yangzhou, for more than 2500 years, the urban historic waterway systemⁱ grew from the old Canal has spread more than 22km² area of the historic city center (Fig.1), the evolution of which writes not only an epic textbook of the comprehensive history of the canal and the city, but also the domestic history of China as the Grand Canal evolution's cradle for thousands of years. In the nomination of Grand Canal World Heritage, Yangzhou play a critical role to lead the conservation of canal heritage as example for other cities along the Grand Canal. However, the authenticity and integrity problem became a debate in the sense of holistic historic urban landscape conservation under the evolving context of urbanization in China.



Figure 2: Throat Location of Yangzhou with Yangtze River and Grand Canal

In the research, comprehensive cultural mapping was organized to examine the deterioration of the historic waterway system in Yangzhou shows that nearly 70% related historical evidence has been lost. Online and offline questionnaire survey to understand how citizens concern about the related knowledge and memory, the result is not positive neither that the existing condition of the water landscapes on most of the water branches could hardly present their genuine historic sense. Regardless of the impacts of wars and urban renewal during the recent 100 years, from the perspective of cultural landscape theory, urban landscape is evolving rather than “conscious stained”, which means the value under different age would be diverse and follow their own way of mechanism. Thus the question leads to what is the value of the historic water landscape of Yangzhou should be cherished in this contemporary age and pass on to next generation.

1. Evolution Mechanism of Yangzhou Canal Landscape

For 2500 years, the Yangzhou waterway grew from a single old canal (古邗沟) to a holistic waterway network that run through the center of the city. Over time the function of the waterway system shifts back and forth from canal to city defensive moats, water supply infrastructure to urban scenic landscape, or multiple concurrent functions. From 487.B.C to 1912.A.D, the City of Yangzhou experienced 16 dynasties, and 4 periods of time, witnessed the epic history of its war and peace, glory then destitution. The waterway landscape was like the soul of the city, described in poems of Tang Dynasty as “a city full of mist and fantasy”.

Based on cultural landscape theories, the research reviewed the co-evolution process of the natural environment and human society, as well as the cultural dynamics in between that generated this cultural landscape.

1.1 The Natural Context of the City

There are two great component parts of the natural setting of the city Yangzhou, one is Yangtze River that formed the hydrological canal pattern; the other is Shugang Hill forming the geographic base for the settlement pattern. Over the last 100 years, the hydrological connection with Yangtze River continued to evolve; as well several significant conservancy projects were undertaken to enhance the connection. In contrast, although the built-environment of Yangzhou has changed significantly during the contemporary era of urbanization, the topographic pattern of Shugang Hill and the alluvial plain below remain; particularly because Shugang Hill has been a historical Buddhist place thus protecting the massif (Fig.3ⁱⁱ). The Yangzhou Shanshui context (山水文脉) suggests “the city ought to be located on axis with Shugang Hill and maintain the livelihood with canals”ⁱⁱⁱ.



Figure 3: The Natural Shanshui Context and the manufacture waterway system

1.2 The Evolution of The Canal Route

From Spring and Autumn Period to Tang Dynasty(700BC-894AD), Yangtze River shoreline and estuary coastline kept moving to the south-east, had a decisive influence on the expansion of the city territory, most important, caused the route extension of the Grand Canal to reach the Yangtze River. Generally, the Canal Route change over 5 period of time: 1. The starting point of the original old canal Hangou(邗沟 486-457BC) along with Hancheng Fortress on the Shugang Hill, mainly for military use; 2. The Han Dynasty (汉, 202BC-220AD), Hangou extend to the south to reach the moving Yangtze River Coastline, also grew a branch as Salt Canal run all the way to the east sea; 3. Sui Dynasty(隋, 581-618), based on the Old Canal of Yangzhou, the Grand Canal Project was Launched by the Emperor of Sui Yang Di(569–618) linking Beijing and Hangzhou, and became a strong domestic transportation route. Yangzhou grow to a very critical crossroad position of Yangtze River and Grand Canal;

4. Tan Dynasty (唐, 783-879) to Qing Dynasty(清, 1636-1912), the Grand Canal route moved out of the city along the east wall and moat in mid-Tang ,and last until the end of Qing.

From the perspective of society, the economic linkage with the Yangtze River formed by Grand Canal has always been the essential evolving dynamic of the city. Knots of the Canal always consist of religious spot with pier, market and bazaar, as well as institutions governing water transportation of salt and other goods. When the canal route goes across the city, the knots became the city center, outside the city wall and in the suburb they activate the growth of small market towns.

1.3 The Historic Waterway Landscape System Activate by the Canal

The Canal brought prosperity and culture exchange to Yangzhou, so-called a city on boat as Venice. Inspired by a map of Ming Dynasty (Fig.5), a certain sense the vitality of the city is illustrated from the interaction between human society and the waterway network. Six categories of historic water landscapes formed by culture engine has been identified:

- A. Shipping and Trading Canal Landscape, inside and outside the city – formed by Canal Economic
- B. Ancient City Wall and Moats Landscape – formed by City Defensive Infrastructure
- C. Slender West Lake Water Gardens And Urban Scenic Water Landscape – formed by Religious and Elite Culture
- D. Water Streets within the City – formed by Water Transportation Route and Pier Markets/Bazaars
- E. Rural Water-field Landscape on moat in the countryside – formed by Agriculture and Rural Life

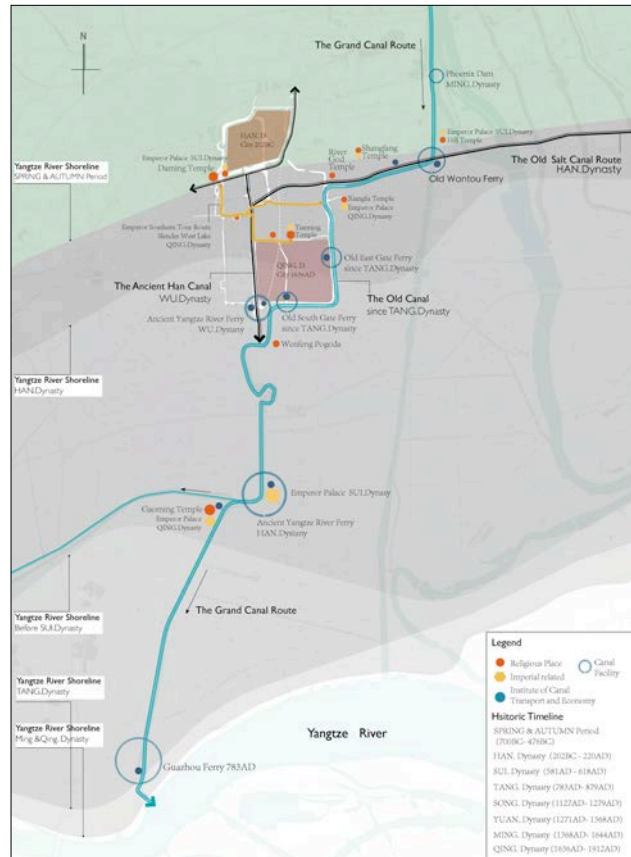


Figure 4: The Evolution of Canal Route 487BC-1912AD



Figure 5: Map of Yangzhou, Ming Dynasty(1573-1620)

F. Waterfront Performing Landscape (intangible) – formed by Elite and Folk Entertainment

These landscape categories are considered to represent and integrate the whole Yangzhou Historic Waterway Landscape System, unveiled the dramatic changing dynamic of waterway network through the history. Vice versa, these landscape provide habitat for diverse city culture, including Canal Economic Culture, Elite Culture, Imperial Culture, Religious Culture, Ancient Military Culture, and Water-town Folk Culture, etc. Together they drew a fantastic realm of ideal living environment combine North and South Chinese Shanshui City in the ancient time.

2. The Deterioration of Historic Landscape and Memory in Yangzhou

After a whole century, however, such historical meanings are blurred and being forgotten in visionary scenery today. What is worrying is not only the loss of essence landscape destroyed in historical wars, but also the historical confidence. Once a historical city lost its most precious confidence, it lost its way for future. At this moment, Yangzhou has such worries. During today's rapid urbanization process, Yangzhou is keen to find its location in regional and national level, trying to get back its historical position, but has not found its way yet. Although new city Yangzhou is developing very fast, the land context, water context and human context are not continuing. The value system is not interpreted and not fully understood.

2.1 The Information System of Landscape Value Carriers

To address the loss of numerous aspects of the heritage of canal waterway landscape over the last century, as well as to identify the landscape heritage value, comprehensive mapping needs to be undertaken. Based on the landscape categories derived from the evolution process of Grand Canal, an integral historic landscape information system is built up, including the landscape value carriers from natural to cultural, tangible to intangible elements (Chart.1). This system includes more carriers than the existing heritage listed in the local government administration and would be a breakthrough for conservation of a range of

I-地形地貌 Topography	I-A 蜀冈地形地貌 Shugang Hills	I-B 冈下古城地形地貌 Alluvial Plain	I-C 水系与地貌关联节点 Cultural related nodes
II-水系河道 Waterways	II-A 水系历史断代及基础功能 Historic Waterways	II-B 运河经济相关载体 Canal Economic landscape	II-C 城濠及相关载体 City Wall and Moat Landscape
III-重点历史水系景观段 Significant Landscapes	III-A 蜀冈山水类 Shanshui Scenic Landscape	III-B 寺院庭苑类 Riverside Temples and Yards	III-C 瘦西湖水上园林类 Slender West Lake Riverside Water Gardens
	III-D 水路街市类 Water Street Landscape	III-E 花洞村舍类 Rural Moat Water Field and Village	III-F 滨水演艺类 Waterfront Performing Art Landscape

historic urban landscapes, thus including more opportunities for renaissance of more value carriers that have been previously neglected or destroyed.

2.2 Mapping the Lost of Canal Landscape Historic Evidence

The illustration process including historical information mapping and existing historic place mapping, the comparison in-between shows clearly what kind and how much of the history evidence had been lost and where we lost them. In the history, there were 14 reaches of the waterway network used to be canals, 3 of them were filled and became roads around 60s. Waterway transportation function has been stopped for the past century, only tourist boats occupied the Qing's imperial waterway route from the city center to the Slender West Lake. Canal related historic landscape elements recorded in historic documents including 57 bridges and pier infrastructures, 12 market streets, 2 market towns, 17 religious and culture spots. But the existing condition is disappointing, that only 17 elements left with physical evidence, that's a lost more than 80%. It is clearly illustrated in the mapping between historic information and existing evidence(Fig.6, Fig.7) that the canal waterway structure still exists, but the cultural lineage used to connect the city and the canal through urban spaces has left just blank.

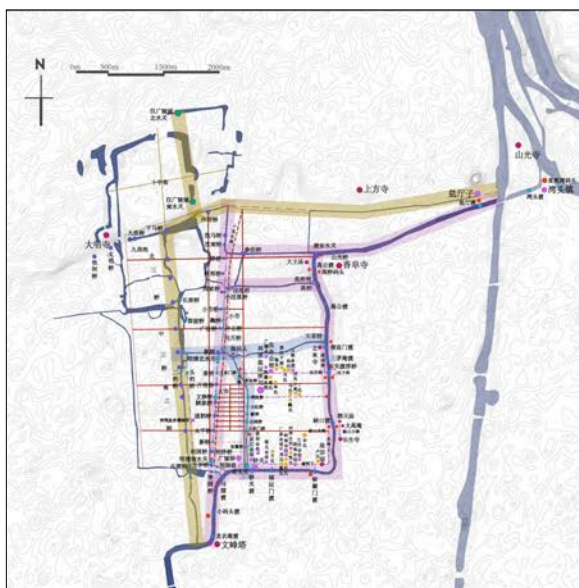


Figure.6 Canal Landscape-Historical Info

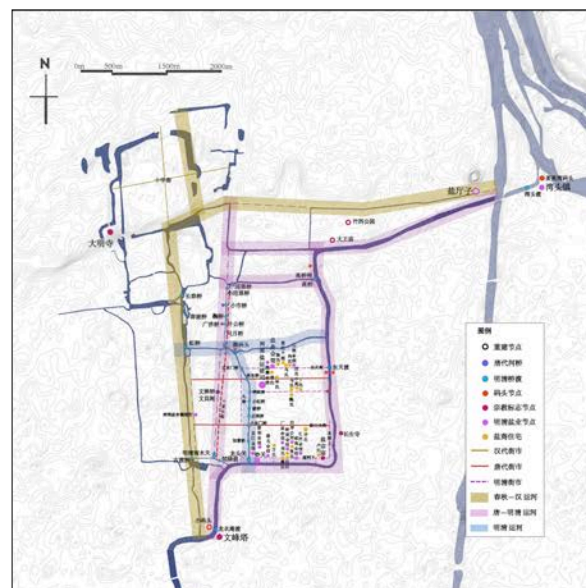


Figure.7 Canal Landscape- Existing Info

2.3 The Social Process of Canal Heritage Damage

The cultural mapping formed a prototype of historic landscape information framework, which recorded the history and the existing condition of urban heritages as well as intangible knowledge and memory of the city. Yangzhou once was famed as the 'City on Boats'. From the canal port to city center, then to the suburb and rural areas, the waterway was the most

convenient transportation system to explore one's way of living, resulting in prosperous economic and cultural activities. During the past century, roads and cars have replaced the waterway transportation mode, nevertheless the water conservancy system hasn't been functioning as a whole and enhanced its efficiency until the last decades.

After 1912, rivers and moats in the Yangzhou region had been continuously narrowed and silt to the extent that the total area had been halved, yet only remained the pattern of the space network. After 1949, the city walls were knocked down and many waterways were filled to be roads, numerous historic bridges were removed at the same time. Later during the 60s Cultural Revolution, lots of temples by the canal piers were destroyed, together with other significant cultural buildings and celebrity gardens. Since 1978, a series of urbanization planning and regulation projects of river and canal have been undertaken, thus erasing much of the historic imprints of the waterway landscape. Although the Slender West Lake water gardens were restored later, according to our authenticity research of landscape character and interview result (200 samples), the historic sense of most waterway landscapes is excessively low; except for 4 reaches out of 13 were seen as fair.

3. Strong Public Expectation and Local Government Response

Despite the different time age and places around the world, there are always commonalities in history that local expectation for reconstruct traditional culture after damages would be extremely strong. Of course, efforts has been taken during recent decades, and showed on the satellite image clearly that the historic waterway network runs throughout the urban and suburban areas again resulting in a tremendous and unique urban form. In our research in 2013-2014, online and offline questionnaire survey of more than 200 samples was organized to understand how citizens concern the related knowledge and memory about Yangzhou's historic waterway landscape. On the other hand, the research reviewed the local planning and regulation tools referring to the future of canal heritage.

3.1 The Public Expectation of Canal Heritage

First, the survey examined the familiar extent between Canal Culture and Canal Heritage places, the result shows ironically that people taken the questionnaire knows Canal Culture as a general concept of Yangzhou's city culture, without knowing the most important Canal knots in the history. Second, compare to Slender West Lake, very few people chose to go to landscape places along the Canal, despite its important heritage value. It



Figure 8. Cross-over cognition analysis of Canal Heritage Value and Historic Knots

despite its important heritage value. It

was gratifying to be in the know among all the expectation for canal heritage, history and culture display get 87% the highest response, and not very fond of reviving active functions such as transportation, activities and commercial spots. Half of the respondents expect for the Canal landscape regeneration.

3.2 The Local Response and Government Planning

In fact, during the past a few years, the Old Canal has already been restored and regenerated several times but fell into the dilemma that the sense of the historic places has totally lost. Essentially the blank needs to be relink with good design that help to seek the spirit of the place back. There are some business projects

along the waterways combine historic elements into new designs have made some progress on

connecting the sense of history that remind us that instead of moaning for the lost of the history, the blank could also be opportunity for creativity.

Based on the experience of the urban development in the recent decades, and thanks for the application process of World Heritage. The government of Yangzhou has realized the importance of a coherent relationship between the historic waterway network and urban renewal opportunity. In the latest City Comprehensive Planning (2012-2020), proposals related to the management and planning of the historic waterways in three planning sections : Water System Planning, Green Space System Planning and Historic City Conservation Planning. The City Plan clearly recognizes that multiple functions of the canal waterway landscape are integrated together, suggesting the dynamic of the land use pattern is going to continue in the future planning.

4. Reconnect the City with Canal Cultural Routes

As history and culture accumulate on the Grand Canal, the research pointed out primarily that the Canal Heritage is a System including natural setting and culture landscape elements , historic evidence and cultural memory imbedded in the city rather than a single waterway. In the case of Yangzhou, historic Canal landscape has lost so much both physical and spiritually, it is undeniable that a renovation needs to inject to the city. Hence the weakness might become a challenge and also opportunity of Yangzhou. Inspired by the HUL Recommendation on creativity of heritage place, four representative cultural routes that can



Figure 9. Yangzhou City Comprehensive Planning - Historic City Conservation Plan(2012-2020)

be illustrated through urban spaces to interpret different stories about Yangzhou as a Canal City. 1) The moats on the Shugang Hill represent the city and canal-moat format before the end of Han Dynasty (486BC-457AD), called Guangling town at that time, and reached the remarkable city defensive infrastructure system in Song Dynasty half century later. 2) The waterways from the foot of Shugang Hill run through Slender West Lake all the way to the Old South City Gate represent the highest level of urban scenic landscape sequence in the history transformed from canal and moats. 3)

On the east side of the city, the Old Canal represents the most prosperous canal economic corridor since Tang Dynasty. 4) In the city center, the water streets, small piers and markets represent the land use pattern and daily life style formed by waterway networks that continually existed in this city.

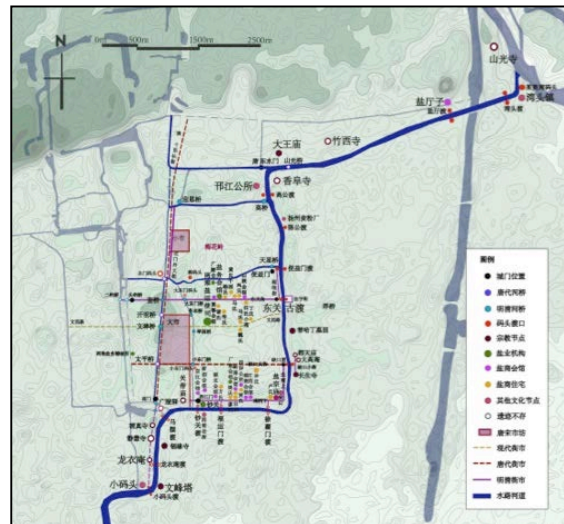


Figure 10. Canal Landscape Culture Route

Conclusion

The proposal of cultural route try to refill the gap caused by the lost of tangible and intangible urban culture heritage, reconnect the city urban space with its deep history essence. Primarily, all the lost sites of the Canal Heritage System should be relocate in the urban space, information display is necessary to response to the heritage site. If allowed, virtual 3D guide would help greatly to interpret the value and tell the story. At the site of critical importance, landscape regeneration should be carefully designed, help to find the historic character of the site and the spirit of Canal landscape. In the future, mobile technology will became more and more advance for heritage information display and guidance, the cultural route have the potential to became a platform for the voice of citizens as “users” to actually activate the historic urban landscape in a democratic way.

Endnotes

ⁱ Here the historic refers to the time period before 1912AD, the founding of the Republic of

ⁱⁱ Geographic data from 中国科学院计算机网络信息中心国际科学数据镜像网站
<http://datamirror.csdb.cn>

ⁱⁱⁱ Original text: 鲍照 Bao Zhao (415-470 AD), “轴以昆冈，拖以漕渠” - 《芜城赋》

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Center Redevelopment of Productive City Based on System Coupling and Function Optimization

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Abstract: City center redevelopment is one of the important subjects of current urban development at a time of unprecedented global urbanization. This paper analyzes the situation and existent problems of China's city center redevelopment, and makes suggestions on how to improve city center redevelopment in the aspects of basic theories, technology, methods, evaluation and planning formulation and so on. It select Changzhou as an example to introduce in detail the overall urban strategies in practice, summarizes the significance of holistic urban strategies. All of the results will improve the theoretical system of city center redevelopment, strong the scientific, technical and operational of planning, and promote a comprehensive and sustainable development for the renewal of old city center area.

Keywords: center redevelopment, global urbanization, system coupling, function optimization, Changzhou

1. Introduction and background

(1) Seeing from the macro background of city development, Chinese urban development has entered the middle and the late stages of urbanization characterized by rapid development and structural adjustment. The newly published *National New Urbanization Plan (2014-2020)* indicates that in contemporary China, "urbanization shall enter the new stage of transformational development that focuses on enhancing the quality", it also puts forward the standpoint to optimize the internal space structure of the city to cater to the requirement in compact development of the city.

(2) Seeing from the city industrial structure upgrade, city social economy has entered into the real implementation stage of reconstructing and transforming the industrial layout, type and structure. With the upgrade of industrial structure and evolution of the social formation, the services industry especially productive service industry will become the important factor that determines functions and status of city in the regional urban system. As the most brisk and concentrated area in city service industry, city center will play an important role in the transformation of urban industrial structure.

(3) Seeing from the development of the urban center, in the planned economy period, at the influence of the city development policies of so called "first production, then living" and "turning consuming city into productive city", Chinese city center shows complex mixture of industry, living, enterprise and facility land usage, development of economic core functions of the center district is seriously restricted. With the apparent change in the economic structure and profound revolution in society in all aspects, there are requirements of higher level on the development of urban center.

2. Deficiencies in the redevelopment of city center

According to the investigation on the current conditions of Chinese city center, universal problems are mainly including:

(1) Blind target position and mode choice of center redevelopment, it is lack of correct judgment on developing stage of city.

(2) Limitations on independent section of land and individual commercial projects, insufficient emphasis on the structural adjustment and enhancement of entire functions of the center organization system.

(3) Current commercial level of the center district is universally low, unreasonable land allocation and low central intensity, it can't fully show the due land value of the center and satisfy the need of modern service industry.

(4) It is short of effective dimensional transportation organization and reasonable layout, congestion in the center district is serious.

(5) It lacks space for humanity activity and featured environment. The vitality in the center district is not enough and can't satisfy the requirement of multi-diversity and high quality of activities in the center.

With the great function changing, city center is never just to satisfy the need of city citizens in daily life and consumption. As the social, economic, cultural and information center of the city, it has more important functions on the development of the city. Therefore, we have to further discuss how to scientifically locate the functions of the old center and combine the center district into the macro adjustment of city industrial structure and development of modern service industry based on the complicated system of the city and on the macro background of Chinese economic development. And meanwhile, we will study how to realize the cooperative coupling of the internal organization system and optimization of the functional structure with the help of the center redevelopment.

3. Important issues needed to study in the center redevelopment

3.1 Analysis of the internal structure and system evolution mechanism of the old center

It has to analyze the inner law of the evolution of the functions of city center in different development stages of urbanization, suburbanization, counter-urbanization and reurbanization, and it has to especially analyze and study the essential meaning of new phenomena such as "multi-centralization", "networking", "decentralization" and "recentralization", and the influences brought by these tendencies on the old center district. More importantly, based on national conditions of China, it will analyze and summarize the industrial structure, district activities, functional structure, space formation and alternating rules of change of internal organization in the old center district, through tracking and investigation on the current social economic development and space environmental conditions in the recession and transformation of the old center.

3.2 Judgements on the internal structural features and actual conditions of the old center

Internal structure of the city is the dissipative system made up by sub systems of functions, land usage, space and transportation, it is the complicated system formed by the interrelation and interactions of its material space and social economic internet. Firstly, we should surpass the usual method of explanation and descriptions on factors of center city scale, center grade and land usage in the past ; Secondly, on the basis of four fundamental factors of functions, industry, activities and environment, we have qualitative and quantitative description on land allocation, structural features, coupling degree, transportation development level, and land usage concentration and so on; In the end, we can objectively master the internal function change and real status of the urban center.

3.3 Study on the important problems for the center redevelopment planning

In the city construction practice, upgrading and redevelopment of the old center district is one long and complicated system project, which has to be carried out with sequential procedures under the general guidance of the city planning. It needs to choose the typical case study of the redevelopment of the different types of urban center districts. Based on the internal system coupling and enhancement of the entire functions of the city center, we will study

some important issue such as the structural adjustment and functional adjustment, interaction of the new district and old district, structure optimization of the land layout, center land concentration usage, environment capacity control and road transportation system adjustment and optimization and so on. Therefore, it let us to explore to realize effective planning means and comprehensive redevelopment mode.

4. Empirical Research ----taking the old center of Changzhou as an example

4.1 Brief introduction

Changzhou is one of the districts developed at the earliest time in the Yangtze River Delta. It is also one famous economic and cultural city with long history. In the history, Changzhou city was prospered by the canal. The construction of road and railway between Shanghai and Nanjing in contemporary age made Changzhou as one important middle joint between two regional center city of Shanghai and Nanjing. Now Changzhou is the central city, modernized industrial and historical cultural city in Yangtze River Delta of China. (Figure 1)



Figure 1: Aerial view of the central area of Changzhou

Old city district of Changzhou has long been the focus of city development construction and gathering district of the center functions. It is the area that gathers comprehensive elements of history, culture, commercial finance, public services and living of the entire city. In recent years, under the background of the quick urbanization, due to the lack of comprehensive and effective policy guidance, problems such as traffic congestion, environmental degradation, industry homogeneity, and features fading have been serious more and more. Therefore, how to evaluate the internal structure? And how to determine rationally the function? And how to transform central function? And how to regenerate land resources? And how to optimize the function and structure? All of these will have significant realistic meaning for the sustainable development of the old center district.

4.2 The evolution of the spatial form of Changzhou (Figure 2)

4.2.1 City space expansion propelled by the national industrial development in modern times (1910s-1940s)

Changzhou has been an important industrial and commercial city before the POC (the Public of China) era. During this period, urban industry and commerce aggregated in the riparian area. In the POC era, national industry boomed and affected Changzhou. Relying on the Grand Canal and Jing-Hu railway line, the industry and commerce of Changzhou made further development. Industries sprawled along the river and the other functions like retail, office formed gradually in the area surrounded by rivers. By this time, the urban form has established.

4.2.2 City space expansion propelled by the industrial development in priority in the planned economy age (1950s-1970s)

In the planned economy era, the city was under the guidance of the policy of first production and later living, the development of industry was the primary content of urban construction for the principle, and the sprawl of industrial lands became the main feature of city shape development. Relying on the canal and railway, industrial lands expanded from old city to west and east along the river and rail. Moreover, new communal faculties were built in old city with the way of making use of every bit of space.

4.2.3 City space expansion propelled by the mixed development of industry and service industry in the initial stage of the reform and opening-up policy (1980s-1990s)

Since the reform and open, the city area had continued to expand on the east and west along river and rail. Meanwhile, new built-up areas were appearing on the south and north of city. Industrial areas extended on the east, west and south supported by the convenient traffic conditions and infrastructure, and formed the development pattern along the transport gallery.

4.2.4 City space reconstruction propelled by the industry transfer and structural adjustment (1990s-now)

After the 1990s, with the city sprawling continuously, the urban shape transformed from diamond to cross, and the north and the south become the main expanding direction. With zoning adjustment implemented, the industry was gradually removed from the inner city to five industrial zones located in suburbs, according to the policy with suppress the second industry and develop the third industry. Meanwhile, central business sprung up and prompted the concentration of service industries. On the change of spatial structure, urban shape has transformed from single core to multi-core with one center and two sub-centers.

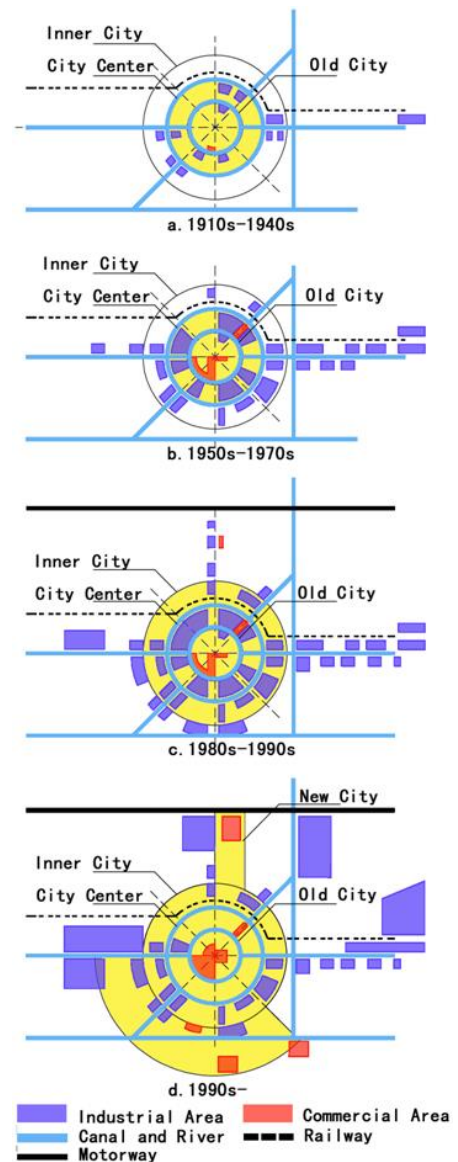


Figure 2: The space evolution of the main city of Changzhou

4.3 Realistic background of the transformation of the functions

4.3.1 It is gradually entering into the middle and late phase of industrialization

Changzhou city is in the middle and late phase of industrialization, the adjustment tendency of the industrial structure is mainly switching from the labor intensive industry to capital intensive and technology intensive industry, while in the industrial layout, it will advance into the direction of large scale and clustering development. Correspondingly, it requires the development of matching industries directly related to the manufacturing industry in the third industry to meet the requirement of manufacturing upgrade and expansion, traditional service industry will have much increase in the scale and level.

4.3.2 Profound influence brought by the economic globalization

With the wide influence and deepening of the economic globalization in the world, Yangtze River Delta in China and its great advantages in location, industrial base, system environment and advanced culture have tightly held the pulses of the world economy and become the regional economical block of China that firstly docks with the world economy. The developing tendency of world economy globalization has made one networking city system, the flow of production elements such as capital, energy, information and technology

has broken the limit of the radiation system with the shape of traditional closed layer. Changzhou belongs to the influential scope in the radius of 300KM pan-Shanghai urban circle, as the important city in Suzhou-Wuxi-Changzhou city group, its overall development has already integrated into the regional economic system and city system of Yangtze River Delta that has the core of Shanghai. This means Changzhou has much self-development space and many chances except powerful organizational functions in the core cities of regions like Shanghai and Nanjing. (Figure 3)

4.4 Current situations and problems of space structure of the old center

4.4.1 Land usage structure

(1) Insufficient development space of the functions in the center

We can find when comparing Changzhou with main big cities in China, development of business land in the center district of Changzhou is relatively low in the total volume as far as the own economic scale of the city is concerned. Also it is mainly the business retailing, and corresponding business service functions have low proportion. Besides, the old city now has small land area for development, those land are scattered and hard to develop in concentration. This is not good for the formation of concentrated business functions in large scale.

(2) Low concentration of land usage

Total land usage of industry within the old center district is about 9.86 km², taking up 12.75% of the total area of the center district. The old industrial district has problems of scattered layout, much pollution, and inconformity with the city function, low location effects and dilemma in the self-development of the company. Total area of the old residential district is about 4.71 km², taking up 6.3% of the total area, it has shortages of scattered layout, aging building, insufficient infrastructure, aging population and deficiency in the community management. In addition, in the old center, there are in total 56 administrative villages and 429 natural villages with the area of 114000 km², taking up 15% of the total area. It has problems of scattered layout, poor environment, low-income for the residents and difficulty in managing residents. (Figure 4)

(3) Land adjustment can hardly adapt to the development.

After the implementation of policy, suppress the second industry and develop the third industry, the industry located in city center and surrounding area were moved out on a large scale. According to statistics, there were 371ha industrial land replaced to another functions, of which the proportion of new land supply sorted by scale are residential, commercial-resident, green land, commercial-office, commercial-resident-living, commercial, transport, middle and primary school, municipal facilities. Since the development of tertiary industry is not sufficient, most of lands replaced were used to build houses affected by short-term benefits and didn't transform as the plan of industrial restructure.

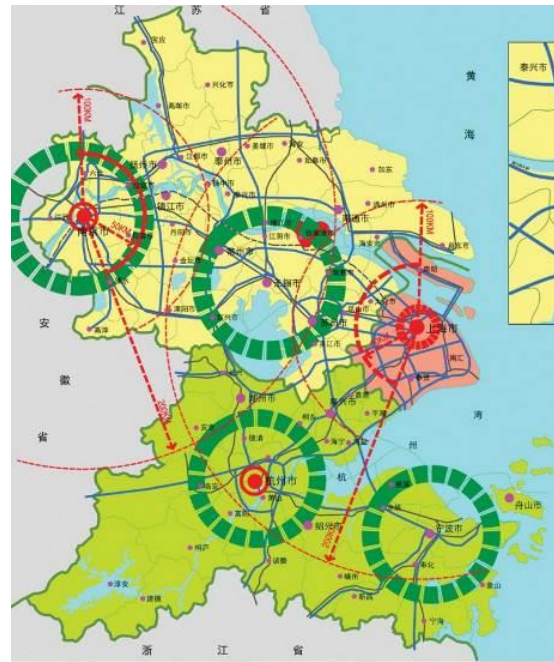
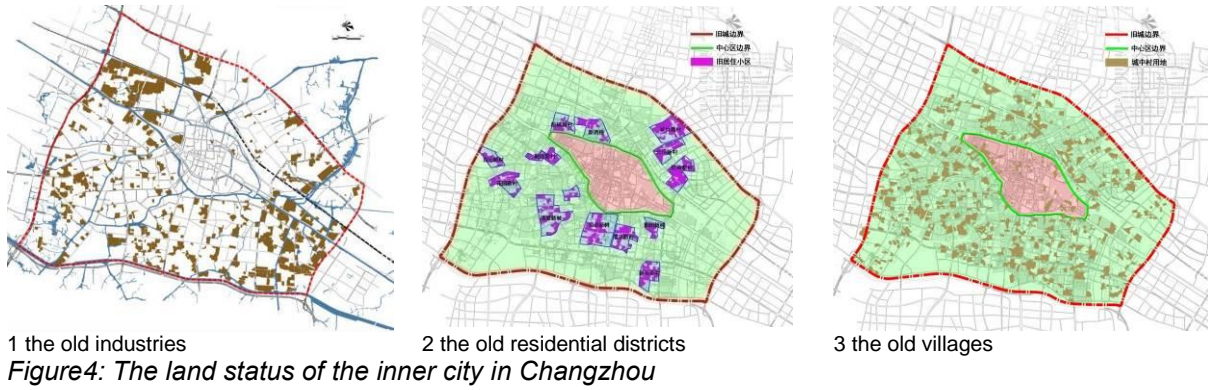


Figure 3: Yangtze River Delta



4.4.2 Road traffic system

(1) Multi barriers in the connections between districts

Now the connection between the center district and other external districts is mainly depending on the main road, the sub roads and branch roads have low connection, at the influence of natural waterways, park and railway, center district has the universal density of lower than 1km/ km² in the main road of passing railway and waterways. There are many barriers in the transportation between the center district and external district.

(2) Low density of the internal road network

The branch road network in the center district has obviously low density, it is just 2.56km/ km². The shortage of branch roads is neither good for the effective organization and evacuation of the road transportation flow nor for the expansion and coverage of the public route network. Thus the road net transportation flow space is unevenly distributed, the transportation flow mainly gathers in the main road. In the static transportation, the center district lacks of parking space and has unreasonable distribution. (Figure 5)



Figure 5: The traffic status of the inner city in Changzhou

(3) Insufficient evacuation ability of the surrounding road for the external transportation facilities

Changzhou railway station, bus station and other external transport facilities are concentrated in the central area, which is good for the external connection of city center. However, due to road network surrounding the external transport facilities insufficient, which leads to only several main roads surrounding these facilities undertake the traffic pressure and causes traffic congestion.

4.4.3 Population distribution structure

The growth rate of the population of the old city in recent years is lower than the entire city and areas outside the inner city. The average growth rate of the population in the inner city in the recent three years is -0.69%, while in other areas, the average growth rate of population is 0.89%. The overall population density of the old city is 9000 people/ km², the distribution of residents is uneven, the population density in the center district is 18000 people/ km², but the population density outside the center district is mostly 1000-5000 people/ km², it is because of the existence of numerous villages in the areas outside the center district and insufficient land development to a greater extent.

4.4.4 Intensity of development and usage

According to the analysis, land development in the inner city of Changzhou has apparently showed circular distribution in the scope of 1-4Km away from the center, it is showing the gradually decreasing tendency from the center district. In the first circle, there is much intensity of development for the main business development sections; in the second and third circle, intensity of development for canal in the west and east of the center and stream of the Guan River is evidently lower than that in the land which is outside the canal and in the

direction of north-south. In the development of the most external circle, land usage appears evident inconsecutive conditions and much of enclave field come up. (Figure 6)



Figure 6 The analysis for spatial height of the centre in Changzhou

4.5 Planning strategy of the redevelopment of the old center

4.5.1 Reinforcement and enhancement of the central functions

The enhancement of the industrial structure is the inner impetus of the transformation adjustment of Changzhou center district. For the large scale city with more comprehensive functions, with the change of city industrial structure, its factors that maintain the attraction of the city are gradually turning from industry to the service industry, the city space will then switch from the space structure that mainly adapts to the industry to the space structure that mainly adapts to the service industry. Facing the demand for upgrading of producer services, with the completion of inter-city rail and Beijing-Shanghai high speed rail providing chances for the development of high-level producer service, the plan encourages the development of business services, retail trade, and upgrades the service level and environment of commercial retail.

4.5.2 Development interaction of new and old city district

We can come to below conclusion through the analysis of the current and tendency on the basis of the internal law and external conditions of the city development: development in single direction or the simple choice on any two directions will bring a series of problems and contradictions, it will also disobey the idea of compact development and symbiotic ecosystem. Henceforth, in the adjustment of the space structure, new city or the external area of the urban center shall have interaction with the old center in new joints or constructions of joints to absorb and develop the spillover function of the old city. The old center district will lessen the pressure of the old city in space, environment and facilities through scattering population and employment, it connects to the high level manufacturing and service industry in the functions with the main focus of business office, trading leisure, cultural travel, life logistics, conversion of passenger transportation and city manufacturing. The new city in the north mainly bears the functions of administration, living, exhibition and industry distributed from the old city. The city in the south mainly takes over the functions of residence, industry and education distributed from the old city. Group of east and west of the city mainly takes over the transferred industrial functions from the old city. (Figure 7)



Figure 7: Interaction between old city and new city

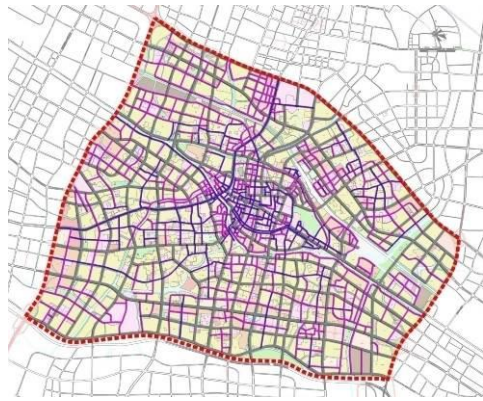


Figure 8 The improvement of the branch network of the inner city

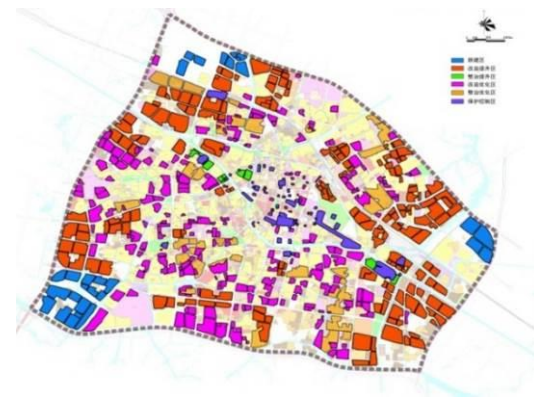


Figure 9: The redevelopment land layout map of the inner city

4.5.3 Adjustment and optimization of the transportation system

Since there are problems of many transportation barriers, much influence of through-traffic, insufficient sub-road systems, immense interference of transport distribution in current traffic situations in the center district, the upgrading and transformation of the transportation system shall develop towards the direction of public transportation and going on foot. First of all, break the barriers to the external transportation and enhance the connection between center district with outside; Second, increase passing railways and waterways, construct and improve existing road network system; Thirdly, reinforce the outer connecting ability of the center district to the secondary road and branch roads, and lower the transportation pressure in the main roads; Fourth, the improvement of non-motorized traffic network should optimize the walk conditions of existing roads, construct the public traffic including walk system and create a pleasant walking space so that promoting and guiding people to shift to non-motorized transport mode. (Figure 8)

4.5.4 Choice and definition of the upgrading mode

According to the six factors, which are the development location of the inner city, the distribution of update dynamic points and large-scale transportation facilities, the guidance of public space, the assessment of building quality and the analysis of renewable areas, the plan delimits the inner city as protection and controlled zone, remediation and optimization zone, transformation and optimization zone, remediation and upgrade zone, transformation and upgrade zone (Figure 9). In the old city, the regeneration should choose protection as the main pattern. In the central area, the regeneration should be implemented based on the principle of remediation and optimization. In the outside of the central area, it should be based on transformation and optimization. In the regeneration of the inner city, the planning and guidance mode should various, flexibility and enhance the operability of renovation and implementation, so that adapting the transformation of function and space.

5. Conclusion

Chinese city development has entered into the middle and late phase of the urbanization with the features of interrelation and interaction of fast development and structural adjustment. As the public service facility and the concentrated area of the city, city center district will necessarily actively function in the city development through system coupling and function enhancement.

In the transformation of the center district, relations among the elements in the city are not single directional, which is the result of the comprehensive function of many factors such as city industry, space, transportation, activity and environment in different directions.

Redevelopment of the old center district of Changzhou reflects the general law of the development of center district in middle and late phase of urbanization in China in some

certain degree. The empirical research is targeting on problems of industry homogeneity, low land usage efficiency, traffic congestion and decrease of environmental quality. On the basis of objectively grasping the rules of the function evolution of the old center district and comprehensively evaluating the actual conditions of the old center district, it proposes to actively conduct the general space strategy of function enhancement, interaction between new and old district, optimization of the structure, land concentrated usage and adjustment of road traffic system, which is no doubt of great significance on realizing the sustainable development of the old center district.

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An Exploration of Architectural Inheritance and Innovation Methods in Urban Fringe Belt based on Typo-Morphological Research-- a Case of Expansion Project of the Second Middle School in Xuancheng, China

(an exploration of architectural inheritance and innovation methods in urban fringe belt)

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1. Introduction

In the context of China's rapid urbanization, expansion has become a situation almost every Chinese city is facing. During the process of urban expansion, the new urban form is becoming more and more different from the existing, because of economic increase, population growth and policies by authoritarian governments (Whitehand, 2011) which is distinctive in China. Chinese traditional cities have usually presented a characteristic of horizontal growth, in consequence of fine urban texture and suitable dimension for people; however, due to the pursuit of big development quantity and novel form, newly-built cities become more and more huge and lost of human dimensions. When these two different urban texture and dimension collage discordant, conflict emerged, which is especially obvious in urban fringe belts.

The concept of urban fringe belt could be retroactive to the geography study on urban form in 19th century, first proposed by German geographer Herbert Louis. Then M.K.G.conzen, who is most responsible for its development, made it an important part of urban morphology research. In western countries, the growth of cities is frequently the result of the development of the market economy, so the urban planning is closely related to the development of the economy. In this situation, the growth of city is a slow process, during which, the fringe belts will be retained, and showing a similar ring structure, such as Louis' research in Berlin and Conzen's research in Alnwick (Whitehand, 2007, Wang, 2011).

Meanwhile in China, the land use is influenced more by the planned economy (especially before the reform and opening up in China) and the government's intervention. In addition, the rapid growth of China's population has exerted huge pressure on the reconstruction of fringe belts. In most Chinese cities, fringe belt has not showed a ring structure, but was submerged in the rapid process of urbanization. During the large-scale reconstruction of fringe belts, different dimensions directly collide together, resulting in urban texture breakage. So, under the background of China's planning context, urban fringe belt is facing greater complexity and more contradictions. For China's urban designers and architects, the biggest problem is how to suture the broken urban texture with appropriate strategies in the changing fringe belts.

This paper is attempting to explore these issues from different levels based on an example of Expansion Project of the Second Middle School in Xuancheng, a small China southern traditional city. First in urban level, the study of the evolution of urban form shows the urban environment of the project and suggests that there has been increasing demand to develop these fringe belt plots, and then turns into building level, looking for design strategies facing different dimension and texture in fringe belts.

2. Planning Context

Xuancheng is a famous historical and cultural city in Anhui Province, with more than 1700 years of history since the city wall was built, and the old city has formed a very unique space form. At

the same time, Xuancheng is also an important economic hub connecting Anhui Province and Yangtze River Delta Urban Agglomerations. In this way, the development of Xuancheng is facing both the protection of traditional context and the growing challenges of the international dimension.

Relevant scholars has divided the evolution of the urban form of Xuancheng into four stages (Sun 2011), the first stage is from around AD 326 to 1939, during which Xuancheng has experienced the whole process from construction to demolition of the city wall. The rest of the other three stages are separated by 1987 and 1999, which are two important time nodes for the administrative divisions adjustment of Xuancheng, the former is update from county to county-level city, and the latter is to prefecture-level city. This classification does not follow the general classification of the political period, but concerns more about the space limit of the city wall and the urban expansion under the influence of different policies and economy.

In this classification, the definition of the first sage is relatively clear because of the city wall's important influence on city form. However, the division between stage II and stage III is arguable. Compare to the administrative divisions adjustment of Xuancheng in 1987, the impact of the reform and opening up in China in 1978 was much greater, because of the change from the planned economy to market economy, city development began to accelerate. Thus, this paper divides the evolution of Xuancheng urban form into following four stages:

2.1 Stage I (326-1939)

Natural topography plays a very important role in the origin of urban form. The initial location of Xuancheng was surrounded by rivers and mountains, with unique geographical conditions. Wanxi River flows through the east side of the city, and Jingting Mountain sets as the northwest background, which follows the traditional Chinese Fengshui Theory, fronting water and with hills on the back. The unique natural and geographical environment is not only the demand of people's living, but also the consistent with the requirements of the defense of the city at that time.

Recorded Xuancheng city wall was first built around AD 326, and rebuild in 964 for the defense from the north. Since then, the city developed within the walls and the fringe belt was in a steady state for about 1000 years (Figure 1, Figure 2). Until 1933, before Second Sino-Japanese War, to resist the Japanese occupation and using the walls as stronghold, the anti-Japanese soldiers and civilians dismantle all the walls twice, deployed more than 30000 people. Then, urban development has entered a new stage.

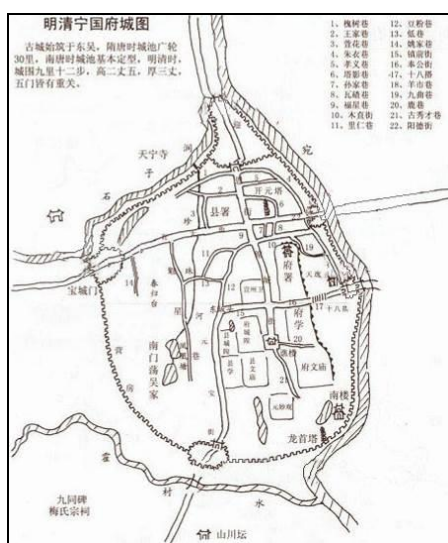


Figure 1: Ancient Map of Xuancheng, Qing Dynasty

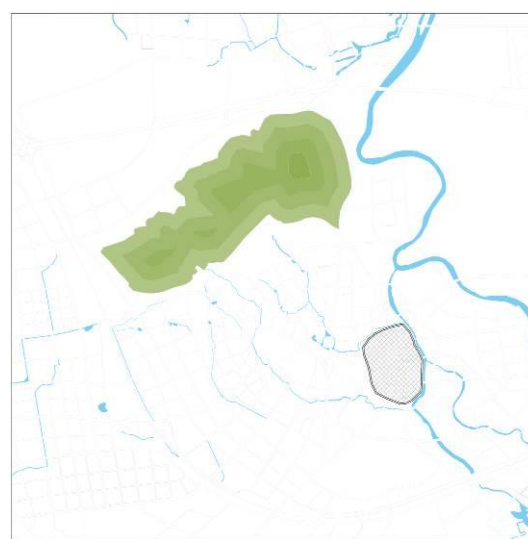


Figure 2: Urban Form of Xuancheng, Stage I

2.2 Stage II (1939-1978)

In this stage, due to the demolition of the walls, urban space of Xuancheng began to expand along several major roads to the south, north and west parts, forming three main development axes. However, because of the destroy of the war and the Cultural Revolution, the city was under a turbulent social environment and the construction was focusing on building urban infrastructure, improving environment and so on. The expansion of urban space was limited, urban built-up area increased from 5 square kilometers in 1949 to 6.7 square kilometers in 1978 (Figure 3).

Besides, from 1949 to 1957, the social and economic system in China had a fundamental change. Under the guidance of the urban development policy of "changing consumption city to productive city", the city build the first industrial zone, which also marked the formation of the industrial zone in the west (Sun 2011).

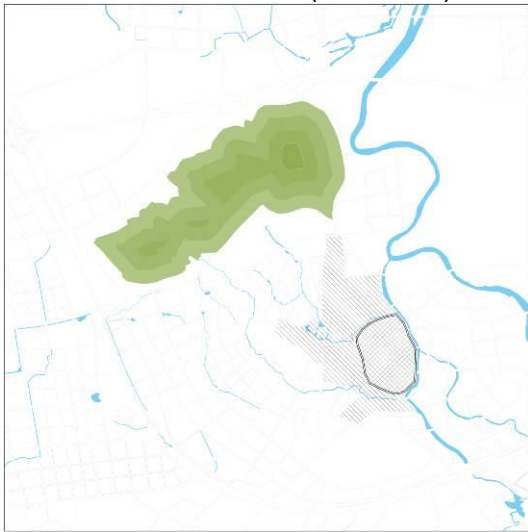


Figure 3: Urban Form of Xuancheng, Stage II

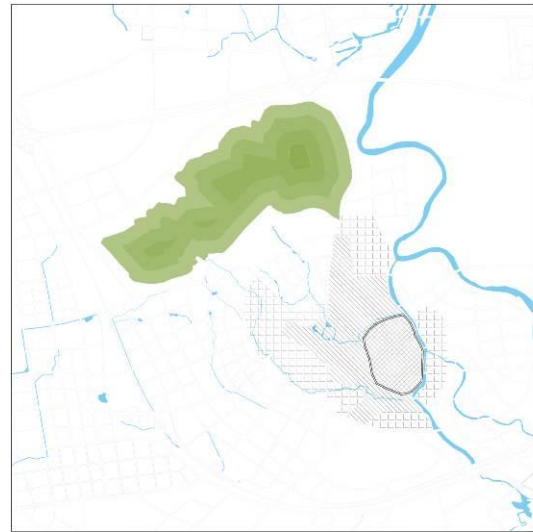


Figure 4: Urban Form of Xuancheng, Stage III

2.3 Stage III (1978-2000)

Since the reform and opening up, China has gradually realized the transition from planned economy to market economy. With the rapid economical development and the increase of population, the city form continued to expand. Between the original development axes, new urban land was constantly filled in. As of 1999, total urban built-up area increased to 16.7 square kilometers (Figure 4).

2.4 Stage IV (2000-)

After the Establishment of prefecture-level City, urban form of Xuancheng has been largely changed with the rapid development of traffic and economy. First, the construction of Shanghai-Chongqing Highway, which is passing through the south, has brought new opportunities to the city. However, it also has formed the new boundary of the main city, along with Jingting Mountain and Wanxi River. Secondly, the existing west industrial zone has expanded further, meanwhile, two more has been built in the north beyond Jingting Mountain and in the east crossing Wanxi River. Counting the southern part, which is going to be built as cultural and creative industry district on the basis of ecological protection, the overall structure of city is becoming "one main city with four areas" (Figure 5, Figure 6).

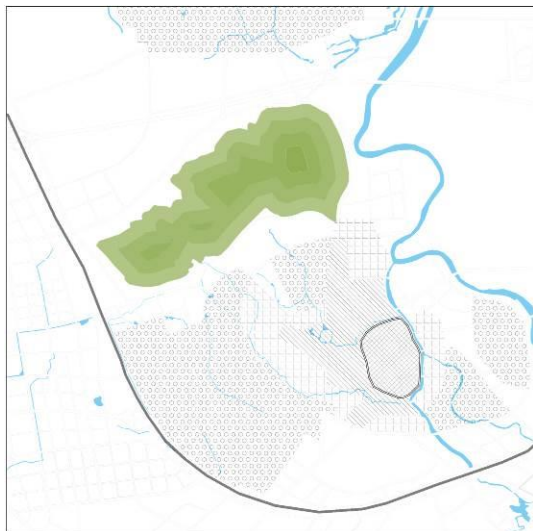


Figure 5: Urban Form of Xuancheng, Stage IV



Figure 6: Overall Structure of Xuancheng

Through the four stages of the evolution of urban form, it can be seen that Xuancheng had developed within the walls for about 1000 years slowly. After the dismantlement of the walls, the city began to expand firstly along several main roads, and then between them. From the reform and opening up of China, especially since the 21st century, the development of urban space was accelerating, showing a strong demand for space. With the expansion of main city, a new boundary has formed by specific geographical conditions, mainly including Jingting Mountain in the north and Wanxi River in the east, and the newly-built highway.

According to the latest satellite map (Figure 7), Wanling Lake district in the southern city is the only remaining for further construction. This region based on beautiful natural conditions of Wanling Lake, will be constructed an important cultural and public activity center, connecting main city and the southern area. Besides, this region is locating in the southern portal of Xuancheng city, which means it has to be responsible for showing the image of city and big scale natural environment.

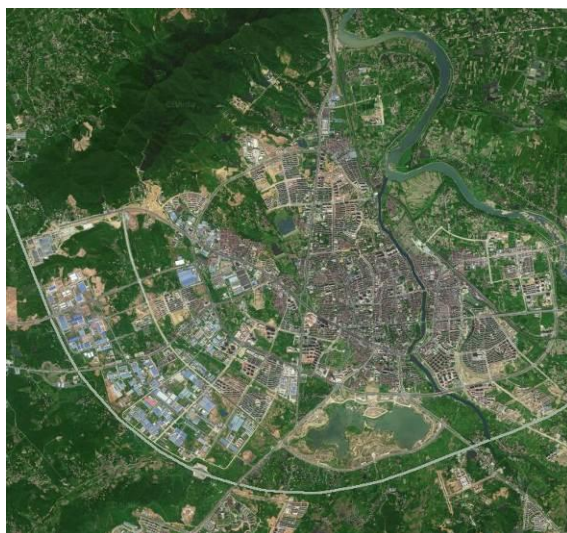


Figure 7: Satellite Map of Xuancheng, 2015

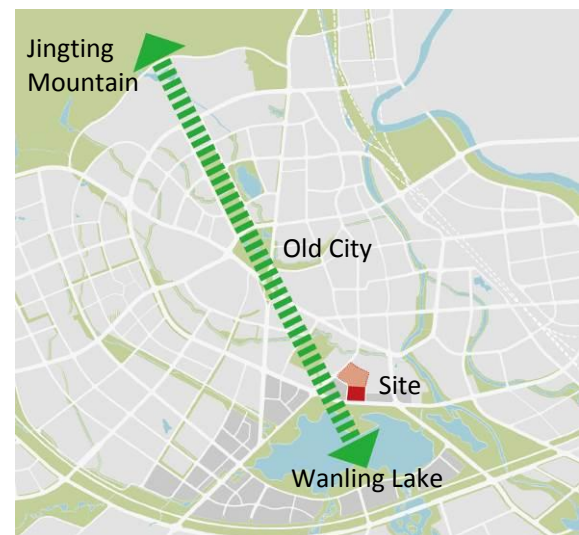


Figure 8: The Location of the Expansion Project

3. Architectural Strategy

The expansion project of Xuancheng second middle school is just locating in the Wanling Lake district, facing exchange from urban fringe belt to cultural and public activity center (Figure 8). By the comparison of the status of satellite map (Figure 9) and the master plan of Wanling Lake

district urban design (Figure 10), it could be clearly perceived the different urban environments between the existing school campus and the expansion. The former was opening to Xunhua Road in the west, adjacent to residential areas in the north and east. Main buildings are in series with the L-type central main road, which is consistent with the context of surrounding blocks. However, the expansion campus is adjacent to the Shuiyangjiang Avenue in the south, directly facing the Wanling Lake. There are large commercial complex and important cultural buildings, such as cultural center and library under construction in the adjacent plots. The existing campus and the expansion are facing totally different urban context and dimension.



Figure 9: Satellite Map of Xuancheng, 2012



Figure 10: Master Plan of Urban Design

In the Wanling Lake district urban design, two important principles have been put forward clearly: firstly, the north and west parts should form compact continuous public interface along the lake (Figure 11), setting Jingting mountain and urban built-up area as the background. Secondly, green space should be wedged into the plots around the lake, to form radial ecological network around the lake (Figure 12). These principles require the expansion project along with surrounding commercial, cultural and other large public buildings to form continuous interface and create northern border of Wanling Lake, besides, establish green, open campus, to take part in the lake ecological system.

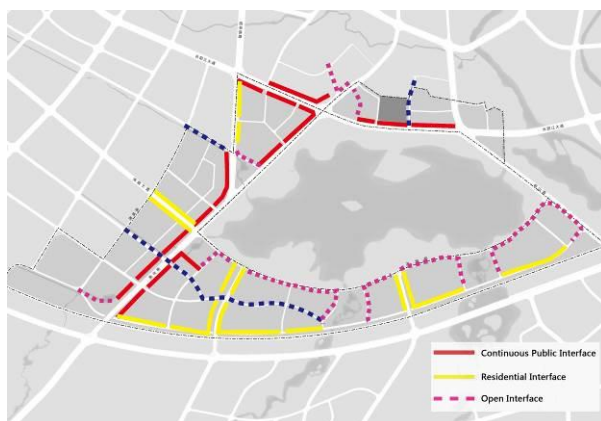


Figure 11: Different Kinds of Interface along Wanling Lake



Figure 12: Ecological Network around Wanling Lake.

At the same time, the expansion project is a kind of extension and supplement to the existing campus, which needs to form a unified whole in the dimension, space structure, traffic organization and function. The expansion project is not only an independent one to take part in teaching activities, but also an organic combination with the existing campus.

Through the analysis of existing expectations and new challenges, goals of the design is becoming clearly. For the existing expectations, the expansion project should follow the original space structure, improve the functional layout and traffic organization; for the new challenges, should form continuous public interface with the surrounding buildings along Wanling Lake, shaping the image of the city.

3.1 Layout Comparison

The expansion project has four main functions: teaching building, science and technology building, lecture hall and gymnasium. In order to create a continuous boundary on the north shore of Wanling Lake, different layout type, such as scattered, centralized and courtyard style should be studied first (*Figure 13*). Specifically, scattered layout has the advantages of easily satisfied the basic physical requirements of different functions, and forming a uniform texture with the existing campus; however, scattered layout is not conducive to form the overall image and continuous interface together with other buildings, resulting in broken urban interface of Wanling Lake on the north shore. Centralized layout is more overall, but it is too difficult to organize four different functions into one volume, and other basic problem such as ventilation and lighting also cannot be solved. What's more, due to the limit of the total size of the building, entirely centralized layout cannot occupy the whole plot and shape city image. Compared to the other two, courtyard style layout is more suitable, from the point of view of the city, the elevation facing lake can be extended, which could not only form a continuous urban interface with other surrounding large public buildings together, but also be consistent with the texture of surrounding blocks. And from the angle of function, around a central courtyard, four different functions can be flexibly combined, both independent and related to each other.

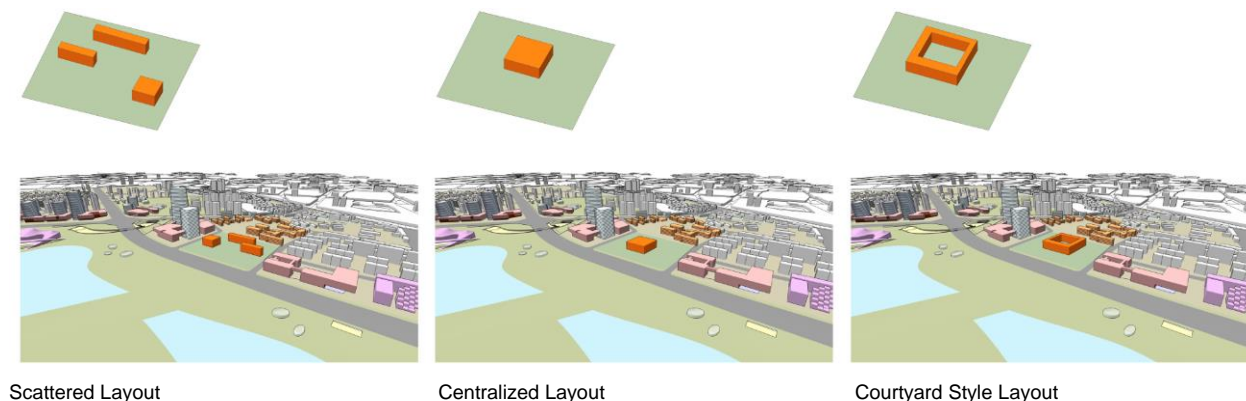


Figure 13: Layout Comparison

For the dual demands of urban image and function, two different layout types combine in a horizontal way, in other words, using the lower scattered boxes to support the upper part (*Figure 14*). The upper part is teaching building and science building around a main courtyard, the north side is occupied by teaching space which is more private and closer to the original teaching buildings on southeast of the existing campus, forming a complete teaching area, and the south part faces Wanling Lake, with a concise and complete facade design to continue the public interface on the northern shore of Wanling Lake. The east and west sides accommodate some assistant functions and set different scales of shared space and especially, a grand staircase on the corridor of the sixth floor to the roof platform, to provide students with break and communication space.

The lower part is comprised of several boxes like lecture hall, gymnasium and library. Among them, gymnasium is located in the west side, close to the old stadium and new basketball courts. Lecture hall is placed in the northeast side of the courtyard, where is convenient for students to arrive. A long ramp is around the hall leading to the roof, where can be used as space for communication and activities, and the irregular shape of the hall is designed to become the focus of courtyard space (*Figure 15*). By scattered layout of the boxes, openings are formed in

different scales, in order to making an open and free-flowing courtyard space. On the south side the main entrance opens to the Shuiyangjiang Avenue, while the north side opening continues of space axis from the existing campus. And other accesses in east and west direction are respectively leading to the stadium and other playgrounds.

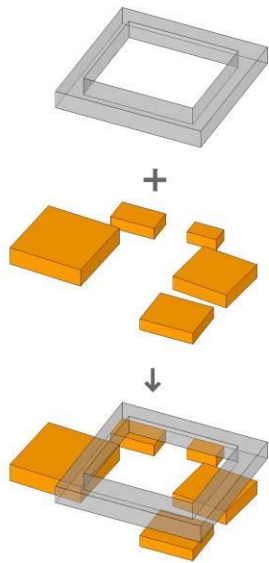


Figure 14: Composition

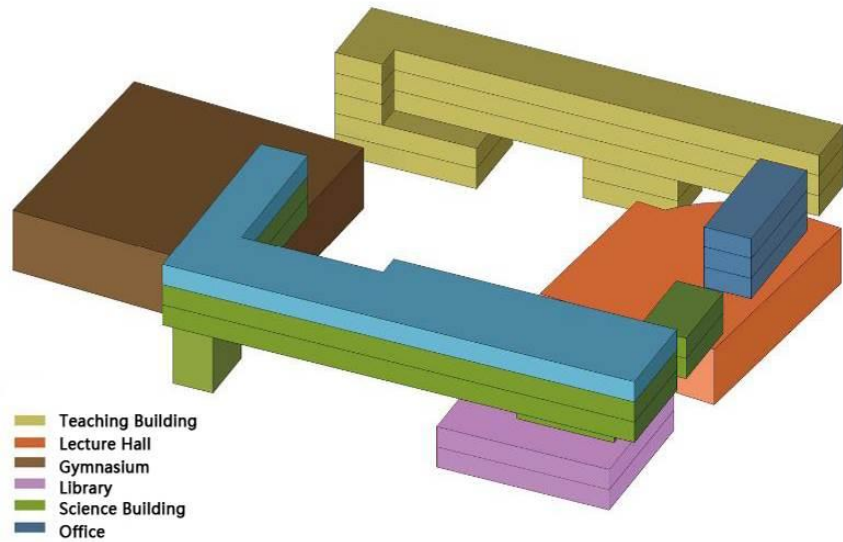


Figure 15: Function

3.2 Space Structure

In terms of space structure, more thinking is focused on the relationship between the old and new campus. In the existing campus, the main entrance opens to Xunhua Road in the west, the main spatial axis where essential educational facilities distributed on both sides presented “L” shape extending to the east and then turning to the south. Such a space structure has been continued in the expansion project with a courtyard layout and kept the axis extending to the south. The main entrance is moved to Shuiyangjiang Avenue in the south, directly opening to Wanling Lake. Besides, the introduction of the courtyard space to the vacant axis not only enhances the spatial interactivity, but also accords with the characteristic of traditional Chinese architecture layout (Figure 16).

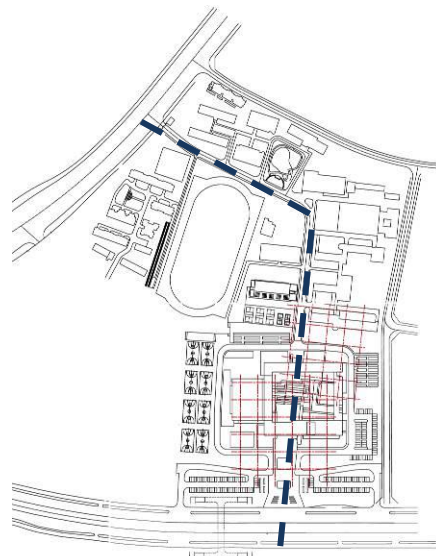


Figure 16: Space Structure

Two kinds of control grid are set up in the expansion project. The main educational facilities follow the direction of Shuiyangjiang Avenue for grid control, while the lecture hall and courtyards adhere to the grid of the original campus. In this way, new building could not only integrate into the urban texture of northern Wanling Lake, but also ensure good spacial continuity from the existing campus. The contradiction of two gridding gives birth to a vibrant and passionate experience when approaching the enclosed courtyard. (Figure 17, 18)



Figure 17: South Facade



Figure 18: Courtyard

3.3 Section Design

In the section design, based on the Wanling Lake district urban design, the major objectivity is to wedge green space into the plots around the lake. On one hand, the main building is 80 meters retreated from Shuiyangjiang Avenue, as a consequence of which, a large public green space is vacated in front of the campus, bringing the greening system through the public green space, and extending to the original campus. And on the other hand, using the height difference of the site and public platforms establish a stereoscopic transportation system, leading students to the viewing platforms on third and roof floor. In this way, the special connectivity from Wanling Lake to campus is achieved from both outside-inside and inside-outside directions. (Figure 19)

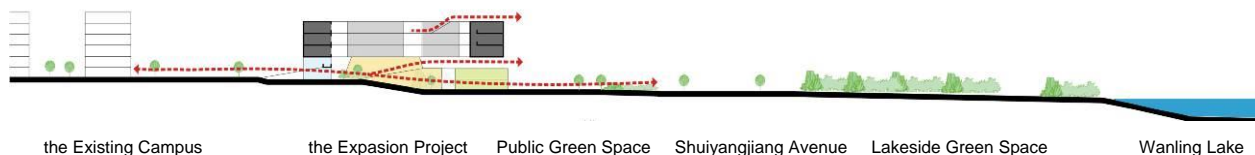


Figure 19: Section

Through the above strategies of layout comparison, space structure and section design, the expansion project could be fully integrated into the public interface on the northern shore of Wanling Lake, make full use of beautiful natural landscape of Wanling Lake, and promote the extension of green ecological system to the interior of the campus.



Figure 20: Bird View of the Project

4. Conclusion

Like many European cities, Xuancheng, the small historic city in southeast China, also has trouble to combine the expectations of maintaining its traditional urban form and the necessity to develop its international dimension. The rapid development of Chinese urbanization makes this trouble more prominent, during which, cities expand to the suburbs, lots of farmlands are transformed into urban construction land to create new city center, which inevitably brings the differences in texture and dimension between old city and newly-built district.

This research is based on an expansion project locating in a changing fringe belt, trying to find out architectural inheritance and innovation strategies through Typo-Morphological Research. Firstly, to establish a sound basis on which to view cities, understand their present, and plan their future it is important to appreciate their past (Whitehand, 2011). Through the study on evolution of Xuancheng city's expansion and behind which, the physical, economy and policy influence in different periods, a conclusion comes out that this project is locating in the last district remaining for further construction within the main city and it is an important district connecting old city and the southern area. Based on natural conditions of Wanling Lake, this district will be reconstructed to an important cultural and public activity center and be responsible for showing the image of city and big scale natural environment. In this context, new building in this district should not only coordinate with the texture and function of the old city, but also present large scale international image of the city.

This paper attempts to investigate architectural design methods based on an under construction project in Xuancheng. It also aims to bridge the gap from urban planning to individual building design through the typo-morphological research.

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How to create a sustainable
knowledge region?



A new approach to the planning of European cities

Jan Brouwer, ABF Culture, The Netherlands

ISOCARP conference, Rotterdam, October 2015

Intro

Urban planning in Europe is entering a new phase. Cities across Europe have experienced a long period of growth. Since the industrial revolution, there has been growth despite crisis and wars. The population rose sharply and moreover economic growth was on average during the 20th century around 3%. This means that national income in that period has become about 20 times larger. The built environment also rose sharply by more homes, businesses, services and infrastructure. The built-up area in the Netherlands for instance increased by 2% per year or by a factor of 7, especially at the expense of use for agriculture and nature. On almost all areas of society such as labour participation, mobility, education, income, real estate there was growth. Urban and regional planning was during that period a question of management and allocation of growth. This situation has clearly changed. There are a number of signs showing that the quantitative growth will not be as spectacular and integral as in the past. Potential growth will be more of a qualitative nature. That means we have to find another way of spatial planning.



Features traditional planning

Is the current method of planning appropriate to deal with the new situation and if this is not the case, then the question is how to deal with this new situation? One could simply say that there is so much going on that the old procedure must be revised. Yet it is sensible to look at a number of characteristics in order to get a clear answer to the question whether the old method is still appropriate.

A first characteristic is the strong sectoral approach in combination with growth. The planning of housing, business locations, schools, health care, infrastructure and so on were all separated and focused on growth. Then there are some sectors where there is hardly any coordinated planning. For example, the office market in the Netherlands has large fluctuations and nowadays also has a large amount of vacancy's as the most basic form of planning is missing. Due to the long preparation, this is further enhanced. The same is true for the market of stores. Both of these extremes, namely, too much or no planning, are actually not desired, and also the separation of the sectors, will lead to undesirable situations. If growth is the normal course of development than growth solves problems often in spite of bad or no planning.

The second characteristic is the problematic dealing with different spatial scales. Each sector often has its own scale on which planning takes place. Basically you can say that there is always a kind of planning but the scale varies by sector. In a free market like the office market, planning is done at the level of the building. At that level the initiator reflects on the future, the use of resources and the desired quality. Coordination with spots in the area, activities in the same sector or other sectors will not take place. In sectors such as school construction there is coordination. The alignment takes place within the own sector. For each sector, the scale on which the coordination takes place differs. We know in the Netherlands transport areas, housing areas, health regions and so on. In addition, administrative units such as provinces and municipalities function as well as a coordination framework.

The sectoral approach seems awkward because space covers all sectors. The coordination between the sectors occurred in the past during the design of new areas. Every sector filled a claim with the adoption of the plan and so it is clear to what extent the various claims could be met. Where the pressure was greatest, the claim could best be realized. Now as there are no major land claims anymore, this system no longer works.

The third characteristic is the dominance of the government. Spatial plans in excess of the scale of the individual building were mostly set by the government. Moreover, there was also a strong financial involvement of the government. Therefore, there was a large dominance of the public sector with respect to the spatial planning. This dominance gave security but was also seen as unbalanced. The government had (too) many faces: director, quality controller, investor, financier and grant giver. In the Netherlands all subsidies for the built environment were abolished from 2015. The role as an investor and financier is limited to infrastructure and public space. Many government buildings are obsolete. The role of government has become much clearer. It actually makes little sense to spend more words to the traditional method. We need to find an alternative.

Need for planning

Next, the question must be answered, whether there should be a need for spatial planning now expanding the built environment is limited. Should not there just be a free market within a limited spatial field. In some countries this is the case, but in most European countries there is spatial planning. This is because the major interests that are involved in the built environment. The infrastructure and public space are the responsibility of the government. The government sets standards for the quality of the space and the buildings. The private sector will benefit from a well organized form of planning because the quality of the own building is highly dependent on the quality of the environment. Statistical analyzes of the differences in price levels have shown that about 50% of the value of real estate is

determined by the environment. Moreover, the built environment depends on large investments with a long life, which mostly needs to be realized with borrowed money. The value of our savings depends partly on the value of the environment. Thinking about the future of an area is than a necessity. That means that both the public and the private sector are interested in good planning but with a new approach.

New circumstances

In the last couple of years we have seen a crisis in many areas. There will certainly be recovery, but in a different way. Various conditions no longer apply. The population hardly increases, and in many places there is shrinkage. The level of education have reached limits. The size of the workforce will probably even start to fall. The individualization which presented an additional increase in the number of households seems to be in its final phase. Many markets have become replacement markets. This also applies to the built environment. At many places one can say that the built environment is spacious enough to accommodate the expected activities. This situation does not mean that we can stop paying attention to the built environment. On the contrary. Over the coming decades, there will be a large-scale adjustment, transformation and redevelopment. There are several reasons:

- The aging of the population creates different priorities and different needs for housing and amenities.
- The welfare society is under great pressure. This will have implications for the nature and size of the facilities.
- The climate crisis is no longer denied. The pursuit of sustainability is widely accepted and will lead to another use of space.
- The information technology will have major implications for the design of cities, similar to the introduction of electricity.
- After the current crisis a shift in economic activities will also be of great importance for spatial planning.

There are undoubtedly more transformations and changes that are currently not provided, but do occur. A new approach with clear principles is needed in order to be prepared.



Principles for a new approach in spatial planning

In order to face the new situation, a number of principles are formulated for spatial planning. Those are:

Planning based on communal values and attention to existing values.

All people are different. There are differences in abilities, needs and values. In a democratic society everyone is a free decision-making centre and equal before the law. Decisions must be taken both individually and collectively. By giving communal values a central role in spatial planning, it is easier to overcome the gap between individual and collective decision-making. The democratic credentials of the process can be improved. Moreover, most political parties are oriented around certain values. This is a major reason for a different approach, but there are more reasons:

- The value approach shows the value of the existing environment in relation to the changes resulting from new investments.
- The use of the same language of values makes it possible to bridge the gap between spatial scales and between different sectors.
- A sectoral approach loses sight on potential synergies. The significance of many investments often is in other areas. A values approach gives the opportunity to do so.
- Spatial planning is not a technocratic process. Every choice has a moral aspect. The values approach also brings that element in decision making.

The city and its surroundings are the central spatial unit

The connection between various spatial functions is nowhere greater than in the city. It is obvious to choose the city and its surroundings as the unit of planning. Inside this unit the same planning rules and communal values can be applied. Moreover, the city and its surroundings are facing an important task. That is bringing a better balance in the flows coming into the city and the flows leaving the city. A nice word for this task is a healthy metabolic of the city.

Art and culture should form an integral part of physical planning

Years ago there was a fixed percentage of the costs of each construction project to invest in art. The money was intended primarily for the beautification of the building. This is a sympathetic measure but does not do justice to the importance of art and culture. Physical investments do change the culture of an area and there is art and culture asked to be aware of it, or even give shape to it. Art can play a role in discovering the past, giving shape of the building process and is helpful in the search for a new identity of the area. In all cases new connections and new images occur.

Maximum transfer of information to all relevant parties.

The emphasis on the transformation of the existing built environment, leads to new and other stakeholders. Especially in today's information age, there is really only one possible strategy in such a situation and that is openness. The transformation of the existing built environment requires maximum openness or transparency.

Distinction between perspectives and projects.

Perspectives are sustainable pictures of the future based on individual and communal values and which play an active role in society. Perspectives are shared by (large) groups of people, sometimes united in interest groups or political parties, but often not. One discovers mostly in

practice that there is a shared vision. Projects are specific physical investments with a beginning and an end, an initiator, clients and a financial settlement. A spatial project requires in every case a perspective on the future. Therefore, a project is always the result of one or more perspectives, sometimes it's a result of a conflict between different views and sometimes a compromise. Recognition of lasting differences of opinion and at the same time an ongoing effort to bridge these differences creates dynamism in society.

Process that focuses on the best of all possible by co-creation

A process that focuses on the best result sounds like a cliché, but it is not. Just then an approach based on communal values must be able to prove his services. It is a good tool to search for synergy. Often, the process is different and aimed at the least worst outcome. A result with which everyone can live, but also just that nobody is really happy with. In the first case, there is value creation at several levels, and not in the second case. Therefore a major role in the process is reserved for the creative ability of the parties involved and the strength of the design. That will always have to take place in cooperation with the parties concerned. A nice word for it is co-creation.

Contributing to the learning ability of the society

The last principle is that each project must contribute to the learning ability of society. The least is that all participants in a project learn something from it, but that is not enough. There is by doing so, no active knowledge development. This requires proper documentation of projects and proper evaluation. The learning ability can only increase significantly if there is also outside the immediate circle of the stakeholders, an active knowledge transfer about projects. In the Netherlands there is an extensive record of facts about areas but virtually nothing about projects in those areas. We see changes, but do not know how they come about. Proper documentation is also provided in order to achieve impact analyzes and thereby strengthen learning capacity.

What are communal values and how to adopt them?

Definition communal values

Four themes are distinguished, namely a cultural, social, economic and physical approach to define values. Communal values may relate to the population or to the physical context. So, eight values are emerging. Essentially, there are of course infinitely many different values, but in the political debate a number is constantly brought forward and these can be used. In the figure, these values are displayed.

Cultural diversity

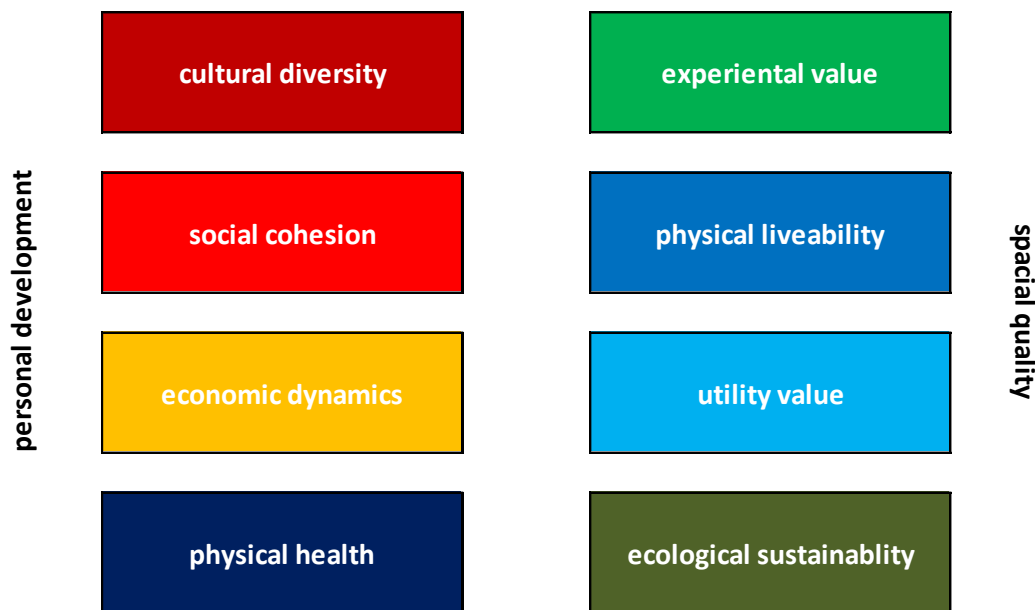
Cultural diversity is the value that indicates whether a community possesses the possibility of free expression. The Netherlands as most European nations is a free country and everyone can express himself freely. However, there are differences in the degree to which use is made of this space. In areas where there are many cultural activities or areas with a large creative industry that space is used more intensively. Culture is essentially about the tension between preservation and change. Lack of diversity can lead to rigidity and thus deterioration and too much diversity may lead to chaos and confusion.

Social cohesion

Social cohesion is also an essential communal value. It shows the degree of solidarity in a society. Partly this solidarity is regulated by the state through a variety of social insurance.

But certainly this time of economic crisis shows that the state does not cover all or some say cannot provide here. Social cohesion is also a matter of the locals. This is evident by the extent to which people are living together, in the way people are dealing with neighbours and are participating in social processes through associations and volunteering. An essential dimension to social cohesion is the tension between alone or together. Individualism is a widely-held value. It gives space to own actions and own responsibility. There seems to be a change coming up. In many places, people are looking for new forms of collectivism. But conversely doing everything together and nothing alone, can be oppressive. It leads in the extreme case to exclusion.

Figure 1: communal values



Economic dynamics

Economic dynamics are required to provide for the maintenance of life. Here is a tension between growth and contraction. How far should we go in order to allow growth and shrinkage which leads to big problems? The economic sector has its own value indicator, which is the domestic product.

Physical health

Health is a value which is largely attached by many people. Health care has evolved over the years and became the largest item in the national budget. And not only the state but also individuals spend a lot of money to get healthy and to stay healthy. Sport is popular, healthy food is in and the book sales with advice on healthy living are doing particularly well. Indicators of health include life expectancy, absenteeism, obesity and the appreciation of the public for their own health. Health is about the tension between homogeneity and heterogeneity. Solid and stable patterns provide stability but are vulnerable to changes.

Spatial quality

The communal values from the population, have in a certain sense a counterpart in spatial quality. The cultural, social, economic and physical value of the environment in which we live

is mentioned: experiential value, physical liveability, physical utility and ecological sustainability. Three of the four values are derived from Vitruvius. Only liveability is not at Vitruvius.

The experiential value or beauty has never been a big issue in the Netherlands. It's a miracle that we have produced so many great artists. Our greatest painters like Van Gogh (France), Mondriaan (USA), and de Koning(USA), moved abroad and Rembrandt died in poverty. The first alderman has yet to be turned away because he or she has approved a disgusting building.

The physical liveability mainly came up in the 80s and 90s. There were even political parties founded on this theme. It is still an important item.

The most important item was over the years the physical utility of the environment and mostly focussing on one sectoral aspect such as housing shortages, congestion, waiting lists for healthcare or safety against flooding.

Environmental sustainability has in recent years become a major theme. Also around this theme new political parties are emerged.

The measurement of values

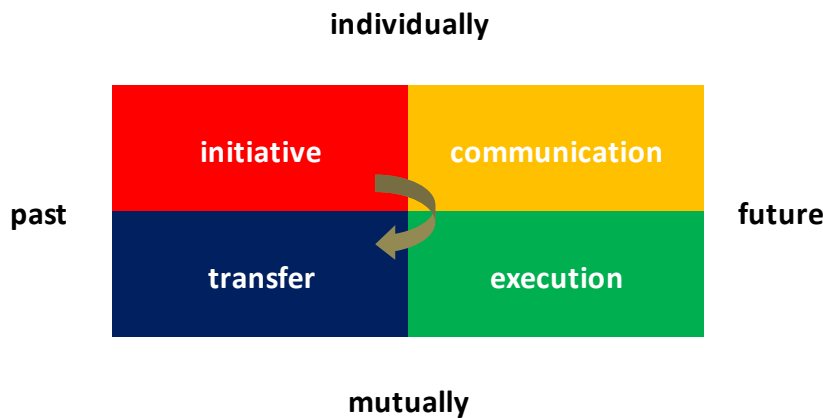
Values have a double meaning. On the one hand, there are objectively by anyone to determine indicators. On the other hand values are highly subjective and related to individual or communal goals such as quality of life or social cohesion. In the different applications a combination is used. First, there are objective indicators that can be set for each area, such as density, dwelling size, income, education level and so on. These indicators can be used to determine the score on a particular value. This is a proven method applied by multiple agencies and institutions. There are reasonably acceptable measures of economic dynamism, quality of life and the like. On the other hand, there are studies of the population in which they asked for the appreciation of all aspects of society. These subjective measures are also used. Together they should provide a reasonable picture of the diverse communal values at all spatial scales. Nevertheless more debate is needed in order to come up with generally accepted values.

Spatial planning based on communal values

Now that the basic principles have been established and we know how to measure communal values, the approach can be developed. Every action consists of four elements. This applies to small daily actions and to investments for major spatial transformations, whether we work according to a new or an old way of spatial planning. These steps recur again and again and stand in figure 2.

Every action requires initiative. Without initiative, nothing happens. Then follows communication about what we do and how we do it. After communication execution follows and, finally, transfer to the surroundings. Even at the smallest action, there is a transmission to the surroundings. If I move from one place to another, I take an initiative. There is communication in order to determine the direction. Then follows execution. The transfer to the environment is minimal, but present, namely the change in the air around me, and the footprints I leave behind.

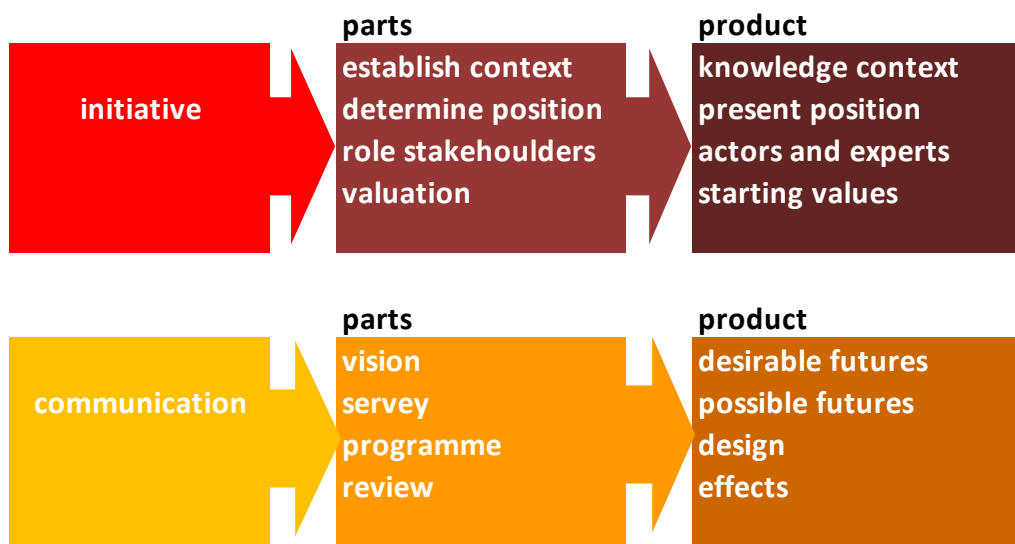
Figure 2: action in 4 steps



An act always has a circular and a linear side. The parts follow each other (linear), but after the transfer there will be a new beginning. A displacement is an endless series of new initiatives to get anywhere. A spatial investment is part of an endless series of initiatives in urban development.

For large spatial projects we can therefore identify the same parts. Spatial planning refers to the first two parts: initiative and communication. Implementation and transfer often require some new players and a new game and is not considered here. In spatial investments each step consists of a number of smaller parts. These are also again based on the components of the above figure. It creates a series of actions that ultimately lead to a completed physical investment.

Figure 3: composition spatial planning



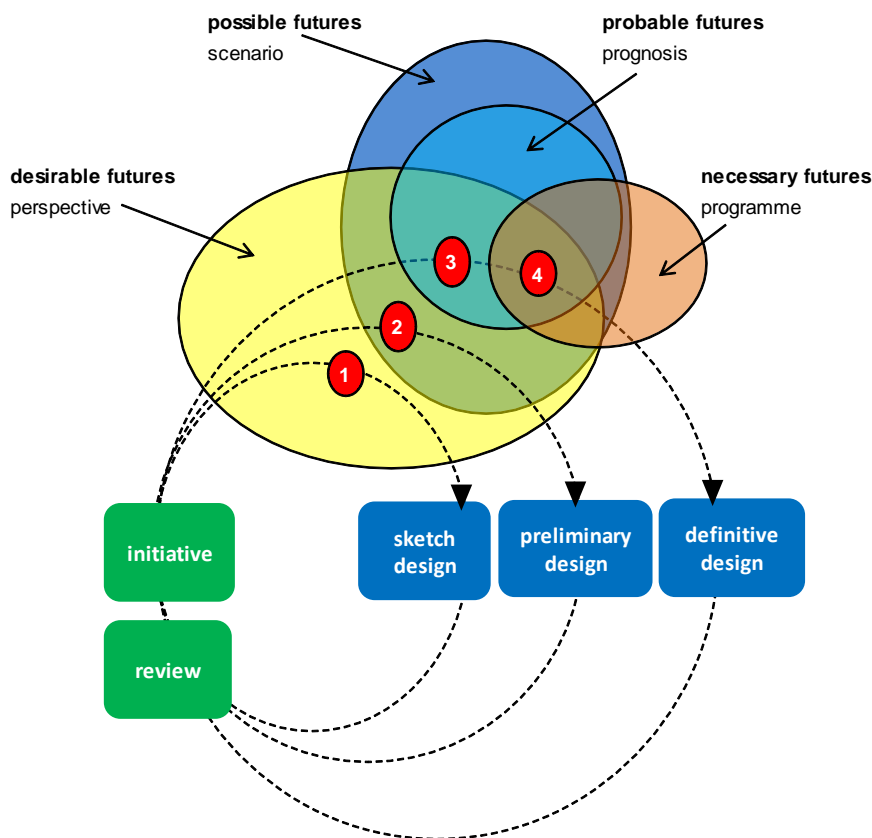
The main components of the initiative are in figure 3. The initiative consists of establishing the context and the own position within that context. In spatial investments multiple parties are always involved. In the old situation the initiative was mainly owned by a limited number of parties, government and developers. In the new situation, there are more and there is a much greater variety of parties. This requires a complete inventory of the people involved

and their roles. Finally, the starting values regarding communal development must be established.

The communication component is further unfolded because this component is essential in the new spatial planning. If something goes wrong, it's usually in this event. It involves mostly a complicated process and it is therefore important to clarify that.

A spatial investment always requires a vision and the resources to make it happen. During the process, the vision must be so sharp that it can be implemented and there should be sufficient resources for the implementation. It is a combination of narrowing and widening. If one of the two fails then the project will fail. The result is shown in figure 4. This probably looks somewhat complex but closer inspection shows that it's not so bad. The upper part of the figure shows the collection of futures for an individual or a group. A distinction is made in desirable, possible, probable and necessary futures. It is true that the probable futures are always a part of the possible futures. The desirable futures not only fall about probable and possible futures, but can also fall outside these collections. The same is true for the necessary futures. By doing so there arise 10 subsets, each with its own character and its consequences. In the middle are the necessary, desirable, likely and possible futures. Everything goes on smoothly. Completely outside are standing the futures that are not possible, not probable, not wanted and not needed and therefore not very interesting. All other combinations have their own significance. Interesting combinations are the futures that are desirable and possible, but not likely. There is work to be done. This also applies to futures that are probable and possible, but not desirable.

Figure 4: process with respect to communication



The purpose of spatial planning is to formulate a necessary plan. All parties support the plan, which still fits within the desirable and possible futures. Very schematically, one would first have to define the desired future (1). We call the result a sketch plan and it is the realization of one or more perspectives. If that's beyond the possible future then a new step is to be undertaken. It can be on any basis. The spot is not appropriate, not enough money, the design does not meet the requirements, not all stakeholders are satisfied and so on. The new preliminary design must fit within the possible futures (2). The move to a probable future can be made as all resources are put in effect (3) and the plan is necessary if anyone has committed them self to the implementation process (4).

The designs are always tested for their contribution to the various individual and communal values. That means the question is answered whether the initiative is continued until a final design.

Examples

An approach based on these principles is by no way a generally accepted approach. Methods that have worked for a long time do not end over one night. The current crisis could perhaps bring a gear for a different approach. In the following, projects are mentioned in which the author experienced with the new approach. In all examples, use was made of the value approach and co-creation. Until 2005 it only involves theoretical exercises. Later it concerns practical projects and the approach was focused on implementation.

1998: The Metropolitan Debate: Developing a new method for decision-making, together with TU Delft, University of Amsterdam and the HMD foundation. The principles are similar to the principles in this article. The method was applied in the project NL2030 in the preparation of the Fifth National Note on Spatial Planning in the year 2000.

1998: Het Nieuwe Ommeland: Application of the decision-making method in the rural areas. Project together with LTO Netherlands.

1999: Northward: Search for new projects with district Amsterdam Noord, community groups and institutions from Amsterdam Noord. Residents groups were supported by designers and artists.

2002: Where is my money? National debate on the use of ICES funds (natural gas revenues). Project together with the Institute for Public and Politics.

2005: Bacinol debates: Search for new projects in Delft along with creative industry in Delft. Project has resulted in several new initiatives.

2006: Valuable interventions in districts: Project along with several housing associations. Quest for meaningful projects and effect analysis.

2010: Delft sizzles: Development of perspectives and projects in Delft South East together with TU Delft, DUWO student housing, community groups, water board, municipality of Delft and the foundation called "Living with Water". Deadlock around building in this district gave way for new projects.

2013: New Wealth: Development of perspectives and projects in the centre of Leeuwarden with community groups, associations of retailers, municipality of Leeuwarden and institutions.

2013: SPOTS: redevelopment of boiler houses to cultural centres as part of Kosice 2013 European Capital of Culture. Project together with community groups and the organization of SPOTS.

2014: Perspective Region Zwolle: Development of perspectives and projects with provinces and municipalities of the region Zwolle.

2003-2015: CPO (collective private organizations): Various projects with Hulshof Architects around CPO. The method follows the principles and the steps as described above. The projects were always undertaken together with community groups, municipalities and sometimes with housing associations, banks and other institutions.

Recommendations

An open planning driven by communal values and established through co-creation is playing for years but is still far from commonplace. The current crisis is bringing a nice momentum in order to change this. This requires:

- A number of important players such as governments and social institutions should act according to these principles: One party must begin and it is obvious that the government and the social institutions of the government can do that. There are still too many projects where these principles are violated and where the taxpayer pays the bill. A few municipalities did start. Look for instance at the Almere principles.
- Communicate principles: The familiarity with this method will have to increase. This can be done by showing examples. Through publications and through teaching, people can be made familiar with the approach.
- Government as director: The government had too many roles. Director of spatial processes according to the given rules is a good step forward.
- Art and culture as a catalyst: Art as a catalyst is only sporadically applied. Where this was the case, it was a great success. For example, see the Metamorfose Poptahof in Delft and Hotel Transvaal in The Hague. More experiments are required.
- Recording of values: At present, the core of the national statistics is the commitment of the economic value added. This is the holy grail of economic dynamism. The other values must be recorded with the same bet.
- Documentation of projects: Better documentation of projects is absolutely necessary. Projects are what people do. This shows who cooperates, what goes in and where it leads to. Projects above a certain amount of money should be recorded much better, if only on a sample basis. There were some large scandals with building projects in the past, but practically nothing is done in order to prevent that in the future and to start a learning process.
- Communicating results: A better registration and documentation of projects and values paves the way to a greater capacity to learn about spatial investments. It also paves the way towards the integration with non spatial projects.

Landscape Design Promotes Sustainable Development of cities ——Case of "Sino-Singapore Guangzhou Knowledge City" Urban Design

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1. Introduction

In order to cope with industrial upgrade and transformation of economic growth pattern in Pearl River Delta which is considered as the world manufacturing center, Guangdong government expects to transform the development mode from "manufacturing" to "innovation" by constructing an innovative area, introducing high-quality talents and establishing high-technology industries. With this in mind, The Chinese and Singapore governments came up with the idea of establishing a "Sino-Singapore Guangzhou Knowledge City". The city will become an engine to promote industrial transformation and upgrading of the Pearl River Delta. It will become a regional innovation center for China and the Association of Southeast Asian Nations (ASEAN).



Figure 1: The position of Sino-Singapore Guangzhou Knowledge City in Guangzhou

The Sino-Singapore Guangzhou Knowledge City in the valley area of northeast of Guangzhou, is respectively 30 kilometers and 24 kilometers away from the downtown of Guangzhou and Guangzhou Baiyun International Airport, belonging to the area with good ecological environment (Figure 1). With about 123 square kilometers of available land, and about 60 square kilometers of developed land, Guangzhou Knowledge City has the potential to accommodate 500,000 residents.

It becomes a key issue for urban ecological security that how to maintain the continuity and integrity of the regional landscape pattern during the process of building a new city from

scratch (Yu Kongjian, 2003). During the process of urban design, the landscape infrastructure could be as open space system to connect regional scale, urban scale and block scale to maintain the fusion development of urban artificial systems and natural systems, which is an important aspect of sustainable development. Based on the research findings of "Sino-Singapore Guangzhou Knowledge City", this paper introduces the practice of urban design which applies the theory of landscape urbanism to design a new town in a valley. It is a right way to promote sustainable development of a city through protecting its ecosystem to construct an urban form with the city and nature organically integrated.

2. Influence of design paradigm

During the rapid process of urbanization in the past three decades, modern urbanism was the basic paradigm of urban design in china. The basic characteristic of it was to freely place buildings in the superblocs formed by a road network which is suitable for motorized traffic, and then used the commercial, residential and other types of high-rise buildings as the main tools to present a city's image. Under the modern urbanism dominated pattern of urban design, new cities in China appeared quickly with similar forms without regarding to the relationship between urban expansion and the protection of natural systems. Therefore, urban expansion has exerted a negative influence on ecosystems around cities and the ecological safety of cities themselves. It mainly includes the following two aspects.

On the one hand, it was in the inner of a city that modern urbanism urban design usually reflected nature in a city from the perspective of urban landscaping. Nature in a city was in the form of isolated ornaments like urban parks and the green areas in residential quarters dotting the urban road network while the existing green patches, corridors and the interconnections between them has never been truly considered. This kind of design pattern is just to copy the nature in the inner city, which results in the fragmentation of natural landscape in the city as well as the completely opposite pattern of natural systems and urban artificial systems.

On the other hand, it is at peri-urban that due to the expansion of the city, the natural systems were taken by artificial transformation models, such as river straightening, reclaiming land from lakes, and the disappearance of natural habitats. Natural systems were replaced by urban artificial systems, and the continuous natural process was cut off by the expansion of cities. Because of the lack of consideration of peri-urban natural systems as a whole, the horizontal ecological processes of natural systems were ignored. This lead to a serious impact on peri-urban natural ecosystems as well as the security of cities themselves such as the frequent occurrence of storm water disasters (Figure 2) in cities and the reduction of biodiversity and other issues. With the rapid expansion of cities in China, it is kind of a challenge which our cities have to face that how to build a harmonious and



Figure 2: Storm water disasters in cities

sustainable pattern during the development processes nowadays.

3. Landscape urbanism and design framework

3.1 Landscape urbanism

Modern urbanism dominated the large-scale urbanization in the world after World War II. Along with urban sprawl, the imbalance of ecological environment and other urban issues, planners and urban designers began to rethink the impact of modern urbanism on the ecological environment (Waldheim, Charles 2006). Urban design was modified by absorbing ecology and landscape ecology theory and designers began to pay attention to the relationship between urban development and nature conservation at urban scale and regional scale. For example, emphasizing both the concept of green infrastructure (Li, Juanjuan, etc. 2012) and a landscape security pattern (Yu, Kongjian, 2003) takes the landscape that embodies natural processes as the framework of urban form. Landscape becomes the key factor to shape the form of cities. The core idea of landscape urbanism is to consider urban issues from the perspective of the landscape and take the ecological strategies as the starting point to solve these problems. This approach puts a city into a larger natural environment for investigation, analysis and evaluation prior to land planning and design.

In European and North American, there are two types of urban design projects explored from the perspective of landscape urbanism. For undeveloped areas, ecological corridors and green spaces that embody natural processes are protected as landscape infrastructure, and then they are introduced into the inner of a city. For developed areas, urban designers changed the artificial environment that destroyed natural process into a new artificial nature during the process of urban renewal. They try to create nature or restore nature in artificial spaces, which emphasized the leading role of urban design. By building a new artificial nature that reflects the natural process, the ecological value and the livability of a city can be improved (Zhai, Jun, 2011).

3.2 Integrated urban design framework

Ian L. McHarg believes that the ideal urban form should include two kinds of systems. One is the open space system in accordance with the natural evolution process, and the other is the system of the urban development (McHarg, Ian L, 1991). These two systems are interrelated and form the landscape unit with land mosaic mode (Forman, Richard T.T., 2008). It is the ideal model of urban and natural integration. From the perspective of urban form, urban design can be divided into four scales: region, urban, block and lot (Liang, Jiang & Sun Hui, 2007). As the background of urban development, natural systems are considered as organic systems and should maintain the continuity of the horizontal ecological process at the three scales: region, urban and block. The theory of landscape ecology analyzes the relationship between cities and nature at regional scale and urban scale based on the schema language of patch, corridor and matrix (Forman, Richard T.T., 2008). Combined with these two theories, we think that the key point of urban design at regional scale is to make sure the relationship between the land for urban development and the surrounding natural elements (farmland, wetland, forest, floodplain, etc.), then to select the appropriate area for urban development in natural context. At urban scale, urban design shall pay attention to protecting or restoring the landscape infrastructure like patch and corridor that reflect the natural process in the land for urban development, thereby defining urban form through the protection of natural processes.

4. Urban design practice from the perspective of landscape urbanism

Based on the requirements of Guangzhou city development for livable ecological environment, the scheme design of Sino-Singapore Guangzhou Knowledge City determines the natural patch and corridor that possess sustainable development value for urban

ecological environment via the analysis for the ecological background of the site. Through the protection of landscape infrastructure, we can determine the form of lands for urban development, so as to achieve the integration of urban artificial systems and natural systems. The urban landscape changes from an "isolated landscape" to a "flowing landscape". The "isolated landscape" is the main feature of modern urbanism, but landscape urbanism emphasizes the "flowing landscape" which reflects natural processes (Yang, Perry, 2010). The flowing process shapes continuous spaces at three scales region, urban and block, which lays a foundation for a livable and sustainable urban form.

4.1 Ecological condition of the site

The Guangzhou Knowledge City is located in the valley between Maofeng Mountain and Fuhe Mountain in north Guangzhou. The site belongs to the area combined with hills and terrace. It is the transition region formed by Guangzhou northern mountain area and the southern alluvial plain. Overall, the valley is flat, obvious dendritic. The surface wetland of this valley is dense and the groundwater is abundant. There are dozens of small streams within the area that form two major rivers, which offer rich water resources to this site. The local climate is favorable and nourishes a wide variety of living creatures. Due to the impact of human development, however, the majority of woodland has become artificial or semi-artificial woodland, and the landscape of the site has been gradually eroded.

We used the remote sensing data covering the four periods in 1990, 2000, 2005 and 2009 during the preliminary research of the project. Then the data were interpreted with EADRAS software to calculate Normalized Difference Vegetation Index (NDVI) of the four periods, so as to conduct the comparison and analysis among them. From the point of view of the NDVI spatial distribution, in the 1990s, because there was no large-scale urban development, there are several obvious vegetation corridors along the valley. With the rapid development of the city, the vegetation corridors disappeared in 2009 and obvious segments appeared in the valley area between the two mountains. According to the mean values and standard deviations of NDVI, from 1990 to 2009, the ecological environment within the scope of Guangzhou Knowledge City experienced the process of the early destruction and then gradual restoration of vegetation, and the total vegetation coverage showed the ecological environment was getting better and better (Figure 3).

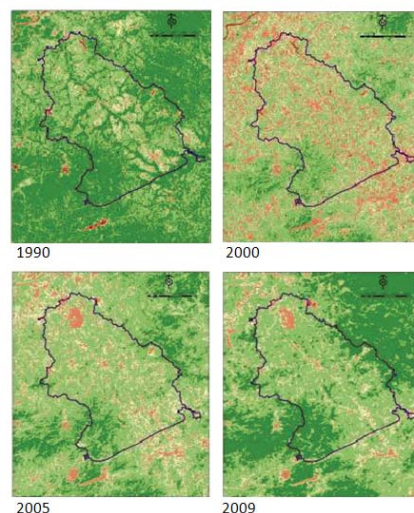


Figure 3: NDVI analysis of the four periods in 1990, 2000, 2005 and 2009
Source: CAUPD

4.2 Land suitability analysis

The research from the point of view of landscape ecology by Richard T.T. Forman, the professor of Harvard University, suggests that the flow of natural processes create different types of landscape patterns, and the patterns will affect the flow of natural processes in turn,

such as the flow of animals, plants, water and materials. If we ignore the landscape pattern to go against nature, and create the city pattern only in accordance with the wishes of the humanity, then we will pay a heavy price finally. The Steep slope is located in the East and west of Guangzhou knowledge city. Once the surface vegetation of the steep slope is destroyed, there might be ecological disasters such as landslides and floods in the storm season. It is a great threat to the life and property of the residents in the city. In this project, we apply the method of landscape ecology into the analysis for the ecological background of the site in order to determine the position of development lands (patch) in natural ecosystems (matrix), and protect landscape pattern (natural corridors and patches) in development lands. More then, it also puts forward suggestions on the construction of landscape security pattern for the main ecological environmental problems. This is an important content of urban design at urban scale.

The analysis for the ecological background of Guangzhou Knowledge City site include the comprehensive evaluation on elevation, slope, flood submerged area, surface water type, NDVI, forest protected area, land use type and other factors. According to the superposition and comprehensive evaluation of various evaluation factors, the land use status within the site could be obtained, which concentrates to manifest the impact of human activities on the natural environment. Based on the size of different land use ecological contributions, the ecological weight value could be determined, and then the protected scope of natural ecosystem could be identified. The area of Guangzhou Knowledge City is divided into three types (Figure 4). The ecological reserve area, the restricted development area and the suitable development area are 52, 29.3 and 41.7 square kilometers. In basis of the assessment results of ecological suitability, the city will prefer to take the suitable development area as urban development land, the followed optional by the restricted development area. The ecological protection area strictly prohibited to use for construction. In addition, the restricted development area are adopted the development mode with a low environmental impact, so as to reduce the impact of urban development on the ecological environment.

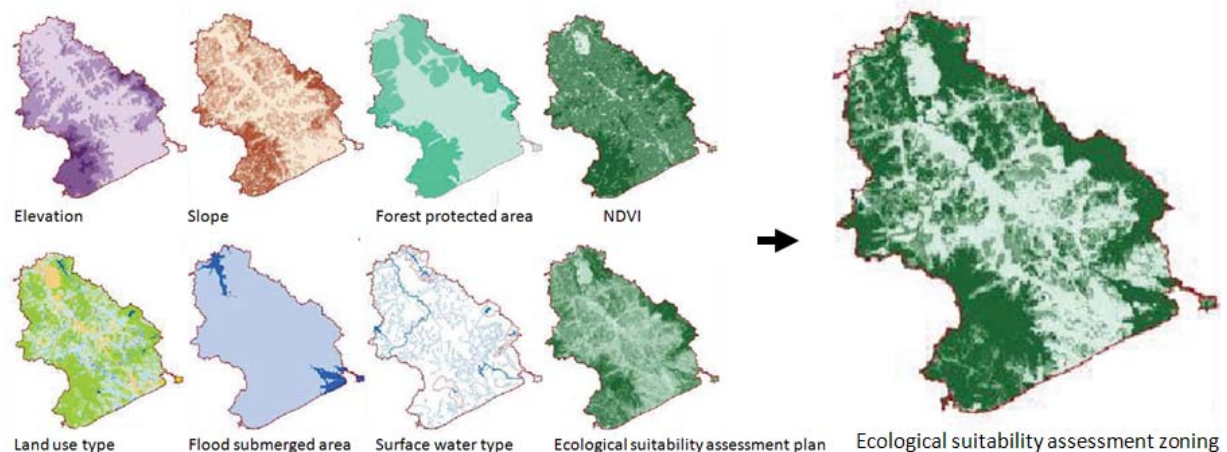


Figure 4: Land suitability analysis
Source: CAUPD

4.3 Landscape as a framework of urban form

In the process of urban development, the construction contents on urban lands are constantly changing, while the landscape infrastructures which are composed of river systems, wetlands, woodlands, and flood submerged area in natural systems will serve for a city forever (Yu, Kongjian, 2003). Modernistic urban design causes the fracture between urban form and site characterization, and ignores the natural systems as the matrix is an

organic system, which leads to be lack of the continuity and integrity of natural system under the three scales: region, urban and block.

The urban design of Sino-Singapore Guangzhou Knowledge City changes the design paradigm that modern urbanism takes a road network as a development framework for a city and generates urban form through urban functions. The project takes landscape infrastructure which reflects the natural process as a framework of urban development, and shapes the urban form by the process of ecological flow. The design proposal combines with the analysis of the horizontal ecological process on the surface to protect the original hydrologic system in the site and form continuous ecological corridors, which could provide the biological migration, the flow of surface water and other natural processes with a protection frame, as well as lays a solid base for the formation, development and evolution of urban form. The design pattern began to change from the intervention of road network to the intervention of landscape infrastructure. It is also an effective way for the design scheme to build the urban characteristic by combining the natural features of the site, the protection and the construction of the landscape infrastructure network in advance. For example, at the urban scale, the urban design scheme controls the building height based on the valley characteristics. Guangzhou Knowledge City is located between Maofeng Mountain and Fuhe Mountain, and the urban form presents a band shape. The scheme controls the overall skyline of the city through the analysis on the view of both sides of the mountains. The major high-rise buildings in the city are laid out surrounding the subway station along the valleys, with the height of the tallest building not exceeding 2/3 of Maofeng Mountain, which ensure that the contour lines of the mountains on both sides will not be destroyed by high-rise buildings (Figure 5).

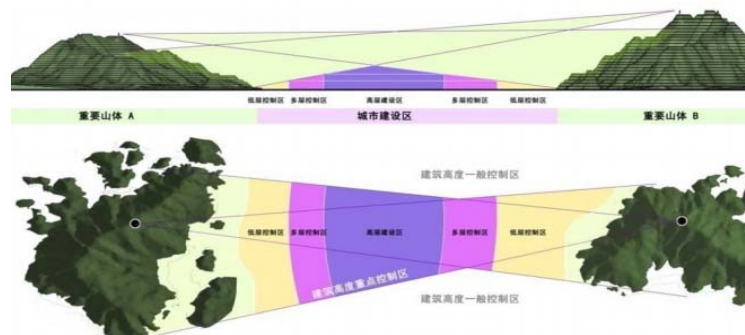


Figure 5: The analysis of controlling building height
Source: CAUPD

4.4 Ecological corridor as the landscape infrastructure

In this project, the ecological corridor which is considered as the landscape infrastructure can be classified into the biological migration channel and the surface runoff channel. The pre-constructed ecological corridor within a city could avoid the lack of necessary natural open space during the process of urban expansion. The ecological corridor reflects the natural process in the inner city, and connects with the patch and the natural system between the inner and outside the city, so as to maintain the continuity of green open space system for cities.

Guangzhou knowledge city is located in a range of mountains and the width of mountain corridor is about 32.5 km (Figure 6). How wide the ecological corridor shall be protected in Guangzhou Knowledge City if we don't want to affect the ecological function of the area? According to previous studies, we should reserve the ecological corridors of 2 km width in the area, and the minimum width of an ecological corridor shall not be less than 0.6 km, so as to keep the basic ecological functions of the regional ecological corridor. Through the recognition of the ecological corridor with high degree of naturalness within the site, there are

three biological migration channels with the width of 2.2 km in total (Figure 7). In the inner city, according to the research of river ecological corridor, we need to retain 60 meters width at least on both sides of the main river systems, such as Phoenix River and Pinggang River within the site, and 15 meters width of green buffer on both sides of the other tributaries.

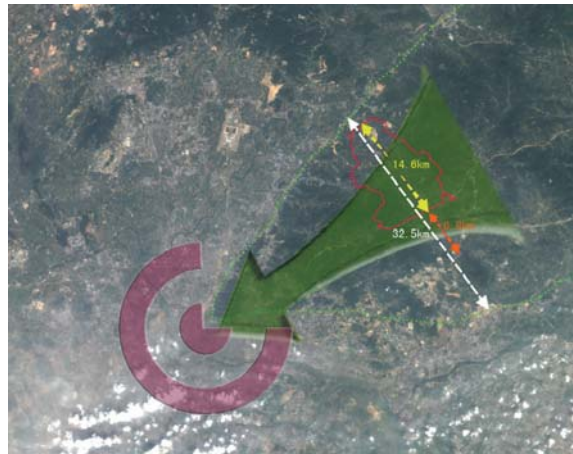


Figure 6: The width of the existing ecological corridor
Source: CAUPD

From the perspective of development of urban land, the open space networks, which are interrelated with each other, could enhance the development value of land. In this project, the urban ecological corridors that are considered as open space carriers can contain the space of pedestrian lanes and bicycle lanes, which can provide daily exercises opportunities for residents, so as to improve the overall health level of urban residents. The proposal of urban design puts forward that the urban greenways are along Kowloon Avenue, as well as the foothills of Maofeng Mountain and the Fuhe Mountain (Figure 8). The greenways are composed of urban greenway and community greenway. The urban greenway is about 71 kilometers, and the community greenway is about 62 kilometers in total. By constructing the slow-traffic network at urban scale, it could improve the accessibility of slow traffic system and urban diversity. On the other hand, due to the static wind frequency of the valley reached 33%, the urban ventilation corridor formed by the ecological corridor is helpful to ease the issues of air pollution and urban heat island. Therefore, the ecological corridor in urban is an important aspect of the livable environment of a city.



Figure 7: Three biological migration channels
Source: CAUPD

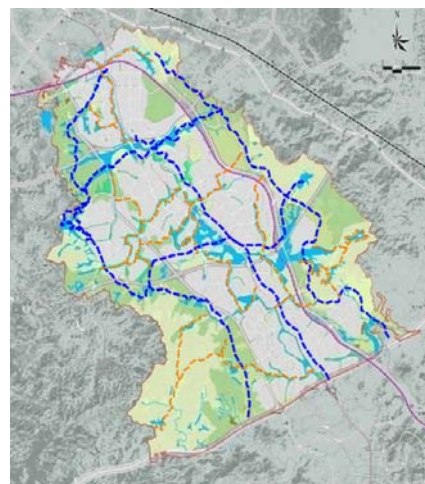


Figure 8: The greenways in the project
Source: GDUPI

4.5 Function of landscape

Under the background of rapid development of Chinese cities, the development model of modern urbanism often leads to the fragmentation of the landscape. The processes of incremental development are lack of overall consideration of natural systems around cities, which destroys the continuity and integrity of natural systems. Furthermore, it is very difficult to maintain biodiversity in the isolated parks and green areas that are dotting among urban road networks. Therefore, we need to link the fragmented landscape, and use a kind of continuous and natural form to design. What's more, we should not only consider the retention and continuation of the existing natural process, but also think about how to recovery the natural process that has been destroyed. We should build the connections of natural landscape inside and outside of cities to establish networks of landscape infrastructure.

Before the establishment of urban road system in this project, we analyzed the land suitability, and established the ecological corridor, which can maximally retain the original natural process within the site. Landscape infrastructure and land of urban development are mixed together in the form of land mosaic. The form of landscape changed from the "isolated landscape" to "flowing landscape". We want to reduce the interference and damage to the natural system as much as possible, and design according to the natural process. Landscape infrastructure is a kind of landscape with ecological function. We reserve the water system and the catchment channels for surface water in the city, and let nature work, which could effectively reduce the speed of surface water collection and flow, and purify the water quality. There are others benefits for the city, such as maintaining biodiversity, replenishing groundwater circulation, controlling soil erosion, decreasing the rain and flood pressure on municipal facilities (Zhai, Jun, 2010).

5. Discussion

With the development of landscape urbanism theory in the field of urban design, the urban design paradigm evolves from "separation from nature" to "fusion with nature", and "function generating form" to "natural flow generating form" (Yang, Perry, 2010). The urban design based landscape urbanism connects the three scales of the urban form via the landscape infrastructure, which reflects respecting nature, restoring nature and creating nature in design processes. Through the protection of the natural process in undeveloped areas and the ecological design involved in urban renewal to create artificial nature (Zhai, Jun, 2013), the urban development could be integrated into nature, thereby reducing the impact of urban development on the ecological environment. Landscape urbanism theory could be a new design paradigm for urban environmental issues in the course of China's rapid urbanization.

A city in a stage of rapid development is often faced with uncertainty in the process of urban expansion. For example, the construction of new highways and high-speed railways will have a great impact on the development direction of a city. It is the dilemma of modern urbanism that how to establish the relationship between urban development and natural ecosystem. Based on the ecological planning cases of Barcelona in Urban Region written by Professor Richard T.T. Forman and the viewpoint of Professor Yu Kongjian about landscape security pattern, the framework of urban development should be constructed at regional scale and urban scale. Outside of the built-up urban areas, we should make sure the suitable areas for the development of a city and the landscape infrastructure network to show a possibility of urban form, so as to cope with the uncertainty of urban development in the future. In addition, the sprawling development should be prevented from eroding the natural system surrounding a city and causing damage to the integrity of natural process. More then, in this way, we can also provide a clear suggestion for the development of the regional highway or railway in the future, which can create an active connection between the development of a city, the landscape infrastructure and the external contact channels.

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DED Delft E Design - Bottom Up approach towards a sustainable existing housing stock

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In Delft in 2013 an initiative of Delft Design, a local society of designers, resulted in a cooperation of designers, architects, scientists and dwelling owners in the city of Delft. At first the cooperation aimed to find European funds for an innovative approach to the existing housing stock and its inhabitants. This turned out to be difficult as the funds were merely aimed at research and knowledge innovation. The cooperation then turned to the city and the local housing corporations to find ways of practising a bottom up method with the users themselves.

Delft E Design, DED, is a cooperative of ten small firms specialized in sustainable techniques, architecture and consultancy. DED is supported by the Delft University of Technology, Faculty of Architecture, housing society Woonbron and the City of Delft. With foundation De Witte Roos a program of sharing knowledge is active.

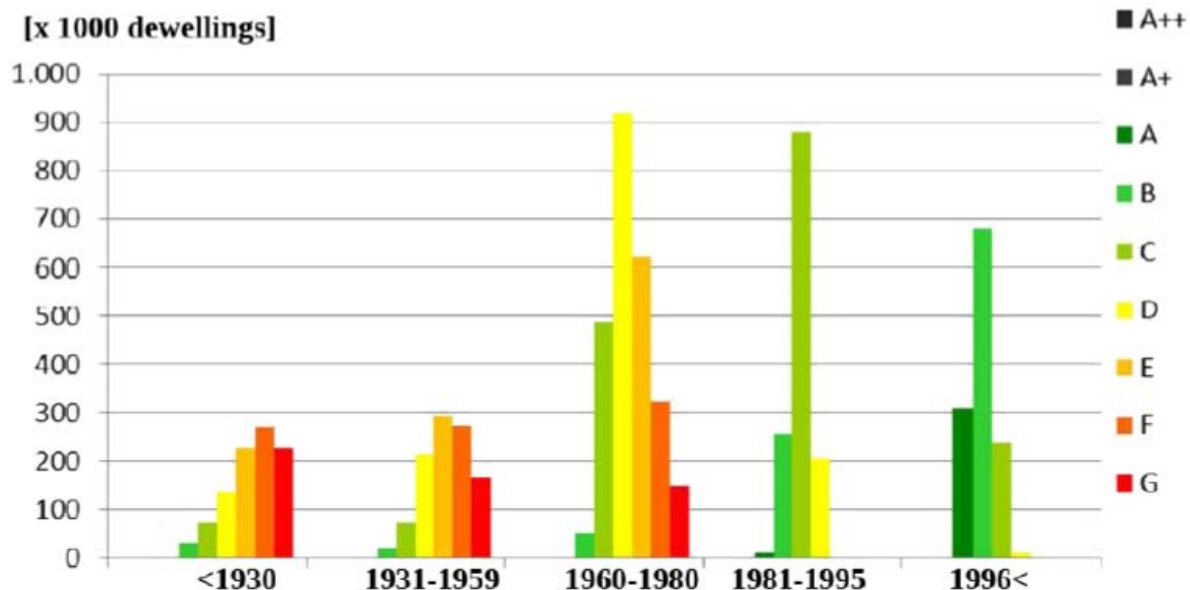
With the city of Delft a so called "E-deal" is agreed on. With this deal the city commits to providing a fund of 4 times € 25.000,- in a period of four years starting in 2014. The cooperating companies agree to invest knowledge and labour, in order to develop a scheme in which the financial savings made possible can and will be invested in energy saving or producing adjustments by the house owners and tenants.

Goal:

DED aims to develop experimental projects with, and undertaken by, the owners and inhabitants of existing dwellings; houses, apartments, monuments, all varying in age. This is done by developing and practicing ways to enable people to establish an energy neutral house and if possible an energy producing house.

The following figure shows the existing energy label in average houses in The Netherlands related to their construction period. Our pilots will cover the three eldest periods.

ENERGIE LABELS



With a small group a start will be made to show and interest more people in undertaking sustainable ways in living en using their dwellings. The approach is one of a testing ground

or living lab, to demonstrate and try out physical interventions. Most important is to share experiences and to see how behaviour combined with techniques can change more with less. With four pilot areas defined to start with, there is a great variety of people and constructions, housing types and neighbourhoods. Also the influence of the environment is considered. Empty grounds can be used for local gardening, energy harvesting and more. With these pilots a pool of ambassadors can be developed and the approach can spread, not only in the pilot areas as well as all over Delft and anywhere.

With the Delft University of Technology research is done on the existing energy use in the pilot areas and simulations are made to show different possible effects. Also executed interventions are evaluated to show the effects to a wider circle. Students are helping by making presentations and doing questionnaires in apartment buildings.

Result:

The result is two sided, one is an approach to achieve large scale user powered energy saving and production in the existing housing stock, to start with awareness. The second is to realize 40% less energy use in 120 dwellings in a period of four years. In the end DED wants to continue the campaign addressing all possible clients.

Approach:

DED will be active in the pilot areas for a long time – preferably extending over the first test period of four years - to continue the pilot and to enable society to adapt and renew the approach permanently. To start DED will investigate the real question and need of the inhabitants. The potential of energy savings possible will be investigated. The cooperation members of DED will advise inhabitants on possible personal and collective measures, both regarding behaviour and physical interventions. DED will help them to find contractors and products best fitting their needs. At this moment for example, several bids are considered on insulation and PV installation. Sharing the experiences makes a profit possible for all the participants. With about twenty families living in the city centre, mostly monuments, kitchen table conversations already result in an average saving of 20% with no money invested. DED will help people to contract the right firms and check the executed performance.

Monitoring the pilots with research members of DED will enable the exchange of new ways to save and produce energy.

Four pilot areas and their specific character.

The pilot areas are:

- Verzetstrijdersbuurt (postal 2507)
- Poptahof (postal code 2400-2401)
- Agnethapark (postal code 1301)
- City centre (postal code 1102-1104+1106-1109)

These neighbourhoods can be described according to several characteristic urban aspects like density in volume, people, amenities, green space, empty space, traffic space, housing typology and climate.

The inhabitants can be characterised by income, education, cultural background and ages. During and after the first four years of the project we will try to relate these figures to the results. At this moment we are still investigating on most figures.

In general the average house serves 2,07 persons. In the pilot areas we don't see much difference in this figure.

In the following a short outline per pilot is given as well as the result up till now, July 2015.

Verzetstrijdersbuurt.

This is a neighbourhood constructed in the 60-70 ties, after the war and with a layout we call Cauliflower. This was supposed to be very 'gezellig' or cosy. In total there are 500 family houses, mostly in rows and some semi detached.



Typical street view, google



Overall layout, google earth

Most houses are privately owned by the inhabitant. All are terraced single family homes. The building density is a total of 1.285 houses on an area of 33,5 ha or 335.000 m² and thus 38.38 houses /ha.

The average income is € 41.300,-hh/year.

General knowledge

In 2008-9 the municipality was active in the neighbourhood with an energy saving program. The response was very disappointing as only 2% of the households joined the program and invested in technical measures like insulation, PV and sun collectors.

Pilot approach

In this area we are doing a follow up on the previous campaign with the former participants to show and act as ambassadors towards their neighbours. Now together with these people we find more people interested. We have reached about 22 more households who want to invest in more technical adaption's of their houses. All joined the questionnaire and now individual visits are going on.

So now there are four ways and routes for further action;

- Through the ambassadors
- Through information meetings
- By offering monitoring the use of electricity
- By offering a complete energy scan

Up till now about 15 reports were made on the possible savings per household. These reports now need a follow up by contacting these households through the ambassador and finding suitable offers fitting the needs we found.

Most important here are the possibilities of insulation and PV electricity. Students have also analysed the technical state of the average house and came up with more ideas about the possible adjustments. Also popular are behavioural changes. These were suggested in the meetings and are an item in the personal follow up.

Poptahof

This neighbourhood was constructed in the 60 ties and the layout is an open Grid, very popular after Ciam and Corbusier. The general design was made by Van Embden, original a co-founder of ISOCARP.



Aerial view Poptahof

An area renewal plan made in 2005 till 2010 was only implemented in about 1/4 of the area and the program was stopped in 2014 because of the economical crises. We consider the existing old housing stock in our pilot. All these houses are owned by Woonbron, a social housing society. All are apartments in four and twelve floor high buildings. The building density is 1231 houses in an area of 21,6 ha, and a density of 57,1 houses /ha. The average income is € 22.000,-/year

General knowledge

The collective heating system is outdated and causing a big energy loss. For the renewal and new buildings constructed in the period from 2005 till 2014 the stoves were replaced and the system upgraded. The old buildings though were kept with the old energy wasting system. The tenants pay their monthly cost based on the total use and the m2 of their apartment.

This causes a lack of interest in individual saving.

Pilot approach

Delft Energie Design (DED) wants to show the opportunities of upgrading and energy saving operations in this neighbourhood opposed to the former plans for replacing most buildings. One approach is to investigate the possible renewal with and through the inhabitants. To start one five floor flat can be transformed as a showcase if the owner can be convinced with a affordable plan. Calculations with the so called "Klushuizen" formula are made and discussed with Woonbron, the owner. A saving of 50% in energy use can be achieved.

At the same time with the tenants and their association an effort is made to help them save energy by the use of their houses and the attitude in their uses.

Several scenarios will be developed with the tenants in workshops and by making interviews to improve the houses as well as the environment. The vast amount of open space in the neighbourhood allows more use and gives several opportunities depending on the interest of the tenants. Scenarios for different degrees of adjustments will be made and calculated starting with a minimum which allows the tenant to stay in the apartment during the construction and in steps towards a complete makeover to realize a zero energy house. In each scenario the possibility of self help will be considered. Also possible sale of apartments will be considered resulting in the housing association to be helpful to tenants as well as towards the new owners.

At this moment talks are going on about the approach of the inhabitants. DED is in touch with the tenants through their association. The association had troubles contacting Woonbron for at least three years. Now with this pilot DED might be able to add to the communication between the owner and the tenants.

To start with an investigation is made on the needs of the current inhabitants of the old buildings. Also information is collected on their energy use/consumption and whether they can do jobs themselves. Next autumn a questionnaire will be spread with the help of tenants in a high rise apartment building and in one of the lower buildings. By analysing the answers first a general advise on the use of the apartments can be made to save energy without any technical intervention. With that DED will get back to the tenants and see what can be done by themselves.

Together with Woonbron further investigation will be done on the technical possibilities. We think of;

- Enlarge the first floor apartments by adding space on the ground floor. With that a garden is made possible and the use of the open space can be more differentiated. It can also add to the social security in the neighbourhood.
- The roofs can be used for terraces or terrace rooms, PV panels and gardening.
- Kitchens can be enlarged
- Individualizing energy use for heating by smart measuring in each apartment and changing the distribution of heating.
- Adding comfort with new technology like monitoring systems on tablet or phone including a control system to the main building entrances.

With the contact made with the tenants they can be made more active as DED gives suggestions on savings to start with for free. By monitoring their savings the possible profit by investing a part of the rent together with the help of Woonbron is more secure for the tenant than before. To plan technical interventions DED wants to find a method to ensure the agreement with all the tenants of a building, a 100% agreement is necessary because these buildings are not suitable for an individual approach on technical interventions concerning the heating system and insulation..

With the approach of the first two buildings DED want to find supporters that can act as ambassadors in the other buildings. To inform everyone meetings will be organised and a meeting point will become active in the neighbourhood.

The first goal is to create more awareness. With the possible control system on the entrances also monitoring software can be developed to see the individual energy use and compare this with others. People can chose to stay anonymous off course. As the dwellings are very comparable maybe some competition can give incentives to further savings.

Agnethapark

The pilot concentrates on the oldest part constructed before the war in the layout of a garden city by Mr and Mrs van Marken, owners of the most important Delft industry, the yeast factory, where also penicillin was invented and produced. The complete neighbourhood was declared a national monument in 1989.



Birdseye's view Agnethapark

The typology of houses is varied, but mostly consists of small dwellings of 2 or 3 floors. Some apartment buildings in the same architecture are present. The building density of the entire neighbourhood, including more than the pilot area, is 554 houses in an area of 199.066 m² or 27,83 houses /ha. The pilot area consists of 219 houses.

The average income is € 38.500,-/year

General knowledge

In the area about 75% of the housing stock is rented to old tenants of which most were working in the factory. The factory sold the houses to an investment company who aims to sell all houses eventually.

The result is a low interest in energy saving programs as most people are old of age and paying low rents.

The house owners, now approximately 25%, are obliged by the municipality to be organized in an owners association that is responsible for the upkeep of the green hedges and the exterior woodworks. In 1990 the houses were renovated in a very modest manner. Glazing is still single and in a lot of houses there is no central heating.

Pilot approach

Because all houses are considered National monuments the efforts concentrate on making invisible or nearly invisible adjustments. As the neighbourhood is designed as a garden city a strong architectural identity is found. This can be useful to create identical adjustments, which makes working together beyond ownership a possible option to investigate.

Because the level of the facilities in the houses is still rather low and energy saving measures are still scarcely found, much can be gained, also with small and cheap adjustments.



Typical houses of the 2nd part built in de 20ties



typical architecture of the first part built in de 19th century

The following organisations have been contacted first to get more knowledge:

- Agnetapark BV and DSM Gist Holding BV
- Owners association Agnetapark
- Tenant association Agnetapark

With DSM the possible use of the wasted warm cooling water of the installations can be investigated as the factory is located next to the neighbourhood.

The housing association, Agnetapark BV, is only interested in selling the houses and is just there to keep the houses in a sellable condition. As people tend to live happily in this neighbourhood and are reluctant to leave, the selling process that started in 2005 is progressing slowly.

After half a year talking with the owners association and tenants association, DED became a trusted partner for them. Apparently former municipal interaction had been too confronting for them and a period of getting acquainted was necessary. DED was invited to a formal tenants meeting and a follow up meeting will be organised in the next autumn. The annual BBQ will be used to advertise DED and a questionnaire will be spread door to door.

Depending on the typology of the house and the ownership different measures are possible. Ownership makes a more individual approach possible as the investment can be calculated individually, especially in the single houses.

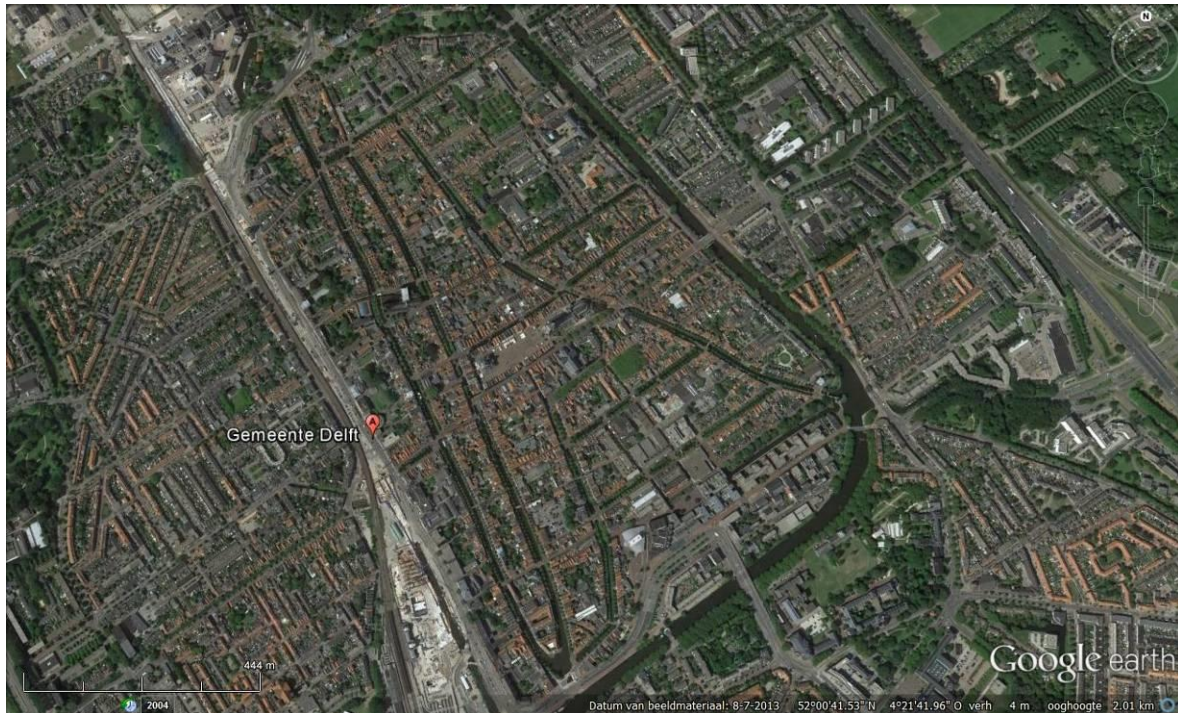
As there are lots of unused open spaces between the housing rows the possible use for growing food and the instalment of (collective) energy saving devices can be discussed with the inhabitants and the municipality. With Delft Design a project investigating empty space in the city is connected to DED pilots.

After the next meeting a series of interviews on energy use and comfort will be started with those who are interested. The questionnaire will be used as this is being developed by DED for the use of all pilots. At the same time the status quo of the houses will be charted. By doing this DED also aims to find ambassadors to spread the word and take on tasks like interviewing their neighbours and so on.

The city centre

Here we find a monumental environment with a lot of private owned houses. Also areas with new housing complexes, from 10 apartments to over 200 apartments sharing parking and facilities. In the pilot we try to contact the different typologies.

Originally the city centre is medieval, houses originate from 1500 to 1850 of which most are considered monuments. Therefore the whole city centre is protected area. This also causes constraints for technical interventions.



Delft city centre, google earth



Monuments along a canal "de Kolk", google streetview

The building density is 5533 houses in an area slightly over one km². To compare this results in a density of 55,3 h/ha.

The average income is € 35.000,-/year. This figure is misleading because of the relatively great amount of students living in the city centre.

General knowledge

There is a big difference in culture of live between the students in de city centre and the older residents, mostly owners and often of a National monument. In the new buildings and the quarter in the east side of the centre we find a lot of young families who moved there the last 10 years. We notice a tendency to more appreciation of the old city centre as a living area with nice facilities.

Here in the city centre we find inhabitants organised in several area organisations of inhabitants. With these groups initiated by the people we find easy contact and the interest to talk to individual households is growing. After a year of general informing these groups the step to personal contact depending on the public attention and the interaction between the house owners individually is improving slowly.

The rich history of the houses, historic solutions for heating, ventilation, insulation and against overheating as well as the chances offered by the historic design for the use of modern materials and techniques, can inspire the inhabitants to invest and understand the limitations of their houses.

At this moment over twenty households have been in touch and at least the reports made individually give them opportunities to save 20% in their energy use by changing their behaviour without any investment.

Pilot approach

After meeting all the operational organisations and giving general information on DED as well, individual owners are visited. Next to the neighbourhood organisations DED is currently contacting several owners associations operational for apartment buildings in the city centre. DED calls the individual meetings "Kitchen table talks" in which the same questionnaire is used as is used in the other pilots. At the table adjustments to measure the situation are made of course. The result is a report with a so called "Bottom up design recommendation". This allows people to question DED on the impact of architectural or technical solutions they found themselves. Often they are already planning changes because of comfort reasons or necessary up keeping.

This approach is appalling;

- For the inhabitant because they can ask for technical and/or architectural advice.
- For the DED adviser because this can cause more interaction and an extra job
- For the DED designer because the unique opportunity to custom design.

DED aims with this "no cure no pay" approach to strengthen the attractiveness to join the pilot on saving energy; more individual customized advice.

DED found several ambassadors, people who invested in energy saving with great results with quite different technical solutions like heat pumps, solar devices, insulation and so on. With the people already interviewed and these ambassadors a meeting will be organised in the Prinsenkwartier to show and exchange the results. Also possible clients will be invited to join with special attention for the owners united in owners associations. DED will organize an exhibition of ideas next year, the current installation of 68 PV panels on the roof of the Prinsenkwartier building being a mayor item.

DED wants in this way to create trust and to give several opportunities to people to join the pilot.

Also now the following activities are being developed;

- To help and monitor the execution of adjustments, to find suitable contractors and check the results
- To start collective projects by connecting people and buildings. Sharing flat roofs or roofs of public buildings can join individuals and add to collectives.
- The development of new methods in saving like through new ways of ventilation.
- To work together with the University with several faculties on the design for the recommendations

Status and findings so far.

The project is now in a critical phase as we are starting to get the first results.

A Comparison of the results in the different pilot areas up till now shows big differences, possibly related to income and density of volume and people in the area. DED will investigate these relations in the near future.

In the Verzetstrijdersbuurt and the City centre we find most activity going on. There it was relatively easy to find ambassadors and activate individual households as they own their houses. In these neighbourhoods DED is now collecting offers for technical adjustments and connecting people.

In the Agnethapark this process can be started in the coming period. With Woonbron a break through is expected in the Poptahof and here DED hopes to find an approach useful in other areas alike which are consisting of a great stock of G to C labelled dwellings.

Currently, offers are collected for several insulation items as well as for the application of PV. This is done with a joined effort through the DED cooperative. In doing this, a transparent approach is made by showing the advantage of the joined efforts to all participants. With the pilots a profit can be made compared to stand alone initiatives. For instance by doing this with the cooperative we can make the work done by the participating companies affordable for the house owners joining the project.

A mayor result is realized together with the Cooperation Prinsenkwartier. We found a new way of funding placing PV panels on the roof of the monument The Prinsenkwartier are renting from the municipality. This is one of the first Monuments in Delft with a licence to do so and 68 panels are installed. The energy production is monitored and available on an App for the users. As this project concerns a public building the app will be shown to the public to inform people about the project and the energy production involved. The investment also is part of the project as the Prinsenkwartier is a peoples initiative with gifts and private loans only. With the saving in energy costs the panels will pay themselves within a period of 9 years.



PV panels on the roof of Prinsenkwartier



Energy monitor app solar edge

DED wants to know more about the personal value differences between inhabitants in a pilot area as well as the difference between inhabitants in different pilot areas as this can help the approach of people in other areas.

It is interesting to see the difference in approach related to the neighbourhood specifications. It seems young people are a better target for saving programs because they use a lot of energy in their households. They own a lot of energy-consuming machines and live a very consuming life. Another example: the owners of old houses in the city centre, mostly monuments, are more serious about energy saving than the owners of new houses in this area. The latter often assume that because of the age of their house most energy saving measures are already taken. They rather invest in more comfort than in saving or producing energy. This is opposite to the attitude of the owners of monuments. They are proud of their house and are very concerned about energy saving by behaviour changes first.

DED will explore whether differences in education, profession, culture and lifestyle also present such differences in focus.. It may be sensible to go into these differences deeper in order to get the different groups to inspire each other.

DED's next steps involve an investigation of how the technical data of the existing housing stock in each neighbourhood can be specified in connection to the energy consumption, as well as how big the existing energy consumption is - on average and more specifically per household. With this information we hope to see whether there is a connection between the household characteristic and the behaviour concerning energy use.

To gain more information and exchange experiences, DED is currently connecting to other local initiatives, such as the Delft Design project NAO on the possible use of all kinds of Empty Spaces, Delft becomes green, Stichting de Witte Roos and their project "de Challenge-4-Change".

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All figures not specified are made or collected by DED

**Research on the Strategies of Cultural Heritage in Villages and Towns
Characterized by Aboriginal Participation
The Role**

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ABSTRACT: Rural culture contains collective interests, and confronts with the mixture and integration of foreign cultures. The strategy of cultural heritage carried by planning achievements is inseparable from a sustainable vision. Moreover, the authenticity of local culture needs to be further consolidated. With aboriginal participation as the characteristics, the paper tries to explore the strategies of cultural heritage in villages and towns based on the technical level beyond traditional planning methods. When the effectiveness of cultural inheritance resulted by planning system mode at the present stage is recognized and inherent advantages of rural culture are provided by aboriginals, with the help from enlightenment of public participation and rural planning methodology characterized by civil participation in Japan, the more effective approach of rural culture heritage is explored in this paper.

Two new methods (aboriginal participation and aboriginal autonomy) used to seek for the strategies of cultural heritage with planning formulation mode are proposed in this paper. Role change, participation level, the perseverance of authenticity in aboriginal planning formulation, and evaluation standards for cultural heritage are also purposed from a new perspective.

KEYWORDS: authenticity, rural culture, aboriginal participation, cultural heritage

Although rural culture has a valuable heritage, over time, it gradually faces new challenges, especially in terms of tourist activity. Regional cultures that have a floating population are widely divergent; some may be relatively intact, while others tend to be discrete symbols, and more fragmented. The ability of rural cultures to be carried forward with authenticity, with a local context and regional characteristics, and to meet new cultural demands, have become hotspot problems for cultural heritage.

In protecting the intangible cultural heritage, two contrasting perspectives have been voiced, represented by: “Do not turn heritage into regret.” and “Do not turn heritage into remains.” (Xie & Chen 2001, p. 43-45; Wei, 2002). These views reflect the two extremes of cultural heritage authenticity – from disappearance to inflexible protection. According to the *Venice Charter*, [ref] “the authenticity of historical sites and relics shall be inherited from generation to generation.” In addition, *The Nara Document on Authenticity*[ref] fully defined authenticity: as being “viewed with a developing foresight, and cultural heritage value and authenticity shall be judged and surveyed under the background, in which such culture is presented.”

1. Purpose of the Research

1.1 Inheritance of Traditional Rural Culture

To regain humanistic information about cultural spaces and to reestablish technical connotations for historical buildings, the carrier of culture must be designed with an ideology for historical buildings, artistic aesthetics of historical buildings or landscapes, the process features of historical buildings, and the use experience of historical buildings or landscapes. They must also be compressive and synthetic (Ruan, 2010). Rural cultures are comprised of lifestyle, convention, tradition, social practice, and folk-custom. In fact, the two terms, “rural culture” and “rural life” relocate the dance, song, music, image art, story, and other related presentation elements. Nevertheless, these elements are not fully recorded by characters, which may be learned by words and dictations, instead of systematic instructions. Historical context evolves continuously with the passage of time. The valuation of rural culture also depends on various information sources, such as culture that is propagated among aboriginals in villages and towns, especially among prestigious and respected people that leads to the highest purity.

Inheritance consists of written culture and oral propagation. If generalized according to linear correlations, the former is more convenient. In other words, culture disseminators often mark important written cultures with dates. Those topics that have a longer history usually draw more attention and gain wider respect. With regards to the time-honored social ages, “the oldest residence in the village” or “the oldest granary in the records,” they represent the social characteristics in those days. To comprehend the ideologies or production modes from earlier periods, we need to rely on inheritance sources that have the highest recognition level or longest history. In contrast, culture passed on in oral forms has no word records, and instead, it is taught by prestigious and respected people through word-of-mouth or by the knowledge production of the period (William, 2012). In rural society where knowledge was taught orally, tradition and faith were developing and interchanging, and being reinterpreted after oral propagation and modification. The authenticity was barely maintained, making it difficult to qualify or quantify culture sources without comprehensive research. Aboriginals showed a stronger ability to differentiate and interpret the origin, development, and change processes of local rural culture. Thus, inviting aboriginals to participate in the inheritance, development, and future planning of local culture is an effective way to maintain authenticity.

2. The Opportunity for Aboriginals to Participate in Planning Formation

2.1 Dilemma in Rural Culture Inheritance

“Culture is a product of social life, and the essence of national spirit. Every nation and every social group has their respective and unique cultural pattern and personality.” (Shan 2006, p.103) The cultural heritage in villages and towns needs to be fully appreciated, and the local culture of aboriginals needs to be respected. The aboriginal knowledge system that has been passed on for centuries also needs to be objectively recorded. Through cross-discipline and cross-culture research, mutual cooperation can help promote local culture and absorb foreign culture while developing the principle of “syncretism between heaven and man,” and according to “locality-oriented” and “self-inherited” characteristics. From generation to generation, from one village to another, and from researchers to the people being researched, the cultural axis is crossing and mingling, finally forming a systematic cultural network. Under the current social environment, and following the rule of survival of the fittest, relatively weaker cultures may be affected and even assimilated, which erodes the authenticity of the original culture. The resulting rural culture variations should be avoided.

For example, the rural Nuo opera of the Dong minority, located in regions south of the Yangtze River, used to be performed on the seventh day of the lunar new year, which was also referred to as “man day” (Jing, 2007). Nevertheless, as the young people of the village had to return to work after the spring festival, the event was advanced to the second day. The Nuo opera, advocating a “ritual system and traditional custom,” eventually broke from the historical rules (Li & Wan, 2008).

2.2 Aboriginals’ Urgent Demand for Cultural Inheritance and the Advantages

The impacts of foreign culture can have a significant influence on the authenticity of rural culture. Intrinsic instable factors are also key sources of influence. (Zhao, 2008, Table 1) This problem also exists in other nations and in tribes around the world. For example, service facilities may be gradually substituted by tourist commodities and high-priced restaurants. Because of the long production cycle or raw material shortages, folk materials and techniques used by aboriginals may be gradually marginalized and separated from their original form. The public spaces for ceremony and neighborhood communication can be occupied by tourists, and aboriginals may lack the space to carry out activities or events in their villages or towns. Even if new public space is provided, the “Ship of Theseus” problem can easily occur, raising doubts about the authenticity. The daylong bustle of tourists breaks from the original tranquility and residents’ private and semi-private spaces may become invaded. A permanent floating population has only a rough connection to the original rural culture, which can lead to a severe vulgarization and invasion of the local culture (e.g., the Di opera performance of *Riding Alone for Thousands of Miles* resulting from the misunderstanding of Lijiang culture) (Zhang, 2012). These problems can affect the daily lives of aboriginals in villages and towns, retard the maintenance, cultivation, and development of local traditional culture, and lead to situations of low price selling and decay. With respect to the authenticity of customs, handcrafts, and anecdotes, the family manuscripts of aboriginals and the narrations of prestigious and respected people are the backbone for correcting errors in local culture. They play an indispensable role in stripping off additional cultures that may have been introduced from other sources.

Warning Information	Internal Sources	External Sources
Folk Culture	Outward migration of local residents and the decrease in population growth rate	Inflow of large numbers of external workers and merchants

	Drop of local residents' living standard	Inflow of overloaded and excessive tourists
	Aging of local residents	Impact of external thoughts and Western culture
	Changes in traditional production process and lifestyle	Impact from modern lifestyle and communication tools
	Elapse of traditional festivals and etiquette concept	
	Decrease in local residents' satisfaction about current life	

Table 1: Early Warning Signs with respect to Rural Protection. (Zhao, Y 2008, Theory and Method for Protection of Historically Famous Villages and Towns in China, China Architecture & Building Press, Beijing).

2.3 Resistance and Feasibility of Aboriginal Participation

2.3.1 Incompleteness of Aboriginal Participation

Practical inheritance of the rural culture is reflected by the orientation of rural planning, and decisions related to short-term and long-term planning. The local property of aboriginals plays an important role in this process. Planning activities in China have no mature public participation system so far. Even in the period of surveying before planning formulation, personnel from different departments and at different levels may try to understand the aboriginals' view and suggestions for planning by field survey, questionnaire survey, discussion, literature, etc. In planning formation; however, aboriginal participation is seldom emphasized. Moreover, in planning activities, the suggestions of residents are seldom comprehensively analyzed. Consequently, few of the aboriginal opinions are accepted. In later stages, few aboriginal interactions are considered and the initiative for aboriginal participation gradually declines. This is also part of our administrative system, which affects the aboriginals' overall quality.

2.3.2 Mature Public Participation Modes in Planning

In the US, small town planning greatly emphasizes aboriginal (public) participation. For example, town planning in Union Bridge, Maryland was comprised of six phases. The first phase was to research the current land use and economic development. In the second phase, questionnaires were sent to the public to collect their suggestions about the goal of the planning. In the third phase, a planning draft was formulated according to the preliminary research and public suggestions. In the fourth phase, the public was invited to discuss the draft, to collect the views of people. This was a key link in the whole planning activity, as it determined whether or not the draft needed to be revised. In the fifth phase, the planning was modified and finalized according to the draft, after the collection of public suggestions. In the sixth phase, after two months of publicity, a hearing was held and the case entered the legislative procedure of city council. In three of the six phases, public participation was required. These three key phases also determined whether or not the planning would be approved. During the planning formulation, residents participated because they realized that the overall planning of the city was closely related to their interests. Moreover, they attached great importance to their influence of the planning, which would affect their lives and employment. Eventually, their valuable suggestions were incorporated into the planning (Zheng et al. 2010,p.100-101). The shared decision-making power realized by public participation was fully brought into play in the planning formation for Union Bridge.

3. Rural Planning based on Rural Culture Inheritance and Aboriginal Participation Method

Seen from a macroscopic dimension, rural planning will have plenty of generalities in the next century. In conforming to the demand for rural economic development, a regional rural system will be established to fully meet the demand of production and living standard improvement in terms of overall construction deployment. Rural constructions will be comprehensively planned and arranged for a coordinated development (Zhang & Cui, 2008) The components that constitute rural planning formation are referred to as “elements in the planning system,” Which are derived from theoretical extensions, instead of planning formation. For example, aboriginals are introduced for the planning method research system. They are regarded as new elements added beyond the planning subjects, and they appeal to points in planning formation that differ from the traditional formulation method. We are trying to observe the influence of such additional elements on the cultural heritage method. As shown in Fig. 1, the roles of aboriginals in planning participation are in “aboriginal participation” and “aboriginal autonomy”. Both of these methods are based on the strategy for research involving aboriginals.

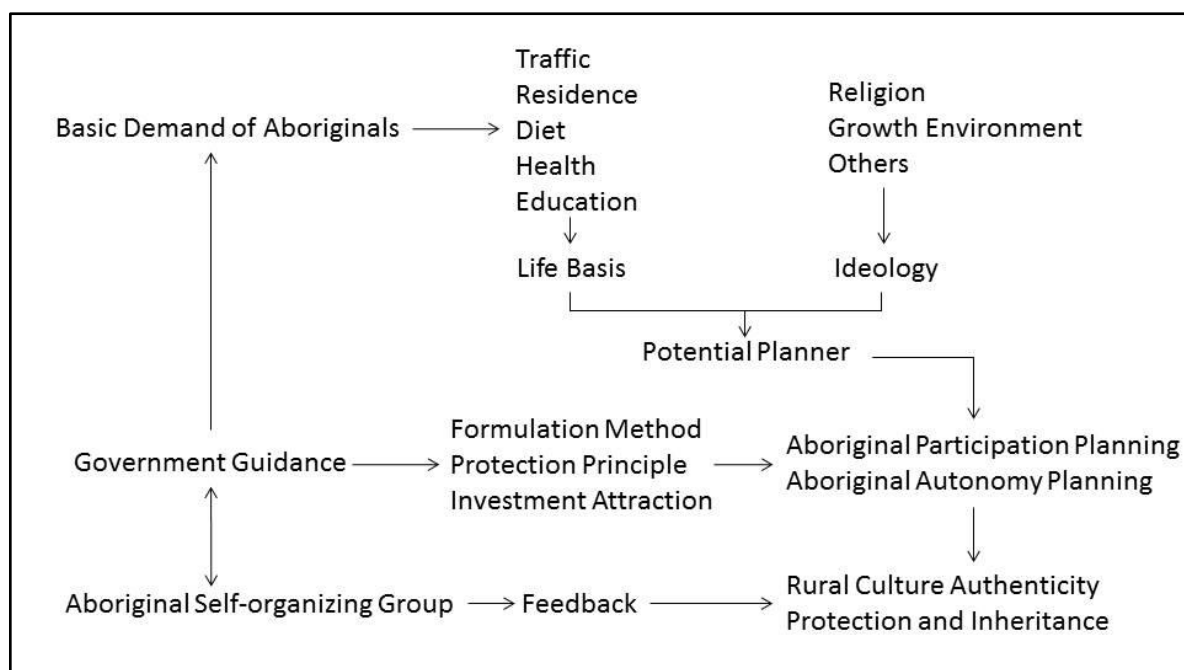


Figure 1: Schema of Aboriginal Participation (by the author).

3.1 Aboriginal Participation

Japan was one of the earliest countries to consider the participation of villagers in rural planning. In the late-1970s, “Rural Planning and Villager Participation” was selected as a topic for the First Annual Meeting (1982) of the Japan Rural Planning Academy, which was regarded as a milestone for developing planning theory based on villager participation. In the seminar, Fujimoto Nobuyoshi presented research on the application of public participation in primal rural planning in Japan. Professor Ushino Tadashi also released a research report on rural planning, with villagers as the main subject: the mode of *かんでむら* (Hoshino & Wang 2010, pp.54-60). In terms of villager participation, these two scholars advocated for planning with the rural village as the unit.

Planning formation based on aboriginal participation differs from the mode led by governmental authorities and undertaken by expert planners. It is interpreted as a new planning method and ideology. The method generally involves: relying on the experience from birth to growth, aboriginals summarizing the characteristics of their village from their

perspective, taking the village as a permanent place of residence, exploring and exchanging ideas based on the aboriginals' view of life and with family as the minimum unit. Aboriginals draw a "blueprint" for the development of the village, focusing on the smallest units for the orientation of construction direction. They gather together prestigious and respected people in the village to integrate their similarities and differences, record or list the village's cultural characteristics, and jointly complete related works. These characteristics have a number of advantages like the familiarity of aboriginals with the culture in the village. Apart from providing a primal authenticity of the village, the role of aboriginals is turned from "being planned" to "the planner". Thus, the contribution of their role is improved and their internal motivation is strengthened. In addition, this mode may also prevent planners from going off-track in planning formation, by ignoring certain folks, traditions, or prejudice.

The ideology of aboriginal participation is also reflected by new groups formed by aboriginals according to characteristics that differ from other groups, administratively. In terms of research and implementations, the age structure, gender structure, growth environment, marriage and birth customs, family and relative relations, and religious lives of members are recorded. According to original aboriginal planning ideology, and by integrating the organizational mechanisms, a solid foundation can be laid for developing villages and towns. This will help to further consolidate the cultural context and provide a unique sense of place for establishing authenticity (Table 2).

	Traditional Planning Formulation Strategy	Formulation Strategy Characterized by Aboriginal Participation
Belonging Sense of Villages and Towns	Residents have the sense of identity for themselves, the place, and the village or town	Aboriginal participation initiative is improved, playing an important role on behalf of their local group in the planning, with the sense of identity greatly improved
Group Attitude of Aboriginal	Partial objections to planning formulation, different attitude, playing a part in pre-stage investigation, limited influence	Playing an insider's role in the whole course as principal person affecting the future of the village or town, shouldering historical responsibility, with influence expanded
Public Acceptance	Except for some famous historical and cultural villages, other villages and towns tend to be similar, leading to the suspicion of imitation	The involvement of aboriginals in traditional planning scheme leads to the consequence that the reform is conditionally opposed, with changing period extended. However, preserved environment and intangible heritage are hereby attached with great significance

Table 2: Sense of Place Affiliated with Authenticity (by the author).

The transformation from the "top-to-bottom" traditional planning mode to the "bottom-to-top" aboriginal participation oriented planning mode is impeded by the system, and it is currently still in its pilot phase. Nevertheless, such transformation of planning form and system uses a scientific method developed from experts' and planners' long experience in rural planning, and the repeated and prudent exploration in practical surveys and work. In research related to rural planning, by comparing the efficiency and timeliness of the two planning methods, we find that the aboriginal participation method leads to an effect that perfectly fits the local conditions. Although it may not be able to fully substitute for the traditional formulation method, the two methods complement each other for mutual

improvement.

3.2 Aboriginal Autonomy

An ideological difference exists between aboriginal participation and aboriginal autonomy. The most significant difference is that the former is led by government with aboriginal participants. Registered personnel mainly come from sponsoring units. As for the latter mode, aboriginals are the principal part responsible for planning of their own villages and towns. The government and other departments only play a coordinating role. Nevertheless, limited by formulation technology, the aboriginal autonomy planning method only realizes full autonomy in the pre-stage communication and ideas. To implement such planning formation, support from other departments is necessary.

In the aboriginal autonomy-based planning, aboriginals' ideology will determine the process and direction of planning formation. It is uncertain whether or not regional disparity, other natural qualities, or cultural preservation will be independent and complete. Furthermore, the planning formation of villages and towns may also be different. As a result, the authenticity of cultural inheritance is not the same. Furthermore, in being affected by foreign cultures, the widely commended rural culture-based development mode is imitated all over the country. Aboriginals are familiar with their own situations and resources; however, without cultivation and training for the planning system, they lack connotations of style loss or characteristic obscurity caused by imitation and unrealistic expectation. As a result, the planning result is significantly different from what is expected. In any case, the planning system led by governmental authorities, and planning formation based on aboriginal autonomy has not yet been given significant responsibilities.

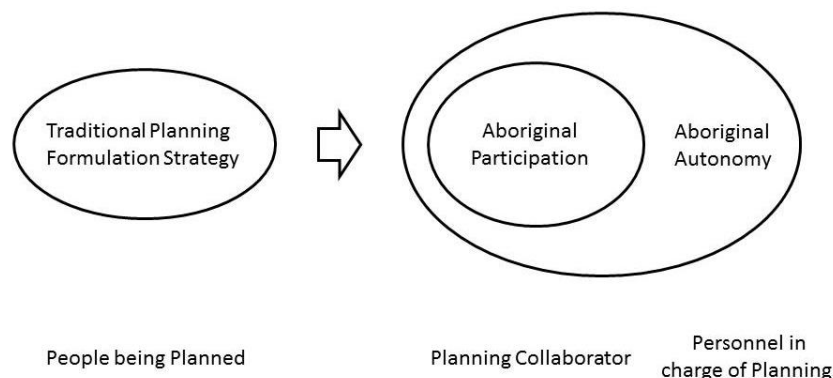


Figure 2: Change of Aboriginal Role in Planning Formation (By the Author)

3.3 Characteristics of Aboriginal Participation and Aboriginal Autonomy Planning Strategy

3.3.1 The Platform of Cultural Heritage is Expanded

The level of rural planning formation is comprised of result quality and implementation effect. Such planning is transformed from being independently completed by traditional planners to the effective participation of aboriginals. Thus, the vision of traditional planning formation is transferred from the technical mode that emphasizes technology, formulation skill, and source to the comprehensive mode based on high proportion of public participation.

3.3.2 Extensibility of Cultural Heritage after the Implementation of Planning

As the main subject and the director of planning formation, aboriginals' willingness will be eventually reflected by the final results; i.e., realization of the aboriginals' willingness and appeal. In the final planning management, such consequences would be more deliberate than the planning that results from expert planners. Accordingly, the efficiency of cultural inheritance and propagation is improved, for the whole course participation in

exploration, formulation, and administration.

3.3.3 Conversion of Evaluation Standard for Cultural Heritage Achievements

Previous cultural heritage evaluation standards have been determined by the planning text demonstration effect, public reaction, and market investment responses, such as providing greater economic motivation for cities, villages, and towns, or attracting wider domestic and overseas attention. Nevertheless, in aboriginal participation-based planning, the inheritance effect is mainly transferred to the aboriginals' contribution; i.e., whether or not the aboriginals' appeal for the village or town is satisfied. Commendations from the external world are no longer the ultimate evaluation standards for rural culture inheritance.

4. Other Reflections on the Strategy of Cultural Heritage Characterized by Aboriginal Participation

4.1 Participation Moderation and Aboriginal Appeal Intensity

In the investigation phase of planning formation, the moderation of survey content and aboriginal appeal intensity is the premise for successful planning. Here, traditional ideology of the aboriginals in villages and towns should be included, such as whether or not any dissatisfaction is felt about the current situation; whether or not psychological fluctuations occur after contact and communications with foreign cultures; whether or not aboriginals are well prepared for possible updates or remolding of the current situation, etc. Cultural heritage must be carried by the planning formation. In practice, the aboriginals' immediate interests and deep-rooted rural ideology are the major factors that promote or impede planning formulation.

4.2 The Power of Collective Willingness

As constituent elements of rural life, aboriginals are divided first, according to their blood relationships, second, by their ethnic relationships, and third, by their production cooperative partner. The diversity that is formed in planning implementation will directly affect the formulation results. The coordination level of collective willingness is connected with rural leadership structure, aboriginals' benefit distribution mode, and the trust level between planners and people being planned. To achieve better planning results, the internal relationships of aboriginals must be determined, which also clarifies their tendency for collective willingness.

4.3 Reflections on the Depth of Participation

Considering the authenticity of culture, the depth of aboriginal participation in planning formation should be maximized within the scope allowed by laws and regulations. According to the Japanese scholar にしお まさる(2013), the form of participation may be categorized in four ways, based on the villagers' privilege: campaign, enrollment of planning institution, communication, and autonomous administration. Following the development process of the traditional formulation method → aboriginal participation → aboriginal autonomy, the depth of aboriginal willingness and aboriginal participation is enhanced layer by layer, while the participation proportion of professional personnel is reduced accordingly. The development tendency of planning still needs to be explored in key steps, like planning institution enrollment and communication.

4.4 Decision-Making Power

According to our present planning formation system, administrative departments do not entitle their powers to aboriginals. Aboriginals may still be able to participate in planning, or even determine the planning formation. Nevertheless, before implementing engineering projects, administrative departments will review and determine whether or not such planning formation is feasible. Decision-making power is still a last threshold for cultural heritage with the planning result being the carrier.

5. Conclusion

The planning formation method will become increasingly detailed in its technical aspects, like software and method, and will become more widely accepted. From another dimension, as important parts in the planning formation, aboriginals will extend the technical level. Their comprehension and oversight ability for rural culture will be expanded from a traditional level to implementation practice. The sharing of decision-making power will improve the aboriginals' status and participation depth in planning formation, thus shortening the formulation period. Meanwhile, efficiently integrating the collective willingness of aboriginals is deeply rooted in the evaluation standards for rural planning formation. Besides guaranteeing the authenticity of cultural heritage, it helps the local culture to resist the impact of foreign cultures, and thus, it maintains authenticity. From aboriginal participation to aboriginal autonomy, the role of aboriginals is no longer to witness the process of planning formation. Their ideology and attitude will determine whether or not the authenticity of their rural culture will be seamlessly inherited. Granting aboriginals new roles and establishing a formulation strategy with aboriginal participation is new direction from the traditional route of planning technology research.

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City Planning between Decline and Recovery - Perspectives for a “Communicative Turn” of Planning

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Abstract

Compared with the heroic times of our discipline when ISOCARP was founded, in the last twenty years planning seems to struggle more and more in heavy weathers. Neo-liberal city development, driven by digitalization and a globalized market-economy, sees the planner more as a waiter than a cook. Facing a cooperative transformation of governance in cities, a “communicative turn of planning”, based on a coalition with civil society, could open perspectives for a new role of planners as intermediate actors. As advocates for the public interest and the commons, planners should not only be moderators. Based on their special competences for space, designing, integration and communication, planners could be catalysts of cooperative urban transformation processes. Preconditions of a possible recovery of public planning seem to be the reintegration of all dimensions of planning, the reorientation of planning education on real problems and not at least the search for more political influence through new alliances between planners and civil society.

1. Introduction

After fifty years of ISOCARP, it's time to reflect the decline of our profession. When ISOCARP was founded, city planning was in a tremendous upswing. Especially in the western world, the long post-war phase of economic growth and social oriented national and/or local governments used planning as a tool to provide housing and better living conditions for a broad majority. In the southern hemisphere, city planning became part of nation building and forming a new post-colonial identity. In the last twenty years with globalization and digitalization, planning seems to become a “dying out craft”. Is this process an inevitable fate, or is it reversible? Since the economization of the city and the representative democracy both lost legitimacy, a recovery of planning and a new self-image of planners seem to come in reach. Of course, there will be no way back to the god-like “master of the urban universe”.

2. Changing modes of city production and the role of planning

2.1 Planning: a flash in city history

Since more than 10'000 years, cities in the world had developed without city planners. Priests, land surveyors or fortification builders, building controllers, sanitation engineers, architects or the citizens themselves decided about the structure and form of urban settlements. Not more than hundred years ago, city planning emancipated as a discipline of its own from engineers and architects, bringing together social sciences, engineering, economics, geography with landscape and urban design. A special methodology, organization, a powerful legal system and national, regional and local administrations of planning evolved. Planning and planning control was originally (and in some aspects until today) hierarchical and top-down, using formalized planning instruments and strict regulations. City planning became a politically influential and important role during the time of growing industrial cities and even during the years of rebuilding cities after World War II. Until the first phase of the post-industrial transformation of European cities since the 1960ies, planners felt and acted like the “masters of the urban universe”. The mode of city production

was driven by technological innovation (infrastructures like sewage, energy supply, tramways, metro etc.), by (paternalistic) social welfare concepts (social housing, schools, kindergarten) and by a strong and active state, especially on the local level of city administration.

2.2 Driving forces of city development

The production modes of cities changed in history and at the same time the driving forces, the decision makers and the role of plans and planners (see MUMFORD 1961). The ancient cities of the Near East, Egypt, Greece and the Roman Empire were primarily produced by the ruling monarch or oligarchy as representative and religious capitals, military camps and fortifications, often combined with trade and manufacturing functions for a wider surrounding area. The medieval European town was a coproduction of its citizens - organized in councils of the owners and guilds of traders and craftsmen – sometimes in violent opposition to territorial rulers and the church. Where the city was residence of a territorial ruler, it was produced mainly by the sovereign and his visions and objectives. Sometimes the citizens' city, the bishops' city and the royal seat emerged side by side (see BRAUNFELS 1976).



Fig. 1: Renaissance Munich with its fortifications (1613), a coproduction of territorial ruler, church and citizens (source: City of Munich).

Since the 19th century, after de-fortification, the industrial city emerged - housing areas for the workers grouped around a cotton mill or a mine, rational street grids with terraced houses for the middle class and villas for the upper class. The industrial city was served by new developed and planned technical infrastructures like sewage, gas-, electricity and water-supply and got networks for public transport by tramways, metro or suburban rail. The production mode of the industrial city was genuine capitalist, financed and organized by landlords and private companies for housing, manufacturing or infrastructures, based on public concessions. Sometimes the latter was supplied by city or state, where private capital was not able or willing to supply the necessary infrastructure. Schools and hospitals and all other social infrastructures were mostly built and driven by city, state or church, sometimes by philanthropic landlords or industrialists. Citizens' rights were linked with property of land.

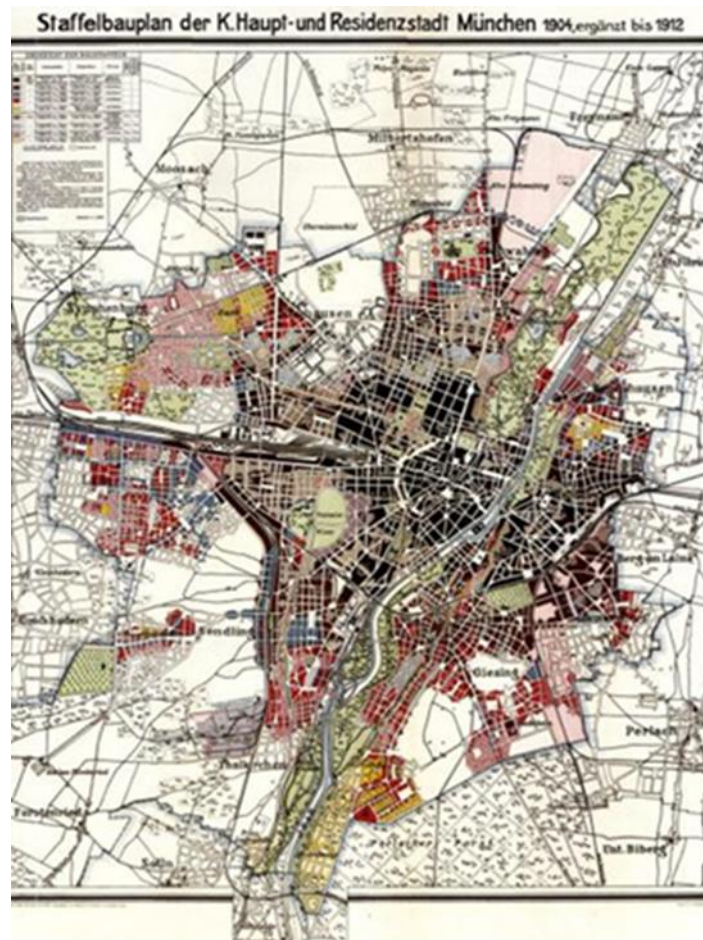


Fig. 2: Theodor Fischer's "Staffelbauplan" for the expansion of Munich (1904/12), the first regulatory plan for the growing industrial city (source: City of Munich).

After the end of the feudal systems (or their transformation into constitutional monarchies) in the beginning of the 20th century, the century of democratic urban development started. With election rights for every citizen, with elected mayors and city councils, the production of the city based more or less on democratic decisions.

2.3 Public planning in the social welfare state

During the 1920ties and after World War II in many European cities like Vienna, Lyon, Amsterdam, Stockholm, Berlin or Frankfurt socialist or social democratic majorities together with trade unions and cooperatives realized the city model of the democratic welfare state: schools, social housing sports facilities, parks and public transport made cities livable despite their growing density. The state sets strong and clear rules about property rights and social responsibilities of land owners, often accompanied by a special taxation of house ownership. Strong legal planning instruments were developed to control building rights and land use (density, kind of use). The state or the planner as his agent was in control of land use and development. These ages were the peak of the influence of city planning. The society lends their power to planners and gave them the resources to realize a rational planned city. In the ideal of the city of welfare state, the planner is a technical expert, who handles his expertise to make good plans and implement them. He is the advocate of the public interest, of coming generations and of those, who have no voice in the political arena. Planning changed from a kind of creative craft to a science-based practice. During the 20th century planning more and more widened its perspective from the mere technical and spatial questions to the economic,

social and environmental aspects of urban development (see ALBERS 1997). In Western Europe over most of the 20th century the democratic “welfare state-mode” of city production gave public planning a strong position. Affordable housing and a high quality of infrastructure was secured better than in the phase of capitalist growth of the industrial city during the second half of the 19th century.

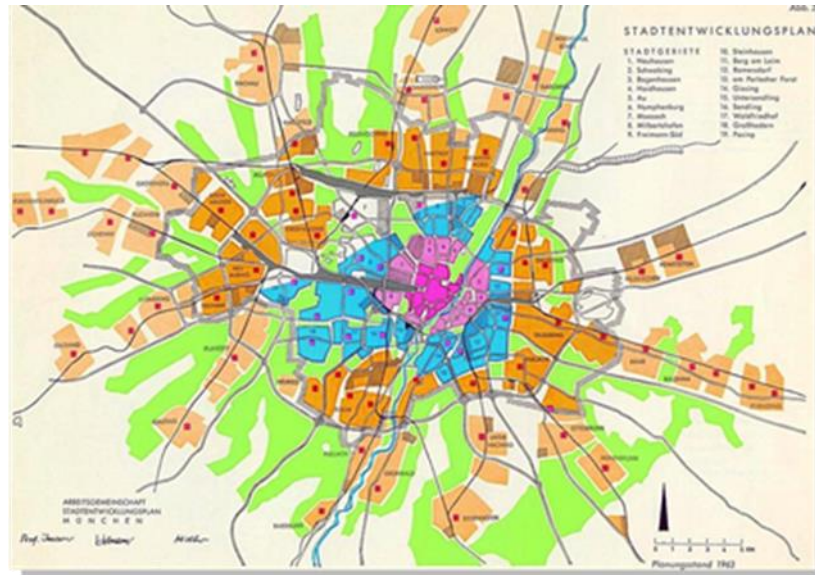


Fig. 3: Munich City Development Plan 1963 (“Jensen-Plan”) - guidelines for the spatial structure of an expanding city-region (source: City of Munich).

3. Decline of planning in the 21st century

3.1 The neo-liberal city: planning goes private

About the turn of the millennium, the model of the social balanced and democratic city came more and more in danger. Globalization with its neo-liberal concepts of a market-society influenced local policy. Almost worldwide the global finance industry became the main driver of urban development. Meanwhile the privatization and exploitation of land and infrastructure following the shareholder value principles of efficiency and maximum profits dominate. Planning in many countries is blamed as a socialist torture instrument, planners degenerate more and more from advocates of the public interest to servants for profit driven real estate or infrastructure investments. The players of the big Monopoly are more international dealing institutional anonymous actors like real-estate or hedge funds than personal private land owners.

Under these conditions, the democratic power of the elected city government becomes in many cases a thin façade. Important decisions about land use, infrastructures and spatial organization of the city are often driven by short term advantages and profit, centralized in the hands of a few powerful economic players. Public land, public housing, public responsibility for infrastructure and for urban quality had been replaced and atomized in many cities (but fortunately not in all, as cities like Vienna, Zurich, Lyon, Berlin, Hamburg and Munich prove) by privatization. The quantified space got forehand over the spatial and social quality of the urban environment. The production mode of urban environments changes step by step from plan- and policy-driven to market- and economy-driven.

New players come on the economized playing ground of urban development:

- Real estate brokers, bankers,
- developers, project managers
- marketing specialists,
- auditors, lawyers etc.

As a result of new players with new rules, the legal framework and the observation of established professional rules get rid of content and quality - it degenerates to a formal and legal issue with lawyers and auditors becoming more influential than planners. The planner himself sits between the chairs of public planning bodies/politics and private capital (owners, developers, shareholders). He becomes the position not of a cook, but a waiter, who serves private interests with a service for real estate development. At the end, city planners often feel like uninvited spectators of urban development.

In the recent issue 200 of *disp-The Planning Review* "The state of the Art of Planning in Europe" was documented with a survey among academics and practitioners in planning. In their conclusion based on 34 answers from 21 European cities, Klaus R. Kunzmann and Martina Koll-Schretzenmayr stated: "The answers show a black picture of the state of planning. Planning in Europe in 2015 seems to be in a state of re-orientation. (...) Changing political priorities, modifications in the regulatory system, or organizational changes are seen as the main reasons of the gradual decline of the status of planning in Europe. (...) Growth at any price - and if necessary even on green fields - seems to have priority in many places. As a rule, the financial interests of investors are placed well ahead of the efforts of planners to bring about a sustainable and resilient development of living spaces." (KUNZMANN, KOLL-SCHRETZENMAYR 2015. 86, 87)

Nevertheless, some self-confident, powerful, mostly economically well-off cities in Europe try to resist this economization of urban development and reject privatization of public housing, infrastructures and public land. With integrated urban development concepts (DST 2013) based on the principles of the Leipzig Charter (LEIPZIG CHARTA 2007) and high investments in public infrastructure, the above mentioned, but also many smaller cities in western Europe have established a social oriented, sustainable planning culture trying to control urban development politically (see CITY OF MUNICH 2005, 2007, 2015). Nevertheless, also these last bastions of a social inclusive, integrated urban development policy stay not unaffected of the ongoing economization of urban development and the further integration of the local real estate market into the globalized finance markets.



Fig.4: Integrated City Development Concept PERSPECTIVE MUNICH (2005) - polycentric spatial concept "compact, urban, green" (source: City of Munich).

3.2. Fragmentation of the planning disciplines

The “decline of planning” and the loss of influence of planners is not only caused by changing production modes and economic drivers of city development. It is also a result of necessity for a multi-disciplinary and integrated planning in a complex world.

No single planner is able to oversee all the facets of the field, even as a coordinator he had often been outscored by lawyers and project managers. Planning profession(s) are more and more fragmented in spatial, technical, social, economic and ecologic special expertise. Beginning in the 1970ties, preservation of heritage and identity, social issues like affordable housing and social-oriented urban renewal, climate change, energy efficiency and sustainable city development became important issues for city planning and enriched the discipline with new contents. At the same time, people wanted more and more to participate in planning issues. Citizens and market actors wanted to be involved as partners, not as objects into the transformation of the city. As a result of higher complexity, the integrated and integrating spatial planning disciplines got more and more atomized into partly contradictory competences such as:

- Traffic planners and -engineers
- landscape planners
- social geographers,
- environmental engineers,
- psychologists,
- event managers,
- mediators, moderators,
- architects, designers etc.

What originally was meant to make planning stronger, proved to disintegrate a holistic and comprehensive approach and to weaken planning against economic forces. The core content of the discipline disappeared in the haze of an increasingly complex setting of urban problems and challenges. As more and more new professional profiles emerged, the planner became one of dozens of specialists in even bigger multidisciplinary teams. They stood no longer on top of the hierarchy of those who plan and manage city development and urban structures.

3.3. Digitalization and acceleration

Scientific, cultural, economic and societal developments have tremendously accelerated since the turn of the century. Looking back on the changes of the last 50 years, presumably the same change rate will be reached in 20 years ahead of now. Not at least since the 1990ies the accelerating digitalization of our everyday life and our professional work as planners is one of the driving forces to change the “classical” planning methodology (see RAUTERBERG 2013). In principle the digital global economy is “space-less” and nearly independent of urban environments and infrastructures. Distances and time are reduced to zero - whereas urban space and the creation or transformation of built structures need a lot of time and space for development. They are physically permanent and used over many decades or often centuries. Planning on the other hand is a slow, analogue and long term business. Planners feel more and more being the last surviving “dinosaurs” of the welfare-state in a market driven, space-less and digitalized world. Not at least, the core content of planning as a discerned, scientific based and integrated practice seems to disappear in the haze of an increasingly complex setting, fragmented into innumerable specialists.

Digitalization did not only change the processes of research and design by an enormous growth of information and by acceleration the collecting and analyzing of data for planning. Emotion, intuition, subjective approaches of urban planning and design had been replaced more and more by routines, standardization and algorithms. Planning decisions seem to be more and more treated as a technical problem of data mining and information - management instead of a question of values and normative political specifications. Digital planning tools are able to analyze a big amount of data and to create uncountable alternatives. Obviously, that does not always makes the quality of our strategies and plans better or political decisions easier. The complexity and contradictory nature of planning problems mostly hinder pure rational solutions. On the other hand, flexible temporary and intermediate use of built structures, multi modal and sharing based mobility solutions or smart grids for energy supply using renewables are examples for the advantages of digitalization in urban development.

4. The “communicative turn”: opportunity for a recovery of planning?

4.1 Cooperative Governance and integrated planning

At the beginning of the third millennium, the neo-liberal, market - driven production of the city as well as the representative democracy seem to loose acceptance and legitimacy for many citizens. European cities face an accelerated process of multifaceted spatial transformations with complex social, economic and ecologic challenges:

- The growing south-north and east-west migration within Europe and from civil war-countries in Africa and the Middle East.
- The ongoing process of an urban renaissance in Europe with fast growing big cities, which makes integrated spatial planning and implementation-management necessary.
- The increasing worldwide scarcity of resources (land, water, energy, minerals, food etc.), which makes planning, management and regulations of the use of resources inevitable.
- The accelerated social-economic polarization between regions and city districts, based on market driven spatial development, which have to be counterbalanced for a sustainable, resilient urban development.
- The urgent search for resilient modes of spatial development, which is not possible without spatial analyses, scenarios, strategies and action plans – i.e. strategic and integrated planning.
- The advantages and risks of the digitalization (“Smart Cities” – “Smart Planning”), which has to be planned and managed as a public realm and under political leadership and responsibility, if it shall become more than a business case for the ICT-industries.

To meet these challenges, a sustainable urban transformation requires a fundamental change from hierarchical top-down towards discursive and reflexive processes: “governance by and as communication” (SCHUPPERT 2015. 1). Beside this cooperative urban governance a relaunch of an integrated public planning culture is necessary for a recovery (DEUTSCHER STÄDTETAG 2011).

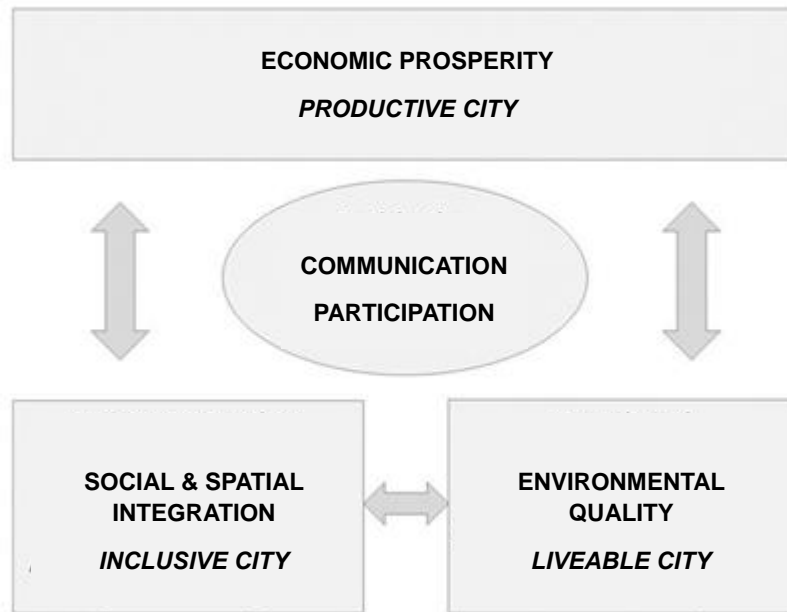


Fig. 5: Dimensions of integrated sustainable planning strategies
(source: DEUTSCHER STÄDTETAG 2011, modified by the author).

4.2 Planning by and as communication – a new role for planners?

Most important and challenging for the planning and decision processes are the fundamental changes of communication through internet, social media and other tools. Beyond the advantages of speed and transparency, the digital planning communication allows a broad information and participation of stakeholders and citizens. Networking not only among planners or the administration, but also with the public or community groups enriches planning discussions and finding the best solution. (see: <http://www.perspektive.muenchen-mitdenken.de>).

The production of the city itself becomes a communication process of many stakeholders from civil society, market and politics: planning by and as communication, taking effect not by power, but by persuasion. If you replace “government” by “planner” in the following citation, you get an idea of what the communicative turn means for our profession: “Power explains a governments ability to get decisions made. [...] For this, it does not help governments to be able to give orders, at least not very much: they need to be able to persuade. Persuasiveness is not contained in the weight of power; it depends on the strength of authority” (RINGEN 2008).

Planning will be organized (or will just happen) between the four poles of governance: politics/administration – market – science – civil society. This are the cornerstones of the urban “communicative arena” (SCHUPPERT 2015. 3), were planners act on the stage and prepare proposals backstage. Planners in the communicative arena will work not only in a unidirectional commission from a public body or a private land-owner/developer. Instead, they will become a new type of “intermediate actors” or “go-betweens”, acting as advocates of the public interest. As experts in the issues of spatial organization of society, planners also could play an important role as “translators” to facilitate communication about urban transformation between even more diverse social and cultural milieus. In that scenario, city

planners get their power not from the government, but from civil society and gain back influence by successful acting in the communicative arena of planning.

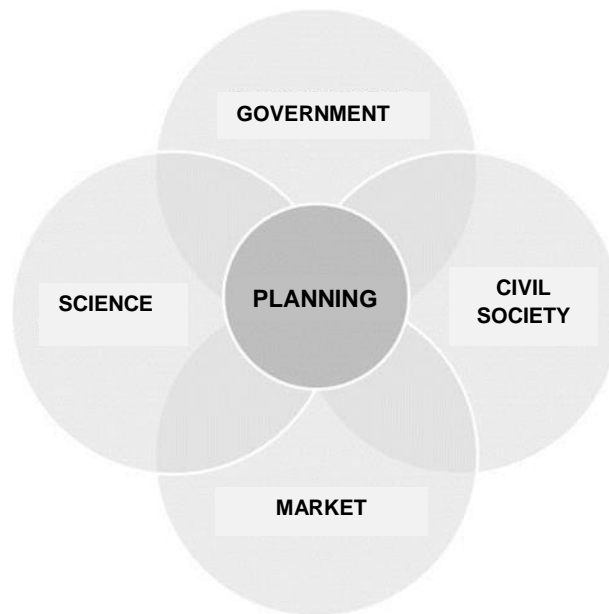


Fig. 6: Planning as intermediate action between different stakeholders
(source: DEUTSCHER STÄDTETAG 2011, modified by the author).

Communication and co-design instead of top-down decisions give city-planning a new legitimacy and urgency: a change of paradigms from “planning as a hierarchical technique of ruling” to “planning as and by communication, organizing complex and multilateral transformation processes” (DEUTSCHER STÄDTETAG 2013b).

4.3 New planning paradigms: core competences and education

Planners could become an active and influential stakeholder in the communicative arena, if they are empowered for “agenda setting” and organizing “advocacy coalitions” (SCHUPPERT 2015. 4) together with other intermediate actors like community groups, initiatives, political and societal groups, media and arts.

Anyway, planners are more than moderators:

- Planners are experts for urban and regional space as the core dimension of urban transformation.
- Planners are experts for designing (*Entwerfen*) as a creative method of thinking, analyzing and problem solving.
- Planners are advocates of the public interest and of spatial justice. Proposals shall base upon fair consideration of different private and public interests (*gerechte Abwägung*).
- Planners have to care about provisions for quality of life and an equal access to common goods (*Daseinsvorsorge*).

These professional competences, values and virtues empower planners for leadership in the communicative arena of urban transformation and in cooperative design-processes. In an

optimistic scenario, the present urban renaissance opens a window of opportunity also for a recovery of public planning.

Education and advanced vocational training in spatial planning have to follow (or better to anticipate) the future paradigm of “planning as and by communication”, focused on the specific core competences of our discipline:

- **SPACE:** spatial analysis and spatial strategies.
- **DESIGNING:** design as a method - design-thinking, innovative solutions - experiments and city labs.
- **INTEGRATION:** comprehensive, multi-disciplinary planning and implementation – integration and empowerment of all social and cultural milieus.
- **COMMUNICATION & COOPERATION:** networking – participation/co-deciding - co-designing/co-production - sharing/cooperatives.

To empower future planners for their new roles as intermediate actors, translators and advocates, the education must contain more social-communicative skills, more cooperation, more political, social and economic knowledge. Students must be confronted and challenged as early as possible in projects, workshops and “urban labs” with real problems, real people and planning practitioners (SCHOLL 2012). Planners should of course never try to become the better sociologists, real-estate economists or lawyers. Based on their core competences, they must be mind-open to communicate, cooperate and integrate knowledge with many other specialized professions. Taking into account the political dimension of planning and urban transformation, the struggle for more political influence and the search for coalitions with social, political and cultural movements are essential for a regeneration of planning. That does also mean:

- To be aware, that planning is not only a technical and rational, but an emotional and subjective challenge. Planners are responsible to protect and develop the identity of places and spaces.
- More involvement in implementation and evaluation - planners as managers of urban transformation. Making good plans is not enough!

4.4 Examples

Meanwhile, there are many examples in cities all over the world for the “communicative turn” of planning. Since the documentation of case studies would exceed the scope of this paper, the following links lead to three cases in Munich, which may stand exemplarily for the communicative turn and probably for a recovery of public planning:

- Creative Quarter:
<http://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Stadtplanung-und-Bauordnung/Projekte/Dachauerstrasse-Werkstattgesprach.html>
- Cross-media participation “PERSPECTIVE MUNICH”: :
<http://www.perspektive.muenchen-mitdenken.de>
- Cooperative housing projects (*Genossenschaften, Baugemeinschaften*):
<http://www.muenchen.de/rathaus/Stadtverwaltung/Referat-fuer-Stadtplanung-und-Bauordnung/Wohnungsbau/Gemeinschaftliches-Bauen.html>

5. Questions for discussion and further research

- What are the differences between Europe and the other continents concerning rise, decline and regeneration of public city planning during the last centuries?
- What are the impacts of globalization and the recent crisis of the world financial market on real estate, urban development and the role of plans/planning?
- How far the fragmentation of the planning related disciplines is responsible for the decline of planning in the last decades - and is the fragmentation reversible?
- Is a sustainable and socially equal city development possible without public planning? Are there convincing examples anywhere in the world?
- What are the general political and structural preconditions (i.e. communication, democracy, land law, self-organization of civil society...) of communicative and cooperative planning processes?
- What consequence has the new paradigm of “the planner as intermediate actor and communicator” on the way planners see themselves and on the role of planners in the administration, freelance practice or academia?
- What are our core competences as planners? What specific virtues and skills do we need for co-design and co-production?
- How can planning education be linked better and systematic with planning practice and the needs of the urban society (“urban reality labs”)?
- How can planners motivate/empower social groups for participation in planning issues, which do not normally take part in debates and actions?
- Which opportunities are given by digitalization, open data and social media for communication, participation, cooperation and co-production in urban transformation (“smart planning”)?
- How can planners secure the interests of the public and of future generations in cooperative planning processes? How can group egoisms and short term goals be avoided to become predominant?

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How urban fabric fosters knowledge transfer and innovation: the example of Barcelona

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1. From an industrial past to a based-knowledge future

Barcelona has a long and well-established history of embracing new ideas and encouraging innovation. The symbiosis between research capacity and urban development is an important dynamic in the city. Whether it is new technologies, health or digital fabrication, its connections with major global companies, or its position as a leading city in the quality of life of workers, Barcelona is a vibrant place of innovation – and that stimulates job growth and opportunities for businesses and stakeholders alike.

As Mercè Tatjer (2006) highlights, since the late 18th century, Barcelona and its region (Catalonia) became the most important industrial centre in Spain, providing Spanish market with manufactured goods such as textiles or chemicals. From this early manufacturing period and almost in parallel with industrialization during the XIX century, industrial sites moved out from the inner city to outside the city walls.

This trend continued into the first third of the twentieth century, when an important industrial diversification began at the expense of textile sector. If industrial buildings continued to expand throughout the city both in the new Eixample Cerdà and small villages in Barcelona's plain such as Sant Antoni or Poble Nou, the development of a second industrial belt represented a major spatial change which serve as a starting-point of industrial growth at a metropolitan scale in the 1960s.

Indeed, the installation of large production centers in emerging sectors such as railway equipment, automotive (SEAT, Pegaso, Ducati) or business products (Hispano Olivetti) changed the scale and content of Barcelona's industrial landscape. Large and modern industrial factory complexes occupied large areas along the railway lines and the valleys of Besós and Llobregat rivers. At the same time, social welfare policies were implemented to respond to the needs of a growing immigrant population coming from the rest of Spain (housing, services and facilities for workers and their families).

By the end of the 1970s, the delocalization of production to new industrial, storage and distribution sites in the periphery became a reality due to technological changes, the crisis in the textile sector along with the emergence of new productive sectors (electronics, pharmaceuticals), the development of the metropolitan network of highways and the changes in maritime transport systems (the revolution of containers).

In the last forty years, the industrial economy has been replaced by an economy of services to production, people and knowledge¹. Barcelona has become a global tourist destination with almost 8 million visitor a year. At the same time, the city produces almost half the technical innovation and much of the research carried out in Catalonia². As facing a crucial moment when traditional stereotypes are being questioned under economical, sustainable and social agendas, defining the city urban model based on research strength or tourism economic activity is a matter of the utmost importance.

Barcelona possess the conditions to consolidate a global research centre. In fact, one of the drivers of Barcelona's success is the constant influx of new ideas and talent into the city. With 961 registered patents in the period 2005-2012, many relevant companies have located its headquarters in the city and its metropolitan area. Local and regional authorities have also implemented proactive policies aimed at facilitating the development of value-added knowledge based facilities, such as universities, while public and private consortia have fostered the development of new technology parks and business initiative support services.

A well-known paradigm of public-private partnership is the 22@ district, involving the transformation of an obsolete industrial environment into an area which is home to new activities related to knowledge. The concentration of these types of activities has allowed 22@ to become a dynamic environment in which the confluence with universities, support activities and accompanying services has produced positive results.

However, beyond the 22@ district example, Barcelona has more than 700 startups, leading companies and research centres that create a unique innovation ecosystem—a synergistic relationship between people, firms and place (the physical geography of the city). What makes Barcelona stand out? How can the city use the strengths of a compact urban model to attract more talent, companies, and investment?

This paper presents the main conclusions of the study 'Geographies of Innovation', commissioned in 2014 by Barcelona City Council to the design studio 300.000 Km/s. The research examines the necessary urban conditions to promote innovation, the relations established between innovative initiatives, the urban morphology of Barcelona's ecosystem and the transference of knowledge between different areas of the city.

Whereas prior studies have focused on entrepreneurial quality by excluding location-specific measures³ or the impact of research performance⁴ to define a city competitive advantage⁴, this study assesses the impact of research and innovation facilities on an urban scale beyond their individual success. We have worked with a database⁵ of successful initiatives including 562 startups, 78 leading companies and 59 research centres from key areas⁶ such as B2B (115 initiatives), E-Commerce (77 initiatives), Digital (72 initiatives), Biohealth (57 initiatives), Transmedia (53 initiatives), Mobile (51 initiatives) and Fab (43 initiatives).

The data and analysis in this study are intended to help drive evidence-based decisions on which companies and industries should invest in Barcelona and how planning and policy-making can augment this process. It looks at the research landscape underlying the urban landscape, highlighting opportunities for collaboration, innovation, and economic development.

2. Do urban conditions foster innovation?

As Katz and Wagner (2014) state in the report 'The Rise of Innovation Districts: A New Geography of Innovation in America', in recent years a rising number of innovative firms and talented workers are choosing to congregate and co-locate in compact, amenity-rich enclaves in the cores of central cities. Instead of building isolated science parks or reproducing the Silicon Valley Model - suburban corridors of spatially isolated corporate campuses, accessible only by car, with little emphasis on the quality of life or on integrating work, housing, and recreation-, innovation initiatives prefer sites that strength proximity and knowledge spillovers.

Consequently, the mash up of entrepreneurs and educational institutions, start-ups and schools, mixed-use development and medical innovations, bike-sharing and bankable investments -all connected by transit, powered by clean energy, wired for digital technology are important factors that influence the proliferation of innovative initiatives.

In the case of Barcelona, this study found an apparently uniform distribution of innovation facilities throughout the city. Innovative initiatives locate both in central areas with good accessibility to public transport and peripheral zones with low rents and a lack of local services. What are the socio-demographic, economic and urban factors that determine this contrasting situation?

We implemented our approach using demographic data and economic indicators from the Open Data Service of Barcelona City Council, cadastral information from the General Directorate for Cadastre, Google Places and Flickr services and transit data from Barcelona TMB public transport agency.

When we look at the economic and social fabric, innovative initiatives are more likely to success in neighborhoods with a high rate of young people and women (*Figure 2*), and an income per capita that remained stable or declined in the past 5 years. Economic dynamism and real state fluctuations play also an outsized role: innovative initiatives are located in areas where positive synergies between companies result in a high level of economic activity as well as areas with a growing rental cost of premises due to its central position or its limited availability (*Figure 4*). The 22@ district differs from the regular pattern as the quantity of initiatives exceeds the number of traditional companies (*Figure 2*) and rents are still affordable.

Regarding the morphology of urban fabric, innovative initiatives tend to be placed on consolidated urban zones, occupying small plots in the city centre (except co-working spaces) or larger surfaces when situated on the periphery (*Figure 3*). Generally, innovation spreads to mixed-use fabrics achieving a sustainable balance between residence, commerce, office and industry although, in some cases, innovative initiatives prefer mono-functional areas either office or industrial.

Neighbourhood services are an indicator of urban quality that influences the implementation of initiatives: local shops, financial services or restaurants can contribute to a better quality of life of workers even if this relationship is not linear (*Figure 5*). Once again, the 22@ district is an exception as the quarter has experienced major urban transformations and some parts provide almost no services to residents.

Centrality and representativeness play a secondary role. Likewise large industrial estates were traditionally located in proximity to railway network and main roads, innovative initiatives are regularly close to major public transport nodes (*Figure 6*). The location of innovative initiatives is generally at a certain distance of most representative areas of the city.

In short, environmental conditions (compactness, good accessibility to public transportation, cheap rentals, diversity of local services, etc.) influence the location of innovative initiatives. However, urban context is not always a crucial factor -each activity requires a specific background.

3. The role of leading companies and research institutions

From Almirall to Telefónica, from Desigual to Puig Group, Barcelona is already home to companies spanning a diverse range of business sectors such as biotechnology, digital technologies and fashion. Universities are also the cornerstone of the city's research and innovation offerings. Barcelona has recently promoted five Campus of International Excellence involving several institutions such as UPC-Barcelona Tech, the Autonomous University of Barcelona (UAB), Pompeu Fabra University (UPF) and the University of Barcelona (UB).

It has commonly been assumed that big companies and research clusters act as magnets for startups and small companies. In order to understand the role of these leading firms and R+D facilities in attracting innovative initiatives, we analysed the number of startups falling within a range of 50, 100 and 200 metres. In both scenarios, just a few companies and research centres are able to concentrate more than 7 innovative initiatives in its immediate perimeter: the quantity of innovative initiatives increases in inverse proportion to distance (*Figure 7*).

For instance, Desigual, which is a global fashion brand, has no innovative initiatives within a radius of more than one kilometre as it is located in a peripheral site on the shoreline that lacks of transportation and access to services. On the contrary, firms situated in the 22@ show the highest ratio of attractiveness.

The same applies to main universities and R+D facilities. Most campuses have a low concentration of such initiatives, except in certain cases like the Institute for Advanced Architecture or some science parks (Hospital Clínic, Poble Nou, BarcelonaTech North and Sarria-Bonanova campuses) where innovation is maintained beyond the university facilities.

The most likely cause of this absence of attractiveness is the difficulty to generate certain urbanity conditions (centrality, small size of plots, mixed-use activities, etc.) as frequently research campuses are the result of large-scale urban transformations (*Figure 8*).

However, we have identified several examples that bring together a significant number of initiatives like the Barcelona Media Park. Located in a central site along Diagonal Avenue, it congregates the new campus of Communication Sciences, MediaPro tower, MediaTic building, RTVE studios, Barcelona's building incubator and a number of small business related to media sector. In this case, attractiveness depends on the partnership between leading companies and research centres.

4. Spatial models, borders and opportunities

As discussed above, innovation creates a closely linked network, which is polarized around nodes concentrating a larger number of initiatives. If leading companies and research centres are important players in the innovation ecosystem, small companies and startups can also generate links and attractiveness for themselves.

We have explored from a spatial point of view how these different types of initiatives cluster in urban space using a gravity model and Delaunay triangulation.⁷ Morphological and environmental factors configure three different spatial models: line, network and centres. In the lineal model, innovative initiatives align geometrically along main civic axes as Diagonal and Passeig de Gracia, taking advantage of a well-connected area with high economic activity, small plots, local facilities and representative character. In contrast, the network model results from the concentration of a diversity of initiatives (startups, research centres and leading companies) in a short distance as is the case of the 22@ area near Diagonal.

In these first two cases, despite reflecting opposite situations (an area that concentrates representativeness and economic power with respect to a district with low rentals and large premises), innovative initiatives benefit from centrality and mixed-use. As explained earlier, the centre model is based on major anchor institutions mainly research hubs and university campuses.

Beyond these main archetypes, we have detected other sub-centres and neighbourhoods with a high potential to develop innovation, located in the east and north areas. Certain residential quarters and zones gathering large urban facilities could represent a barrier to connect existing innovation districts, even if the tendency is the spreading of innovation all over the city thanks to the diversity and compactness of urban fabric that enables a positive transference of innovation and knowledge. In addition, the location of large innovation facilities demands increased investment of public administration. Frequently, research centres and university campuses have been placed in apparently central sites (mountain, coastline) regardless of urban conditions. These operations didn't achieve maximum impact in contrast to other situations that profit from an existing vibrant urban fabric to implement successful development.

It is important to recall that in today's hyper-competitive, global knowledge economy, innovation initiatives will play a key role in generating economic growth and social prosperity, particularly when they work in the context of city-wide strategies for smart specialization. In this sense, the innovation ecosystem of Barcelona could become a reference for other urban areas. This model embraces those very attributes of urbanism—what Saskia Sassen (2008) calls “cityness”—that were denigrated and often destroyed in the 20th century: complexity, density, diversity of people and cultures, and a layering of the old and the new.

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¹ The GDP of the province of Barcelona is divided as following: 0.5% in Agriculture; 6.9% Construction; 18.7% Industry, 65.6% Services. Regarding the percentage of workers, 0.1% of the population is employed in Agriculture, 6.9% in the Construction Sector, 10% in industrial activities and 85% in Services. Data source: Ministry of Employment, Labour and Social Security.

² At present, Barcelona metropolitan area contains 60% of workers in knowledge-intensive activities and 68% in creative activities in Catalonia. Data source: Ministry of Employment, Labour and Social Security.

³ Guzman and Stern (2014) introduce a new method for studying the founding and growth of entrepreneurial ventures. The study that uses for profit business registrations in California from 2001-2011, estimate outcomes on the basis of start-up characteristics regardless of location restraints.

⁴ Elsevier and Urban innovation network (2015) report analyses Amsterdam's research strengths and benchmarks its performance against ten other European cities of comparable size and standing.

⁵ Infonomia is an innovation consulting firm based in Barcelona tapping into global ecosystem of experts and partners, which combines a wide variety of backgrounds.

⁶ The initiatives have been classified in 21 categories: Food and agriculture, Self-sufficiency, B2B, Big Data, Biomed, Coworking, Digital, E-commerce, Edu-play, Fab, Fashion, Green, Inno-social, Mobile, Nano, Smart, Trans, Transmedia, Tourism, University and Videogames.

⁷ Delaunay triangulation and gravity model are commonly used in spatial analysis to define areas and distance relationships according to proximity and density of data.

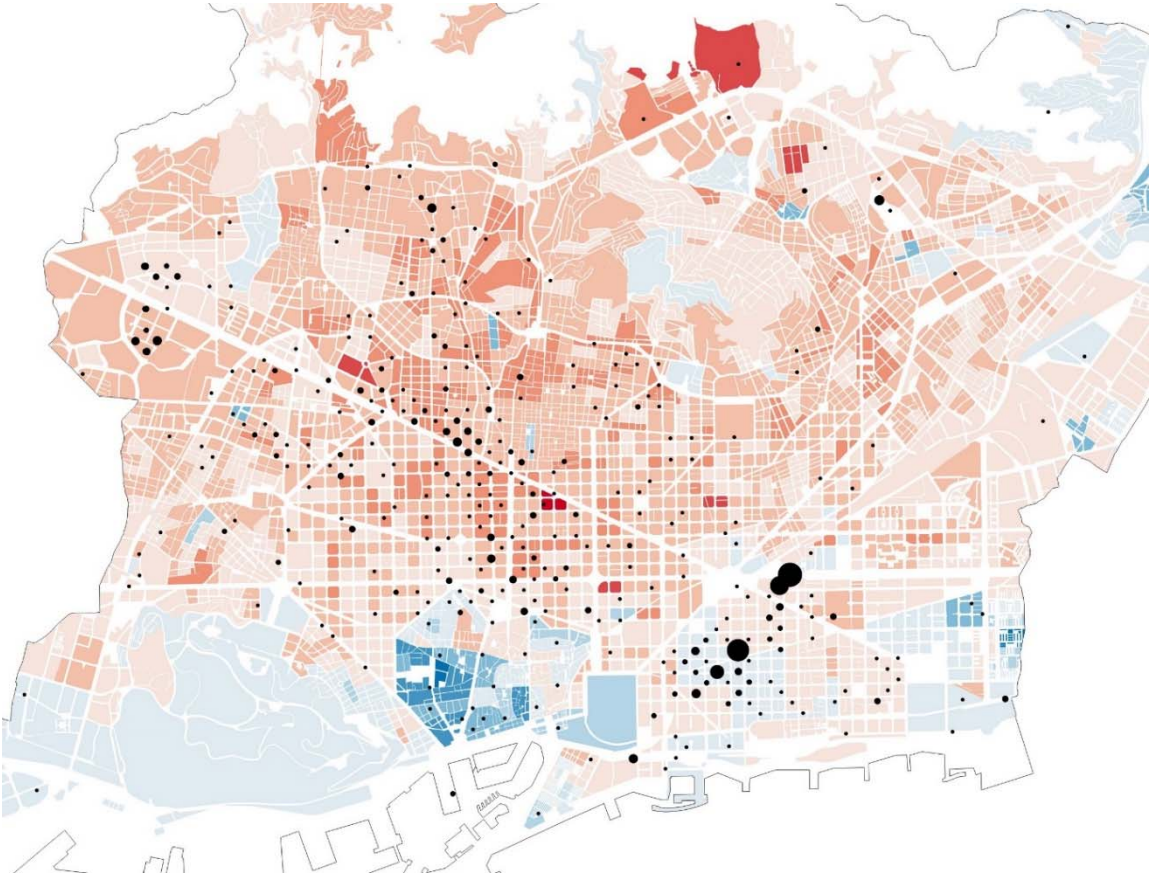
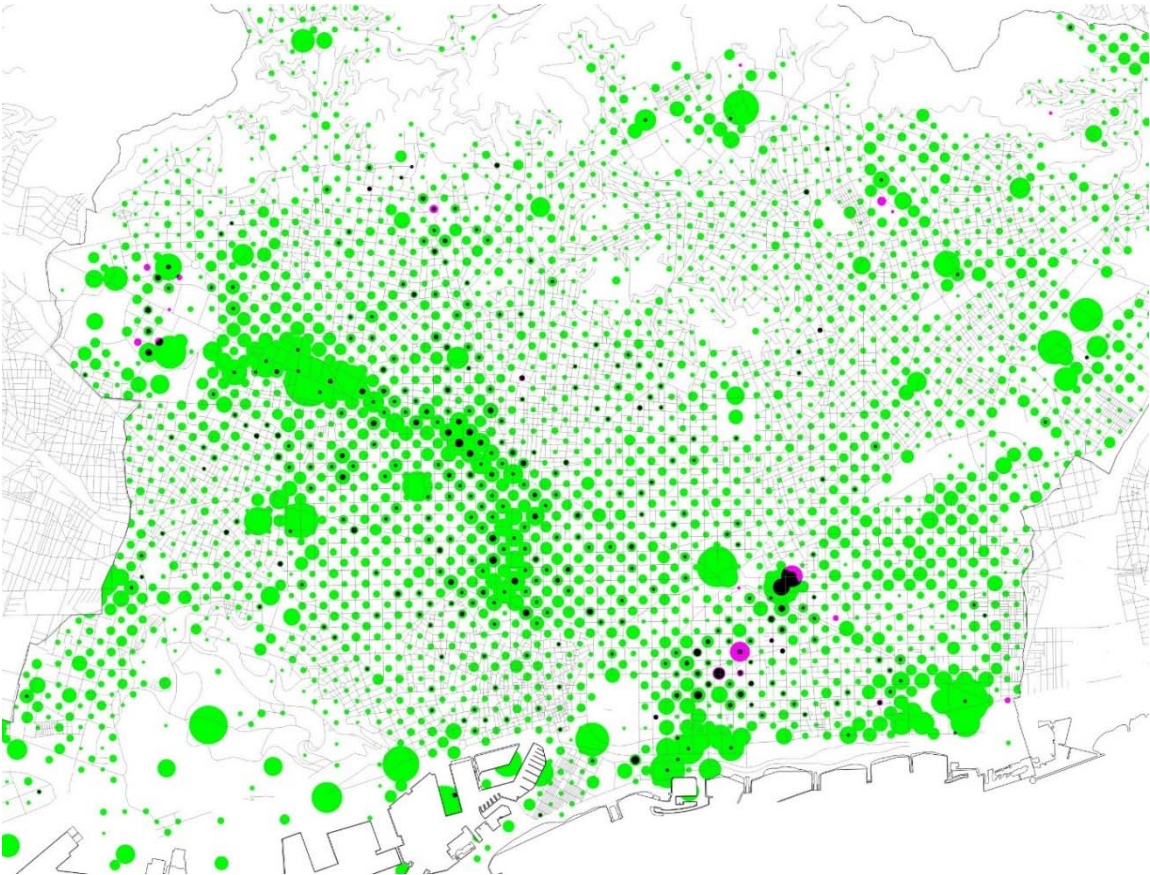


Figure 1, 2: proportion of innovative initiatives and gender analysis.

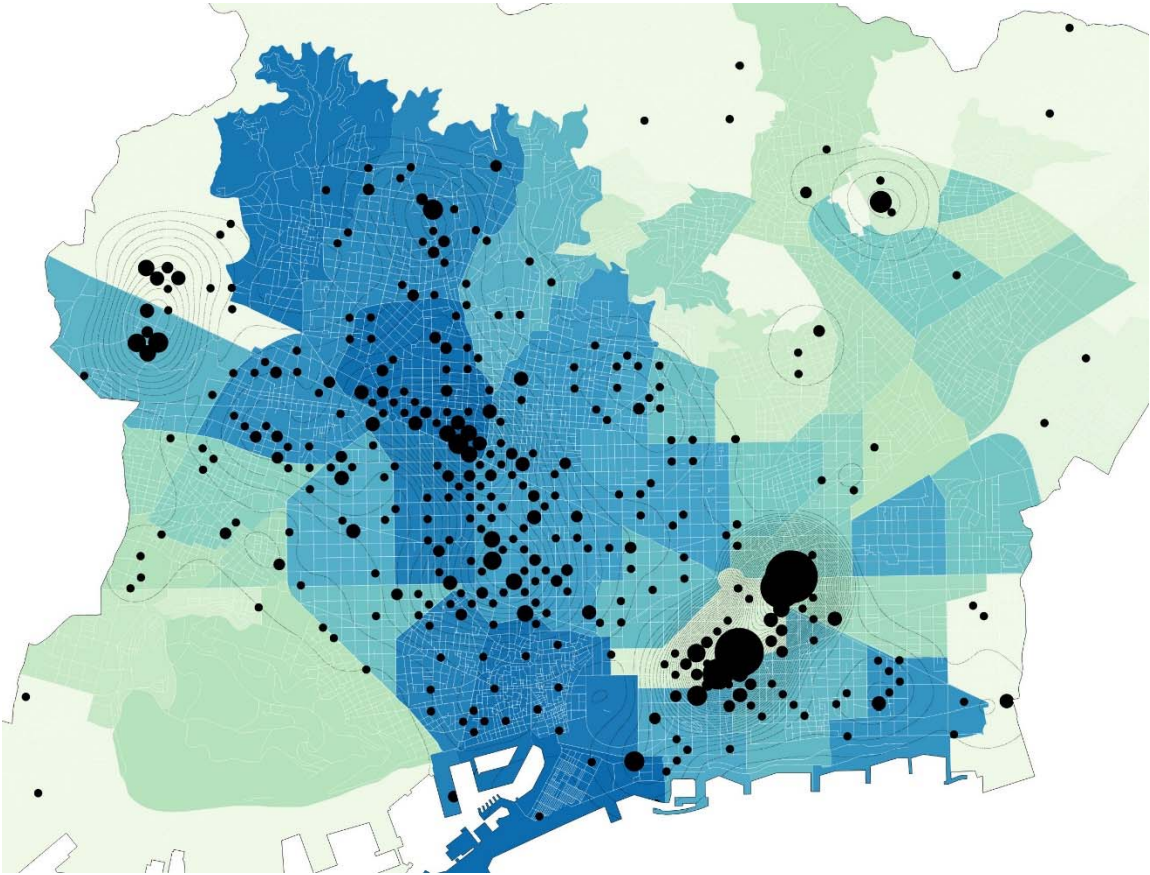
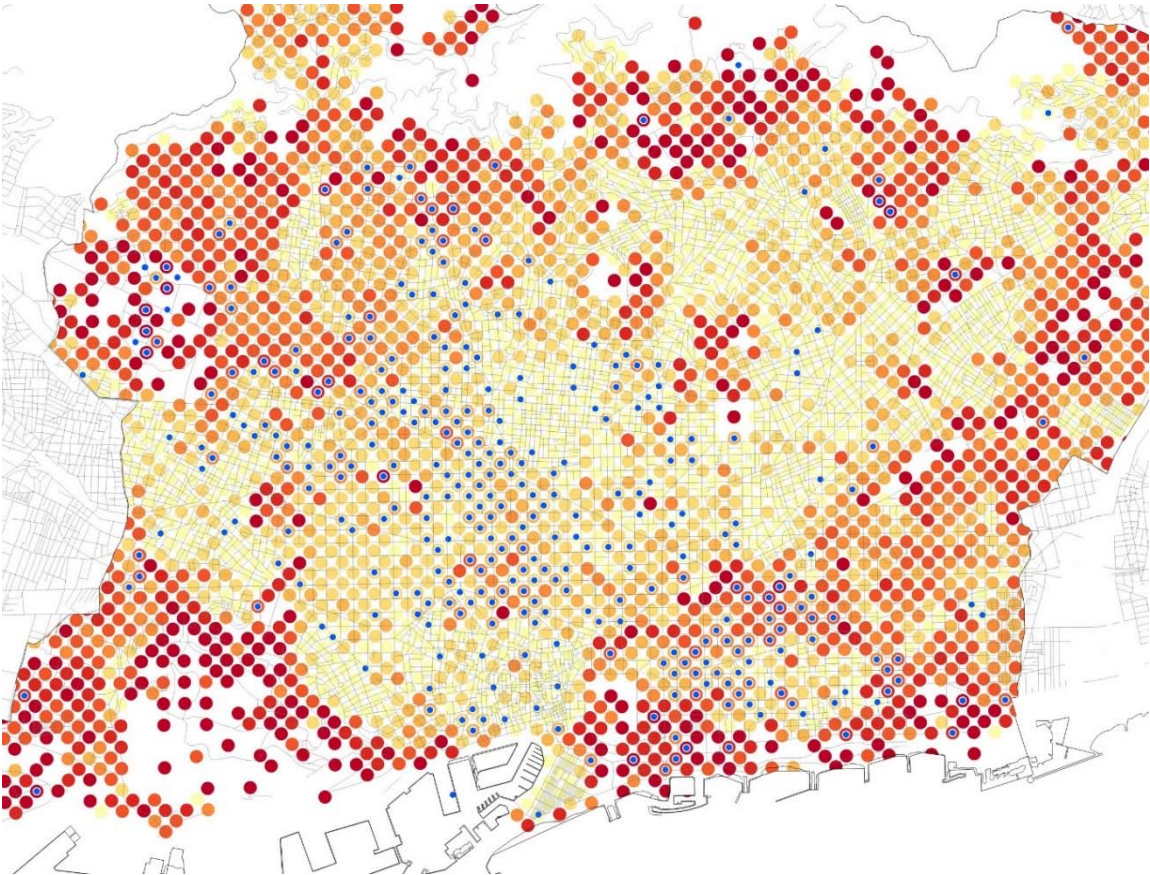


Figure 3, 4: surface of plots and rental cost of premises.

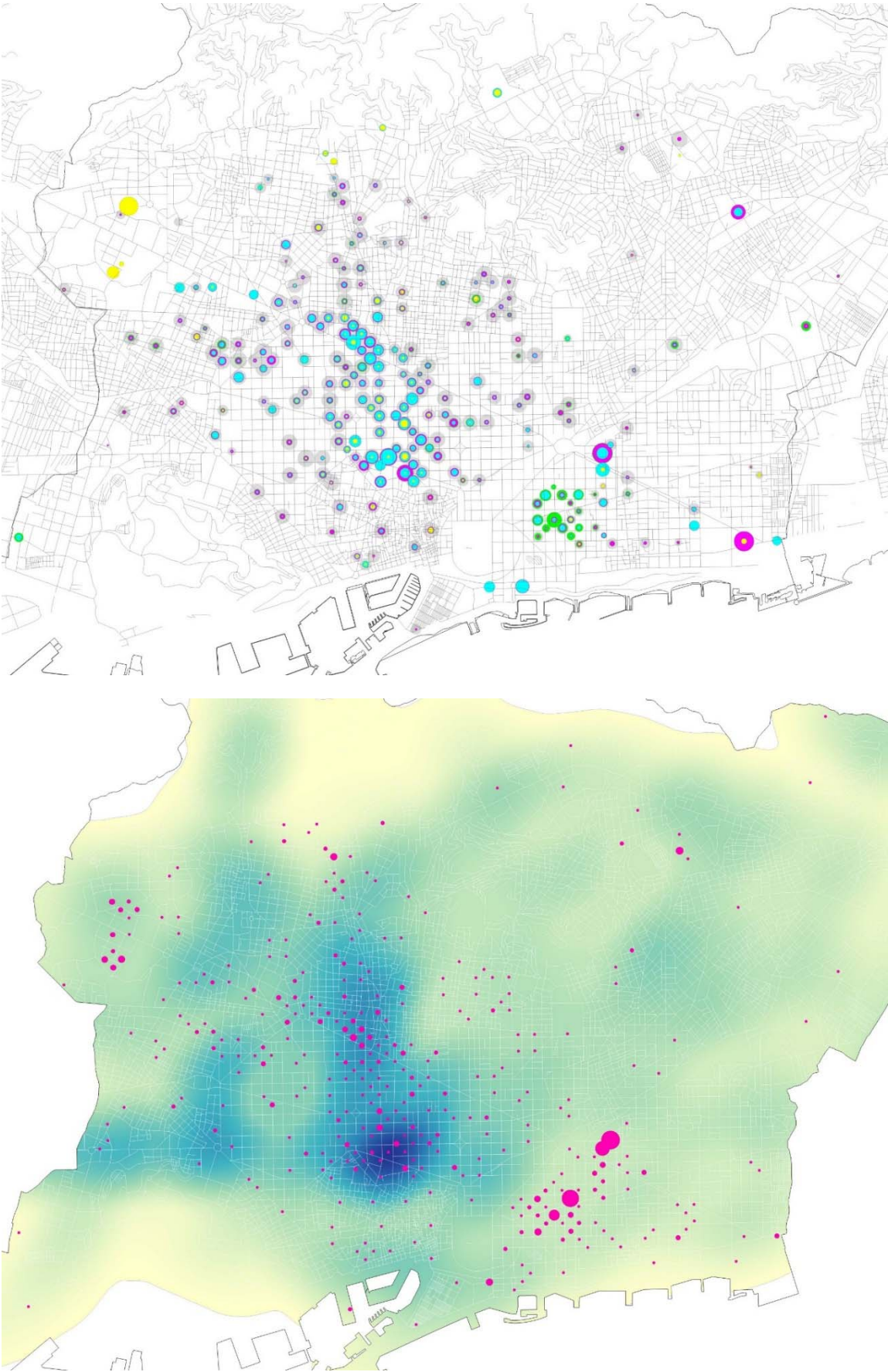


Figure 5, 6: analysis of land use and accessibility to public transportation.

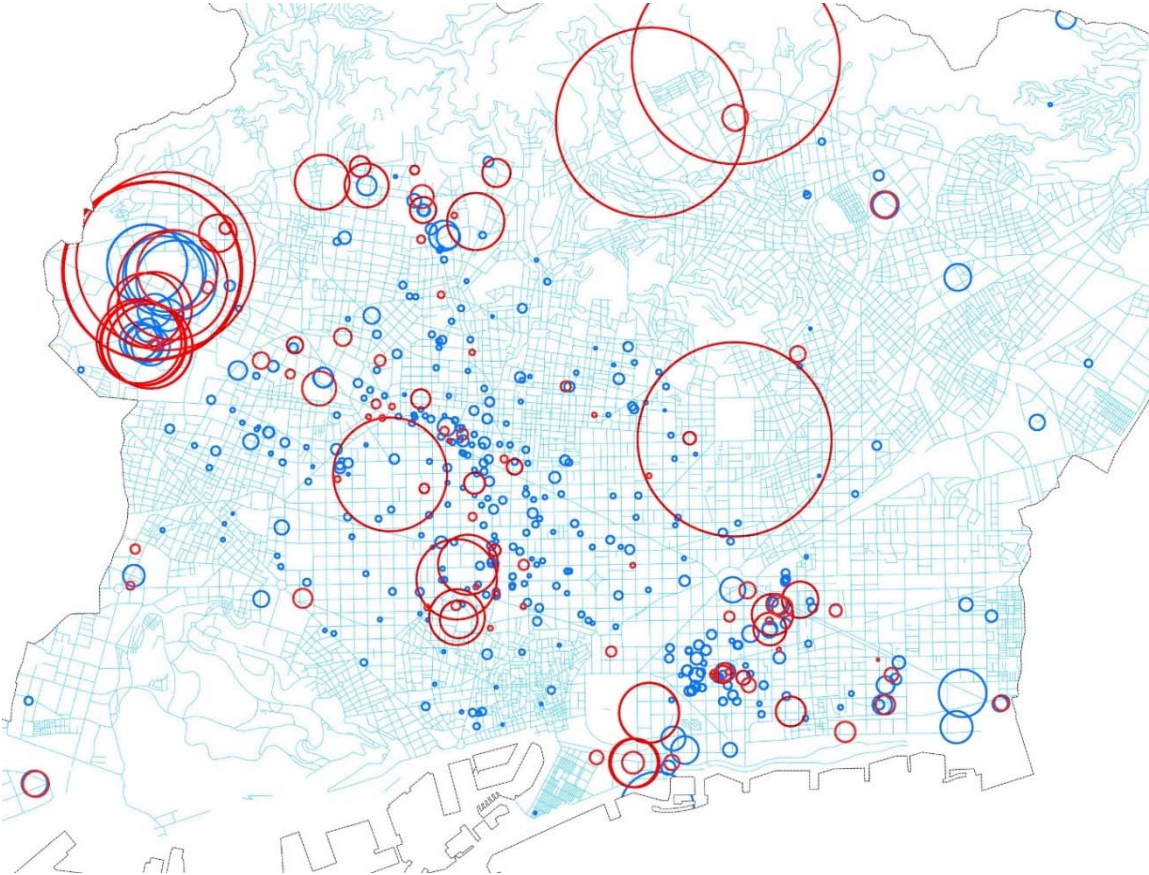
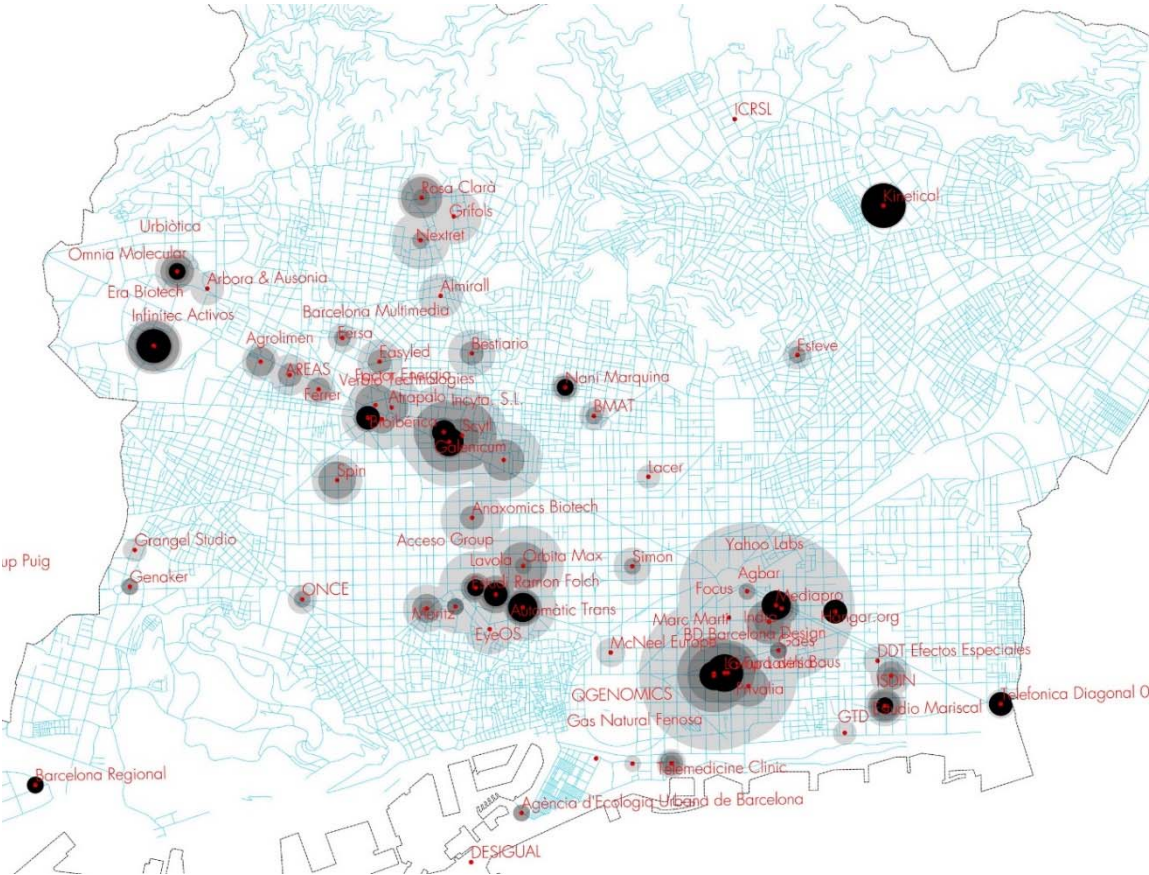


Figure 7, 8: attractiveness of leading companies and research centres according to distance and surface of plots.

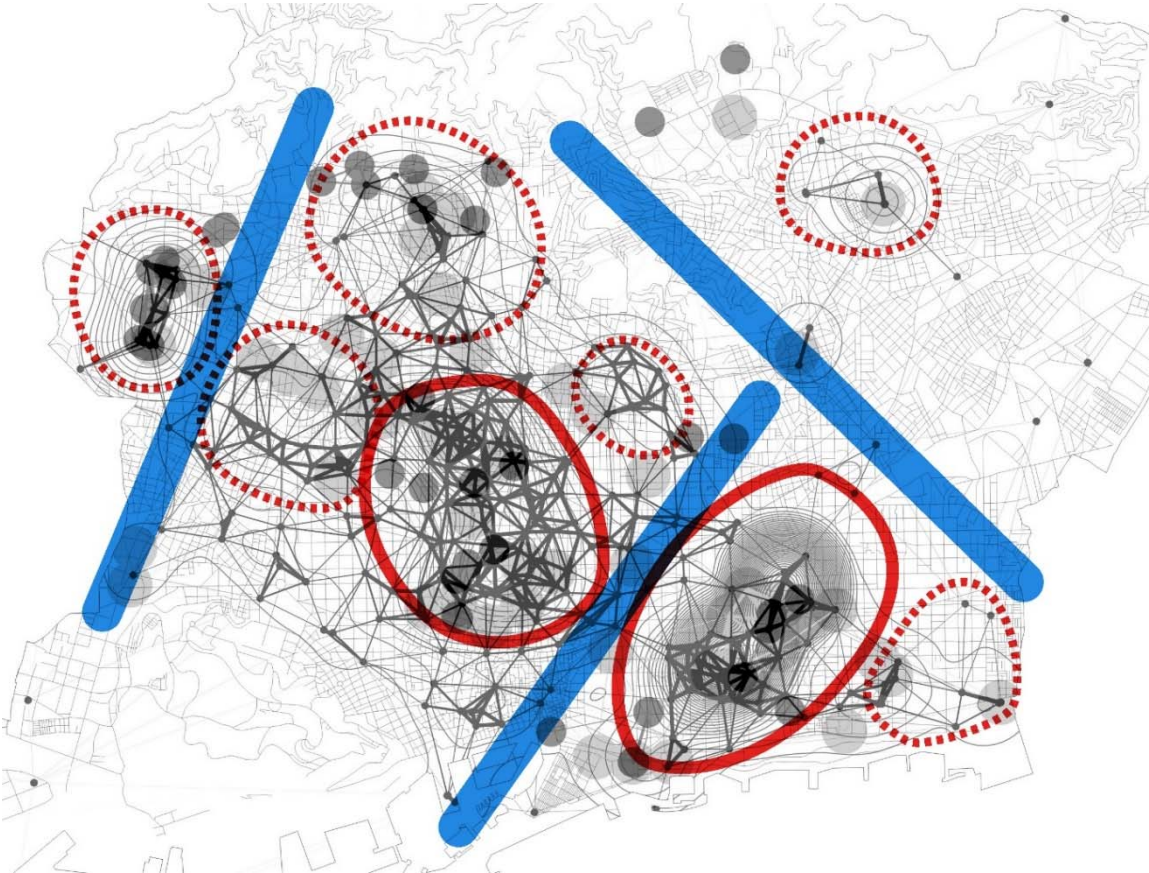
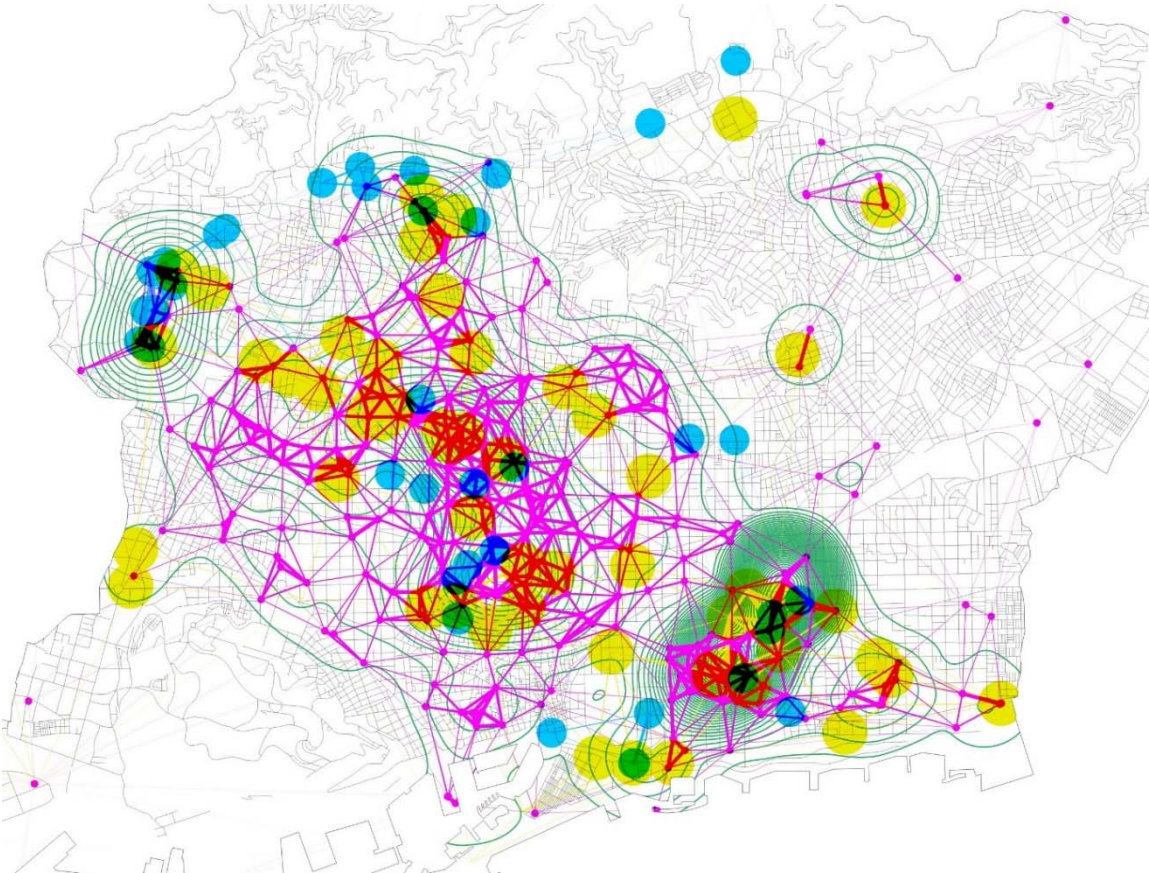







Figure 9, 10: spatial models (line, network and centres) and opportunities for transference.

-  innovative initiative
-  economic fabric according to the number of companies (radius)
-  innovative initiatives exceed the average of traditional companies
-  the number of innovative initiatives is lower than the rate of traditional companies

-  innovative initiative
-  < proportion of women
-  < proporció of men

-  innovative initiative
-  < plot surface

-  innovative initiative
-  < rental cost of premises

-  innovative initiative
-  culture
-  office
-  commerce
-  industry
-  housing

-  innovative initiative
-  < accessibility to public transportation

-  leading company
- number of innovative initiatives within a radius
- 50m 100m 200m 400m
- 

-  plot surface leading companies and research centres
-  plot surface of small companies and startups

-  startup
-  research centre
-  leading company
-  coincidence of different type of initiatives
-  level of connectivity
-  density of innovative initiatives

Rediscovering the College Town

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Nothing matches the energy and pulse of a college town. Universities throw off an infectious excitement that infuses their communities with culture, creativity, and a love of learning. Both retirees and young, knowledge-based workers are drawn to these places, as they offer a high quality of life at an affordable price and are smart financial investments. Retirees benefit from cultural events, continuing education, and great medical care if there is a university hospital. The young creative class tends to gravitate where like-minded individuals are in abundance, and that invariably leads to a college town.

Richard Florida observed that knowledge-based workers are attracted to places that possess the “three Ts,” the first being tolerance—of beliefs, religion, dress, and sexual preference. The second is an abundance of technology, to serve workers’ desire to be connected at all times. And thirdly, talent—talented people want to be around other talented people.

Universities need to respond to these criteria because they are always striving to attract young faculty, researchers, and graduate students. Universities are big businesses, and each has to attract its share of paying students as well as engage in research to secure financial grants. The notion that a student is a consumer and must be attracted to a place is slowly becoming an underlying premise of universities. Therefore it is incumbent to understand what criteria students use when selecting a town where they will spend four years.

Research in the United States indicates that for students, the number-one criterion for college towns is entertainment. This includes access to cinema, theatre, concerts, sports bars, pubs, and recreational entertainment such as bowling and billiards. The second is affordability, referring mostly to the cost of living, but also how cool the living space can be when one prefers the authentic, such as a wood-beamed attic instead of a pseudoloft. Number three is access to health, fitness, and recreational facilities, which may include gyms, yoga, aerobics and martial arts studios, bicycle trails, and outdoor sports fields. The remaining criteria include mobility, jobs, and overall uniqueness of the place. Mobility refers to easy access to other cities via inexpensive bus or rail transit, permitting students to visit friends or return home for family get-togethers and holidays. Surprisingly, access to jobs is less important, as most undergraduate students have access to student loans or parents able to finance their education. The overall uniqueness of a town or university refers to name recognition; students took pride in the fame and status of their college towns. For example, Lexington, Kentucky, is where the Kentucky Derby is held; Charleston, South Carolina, is known for the Piccolo Spoleto festival; and Ann Arbor, Michigan, has a winning football team: “Go Blue.”

The academic institution is an overwhelming presence in a college or university town; it pervades the economic and social life. Within the geographic boundaries of the college town, the university is the single-largest employer. Many businesses cater primarily to the university; and when school is in session, the academic community usually outnumbers the local population. There are two fundamental types of college towns. In one type, the town is intrinsically intertwined with the whole community, as in Chapel Hill, North Carolina, and Princeton, New Jersey. In the second type, the college-town precinct is one of many nodes within a larger, polycentric metropolis, such as University of Pennsylvania’s college-town district in Philadelphia. A third type is where there is no college town as the academic

institution is a district onto itself. A segregated precinct isolated from the town or city where it resides. The Technical University in Delft may be an example of this third type, where the edges are cauterized from the rest of the city.

Successful college towns have an identifiable main street where the majority of commercial activity is clustered. Historically, this main (or high) street developed because it was the primary access route to the university. Analysis shows that this thoroughfare was usually located along the topographic ridgeline—the highest ground affording the best natural drainage. Main streets are enfronted primarily by mixed-use buildings, which are a maximum of four stories in height. The uses within these buildings evolve to serve the student population and their needs. What was once a used book store may now be a hair salon; a franchised fast-food outlet may become an independently run coffee bar. Buildings with this resilience are needed to permit adaptation to changing needs.

Analysis and observation also indicate that east-west main streets usually have successful retail on the north side of the street (the sunny side), whereas north-south streets have retail stores on both sides of the street. Regardless of the street orientation, the frontage length of retail stores generally extends for 1,300 feet (400 meters), the equivalent of a five-minute walk. At an average building depth of 40 to 80 feet (12 to 24 meters) the total retail area ranges up to 80,000 square feet (7,500 square meters), irrespective of the student population. There are some exceptions to this number, but the findings suggest that 25,000 square feet (2,300 square meters) of retail means the college town is underserved, while 150,000 square feet (14,000 square meters) of retail suggests a regional market drawing from far beyond the boundaries of the college town.

In analyzing sales receipts for businesses in college towns, it was determined that students contribute about 25 percent of the total revenue of retail businesses. Food venues such as pizza parlors may receive 75 to 100 percent of their sales from students. However, the average student contribution to overall sales is remarkably low within most college town retail districts, in part because the majority of students attend school for only seven or eight months of the year. During the academic year, students contribute about a third of the retail sales revenue. This suggests that a successful college town is mostly supported by the nonacademic portion of the community. Students may provide the workforce and cool ambiance, but the actual revenue is generated by serving the needs of the community.

Not surprisingly, the main street in a college town typically carries from 15,000 to 20,000 cars per day. This level of automobile traffic helps the retail businesses survive, especially when school is closed for summer vacation. Connectivity, a robust street network, and ample short-term, on-street, metered parking help local businesses attract a steady flow of customers. Convenient midblock, off-street parking is also essential to satisfy long-term parking needs. Successful college towns embody the park-once concept, permitting multiple errands to be completed as a pedestrian. Additionally, adjacent dining, entertainment, cultural events, and sports venues in close proximity to strategically located parking ensure a vibrant nightlife for all age groups.

Universities offer their communities a wide range of cultural and socio-economic benefits. Residents have access to cultural events such as art shows, theatre performances, and music venues. The school embodies intellectual capital, promotes lifelong learning, and provides adult continuing-education courses for local residents.

College towns have proven to be great places to incubate businesses, which can take advantage of the educated employee base. Businesses that need a flexible workforce do well in college towns, finding an abundance of part-time employees. Businesses that rely on making deliveries, such as florists or pizzerias, are ideally located in college towns. Art-framing shops are completely flexible regarding when the actual framing work must be done; such

businesses are well-suited to employ students who work in the evening. Caterers can call on the student workforce on an as-needed basis.

Conversely, residents with large homes or rental properties may rent to students or university staff. Residents may employ students to help with yard work, babysitting, and other services. A healthy college town benefits from this symbiotic relationship between town residents and the academic community.

In the past, towns overlooked the positive benefits of having an academic institution in their backyard, and not all universities appreciated the importance of a vital town as their neighbor. The Technical University at Delft is not an exception when it come to buffering itself from the city. However, many institution who once built an alienating wall around their campus in the name of security or privacy have now come to realize that it is more beneficial to directly invest in the adjacent communities, play a leadership role, and aid in the social stability of their environs. Renowned academic institutions are noted for being powerful economic drivers in their communities and regions by functioning as technology innovators, employers, developers, and investors. Indeed, all of these support their primary academic mission.

Let's reinvent convivial regions: in the memory of Bill Twitchett

Dr Philippe VAILLANT, France

Abstract / Introduction

The world is limited. Our cities grow, extend, expand... In contrast, nature shrinks, biodiversity disappears, resources are running out... Now, we are faced with a search for balance between nature and city.

To find this balance, the notion of *convivial region* (Ref.1) with an indicative scale of 32000 km² (100 km radius), seem now to be unavoidable. That is the scale of the "living area", the "territory of belonging", based on human body. That is the scale of countries such as Holland, Belgium, Switzerland, Latvia, Slovenia, El Salvador...it is the scale of the 13 new metropolitan regions of France, and many parts of the world, as shown in the works of Bill (William) Twitchett (1995, Ref.2). The thesis of Philippe Vaillant (2008, Ref.3) deepened this notion. It was conducted in collaboration with him, after 28 years of common work in seminars and workshops at the Association Le Pavillon / Terre et Cité (*The Pavillion / Earth and City*) in Arras France. This last thesis was directed by Jean-Pierre Husson at the University of Lorraine in Nancy-CLSH Site, LOTERR Laboratory, directed by Michel Deshaies. Michel Deshaies was the director of the following Post-PhD (Ref.3b).

The convivial region is the result of a research led by Bill Twitchett since 1966. The pedagogy of the Association "La Chênaie de Mambré" allow to deepen the process through the dynamic of its workshops, based on *values*. Indeed, this process consist to *pass* from a power relations society (PRS) to a convivial society (Ref. 1b). This dynamic is organic, and a general expression is the approach of Carl Rodgers and A. N. Whitehead (*Process and Reality*, Ref. 4). On this basis, an organic geography and an organic planning can be created on Western references, like Augustin Berque did with Oriental references (*Ecumene*, Ref.5). The convivial region may then appear on this solid foundation as a new geographical object, that illustrate "the *passage* from being to the real " (Michel Serres, Ref.6, P.V. Thesis p.319). It's the *passage* from *pure potentiality* to *hybrid potentiality* and then *actual potential* (see Figure 5). These *passages* are replacing the old dualist distinction human / nonhuman.

This new approach to planning is developed here on 5 regions of the world, among which can be found: natural areas, developing areas and developed areas. Those regions are: the new "Between Vosges and Ardennes" region in France, baptized ACAL; the Aboriginal country of Nyikina in the Kimberley in Western Australia; that of Abidjan in the Ivory Coast; the region of Kashgar in Xinjiang, China; and the Mapuche country between Chile and Argentina.

It will be shown how some 2,100 convivial regions in the world, grouped by federation of regions, can expand and transform themselves. This approach combines globalism and globalization, and shows the process of sustainable convivial region creation. It develop the knowledge of this process.

1 The world is limited

	1	2	3	4	5	6	7
	TERRE (Mkm2)	Mers & Océans	Terres émergées (TE)	Océanumène (2/3 TE)	Marges (1/3 TE)	64% Terres 2p/km2	26% Terres (Reste Pop°)
	100%	71%	29%				
Mkm2	459,55	326,28	133,27	88,85	44,42	85,29	34,65
Mhab			6 512,57			170,59	6 469,92
Densité (hab/km2)			48,87			2,00	186,72

Figure 1 : Areas of Oceans and Earth ; Estimate of densities on the planet (Source: Universalis Atlas & P.J.Thumerelle, the peoples of the world), thesis P.Vaillant Ref.3 p. 502)

We now have to pay close attention to both the 'empty' and the 'full' regions. The overall balance of the planet is at stake. We speak of the emergence of *regional cities*: a name will have to be invented for the regions where nature still dominates. For urban areas, the concept of *metropolitan area* is now ripe (Ref. 7) but it will only become noteworthy when it is completely connected to the *natural regions*, in order to connect all the processes one with the other (see Figure 10 below). It's the concept of *convivial region*.

Indigenous peoples own approximately 26% of the global land. These lands are coveted by multi-national societies, thus endangering the traditional maintenance of these lands by their inhabitants as well as their preservation for the future generations (Ref.8 & 13). Autochthonous people are a model for humanity. Their stories, tales and legends are a *word* to share.

2 A decosmised world, a destructive modernity

Our modern society destroys nature. This fact is well-known and uncontested. Why is this? According to the Association "La Chênaie de Mambré", the relations are based on *power relations society*, instead of shared values, and *passages to a convivial society*. According to Whitehead, there is a "bifurcation of nature". According to Berque, there is a 'decosmisation' of the world. The first explanation can be found in André Rochais's Note (Ref.1b), the explanation for the second is in *Process and Reality* (Ref. 5) and the last is in *Ecumene : Introduction of the study of human environmental* (Ref.6). The key text that synthesizes the first explanation is Griffin's. It can be found in *Whitehead Radically Different Post Modern Philosophy: an Argument for Contemporary Relevance* (Ref. 9, Appendix) and the key text that synthesizes Berque has been written by himself in "Can we rationally speak of "nurturing science"" (shizengaku) ? » (Ref.10).

The three explanations, very different in their references (Western for the two first, Eastern for the third), lead all three to a critic -and not the removal- of the Aristotelian substance, to an outlet of the *dualism*, and a logic of the *included third*. The substance "which only needs itself to subsist", once the widespread interrelatedness of things scientifically acknowledged (quantum mechanics, Ref.11), gives way to the notion of *conviviality* for the Association MWC, of *society* for Whitehead, and *mediance* for Berque. Both place, next to a mathematical *topos*, a *chora* which is specific to a place of spatio temporal continuum (PR72). The *feeling* of HFC is whiteheadian *prehension*, or A.Berque's *trajection*.

Those two authors and thousands behind them are therefore inviting us to retrieve the *connection to places* (*Handbook for Whiteheadian Thought*, Ref.12 and figure 2). This 'connection' could be the Aboriginal *liyan* (Anne Poelina, Nyikina people, thesis, Ref. 13) expressed with cultural bases which are both Western and Eastern. Isn't that the special connection to the Land of the Indigenous Peoples of the planet? Is there not here a transcultural and transdisciplinary dialogue basis, traversing the three UNESCO vocations: scientific, cultural and educational? (Yamoussoukro forum, Ref. 14) Haven't we got here the basis for a civilization which respects cultural difference in the unity of alternative globalism (and not economic globalisation)? (Rene Passet, Ref. 15 and Ref.3 p263).

1. How to recosmise the world: a transcultural and transdisciplinary organic approach

It is therefore the philosophical basis of science that needs to be transformed by using the latest scientific achievements as summarised in the works of Pierce, James, Whitehead, Bergson, Dewey, Laszlo, Aspect, Prigogyne (Nobel Prize), Lyne Mc Taggart, Rupert Sheldrake, Dubro & Lapiere... This new paradigm was announced as early as 1983 by Prigogyne and Stengers in *The new Covenant* (Ref.16). It was later developed by many philosophers in its panexperientialist, constructive postmodern panpsychist sense (Ref.12).

3.1 The Augustin Berque scheme and its Oriental references

Berque gave the University of Corsica a series of conferences on You Tube (Ref. 5b aso.) which synthesizes the work of a lifetime. The key concepts are *médiance* (Ec Ref.5a p.124-126), *trajection* (Ec, Ref5a P.127-129), *existential moment* (Ec, Ref 5a id.), and *topos / chora* (Ec , Ref.5a, Ch.1 p.17-30).

There is precursors as René Dardel (Ref.16)

3.2 The whiteheadien scheme and its Western references

The key concepts are *society* (PR 94-110), *préhension* (PR 32-34), *conrescence* (PR 211), *morphological / genetical process* (PR 72).



Figure 2 : All domains and authors with whitehead thought

3.4 A link between the West and the East: a universal organic approach

The thesis I presented in December 2008 highlights focuses on the relation between the two preceding steps. Here is a small table which presents the link between Whitehead and Berque. This link will have to be completed by many research scientists and philosophers in their respective fields.

Alfred North WHITEHEAD	Augustin BERQUE
SOCIETY	« MEDIANCE »
PREHENSION	« TRAJECTION »
CONCRESCENCE	« EXISTENCIAL MOMENT »
SPACE-TEMPORAL CONTINUUM Morphological / <u>genetical</u> Process	TOPOS / CHORA

Figure 3: The links between the scheme of Augustin Berque and the scheme of A. N. Whitehead (Ref.3, page 257-260)

This table shows the universal character of Whitehead's *concrecence*. Geographic objects can be constructed on this scientific basis. In our rapidly changing world, these geographical objects go from *pure potentiality* to *hybrid potentiality* and integrate themselves to the objects of everyday life (*real potentiality*). In the words of Michel Serres, there is thus a "passage from the being to the real." Thus, thousands of years appeared Cities, agglomerations, metropolitan area, and now the *convivial region* (Figure 5).

The *concrecence* means "grow together". "Concretus, in Latin, it was the past participle of *concrecere*: grow together," explains A. Berque (REF.5 p.18). The world grow by *drops of experience*, expression borrowed by Whitehead to William James, who became synonymous with *passages* for HFC association. The whiteheadien technical term is *actual entity* (PR17) or *extensive quantum* (PR80) by reference to quantum mechanics. *Drops of experience* (DE) replace the atoms of Democritus. They are the place of emergence of the *Say*, and *creativity* in the world.

The first component of DE are *prehensions* with *subjective forms* (PR17) are the *values*: Sharing, No PRS, Common Good, Efficiency, Fraternity, Conviviality, ... This requires much time and many exchanges to agree on common values.

The diagram of the *Drop of Experience* (figure 4) can not have the effect if people doesn't change. It is an experience to do : if the pattern becomes a recipe it will hardly be effective. The way to build convivial regions is primarily a commitment for the men and women who participate, to a personal transformation path. "A man who is divided shape beings and the world in its own image" (Ref. 1, Note 1). It is necessary to be transformed by the tool.

Vaillant's thesis (2008, Ref.3) summarizes fifteen organic approaches in relation to the human, society, the territory and the cosmos (Ref. 17). The postdoctoral added eleven more, after a research between France and Australia in 2013-2014. Those twenty-six approaches are all consistent with the schema of the Whiteheadian *concrecence* (Ref. 18).

3 The convivial region is a tool to measure the individual and the social human body

4-1 – The organic aspect of B. Twitchett's approach

William Twitchett's approach (thesis 1995, Ref.2) does not escape from the organic character *de facto*, as shown in the diagram below (figure 6).

The deepening of the concept of convivial region in an organic sense was initiated by B. Twitchett himself in his contribution to the 2003 ISOCARP convention. Indeed, Bill Twitchett's contribution, *Friendly Versus Sprawl Regions: examples within Australia and within sub-continents of comparable physical scales*, 2008 44th Congress 2008 ISOCARP (Ref.2) illustrates the use of the "Drop of experience" and different phases with written reference to the thesis of P. Vaillant: *Vision*, page 3 alinea3, the *Proposal*, page 6 paragraph 6, the *Satisfaction*, page 9 paragraph 4.

It can be observed that this contribution implements only 3 of the 5 realities of Whitehead's *concrecence*: *Vision*, *Proposal*, *Satisfaction*. Two realities: remain: *Interactions* and *Decision*.

LES 5 REALITES DE LA "GOUTTE D'EXPERIENCE"

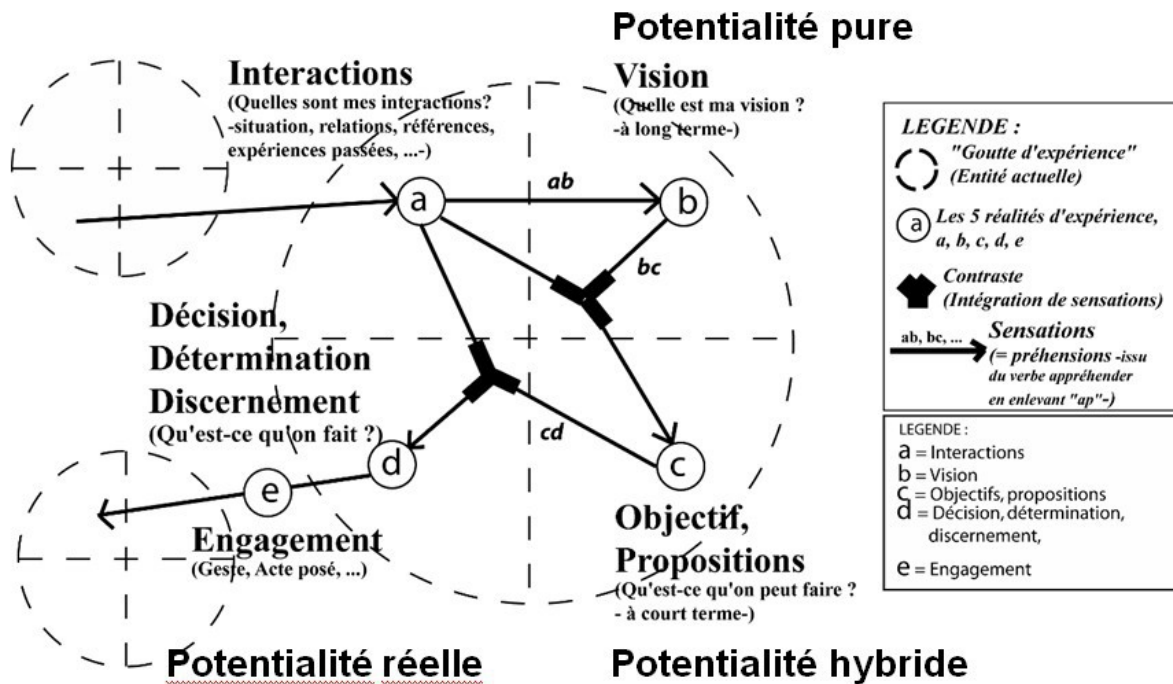


Figure 4 : the Whiteheadian concrescence (PR, III^{ème} partie)

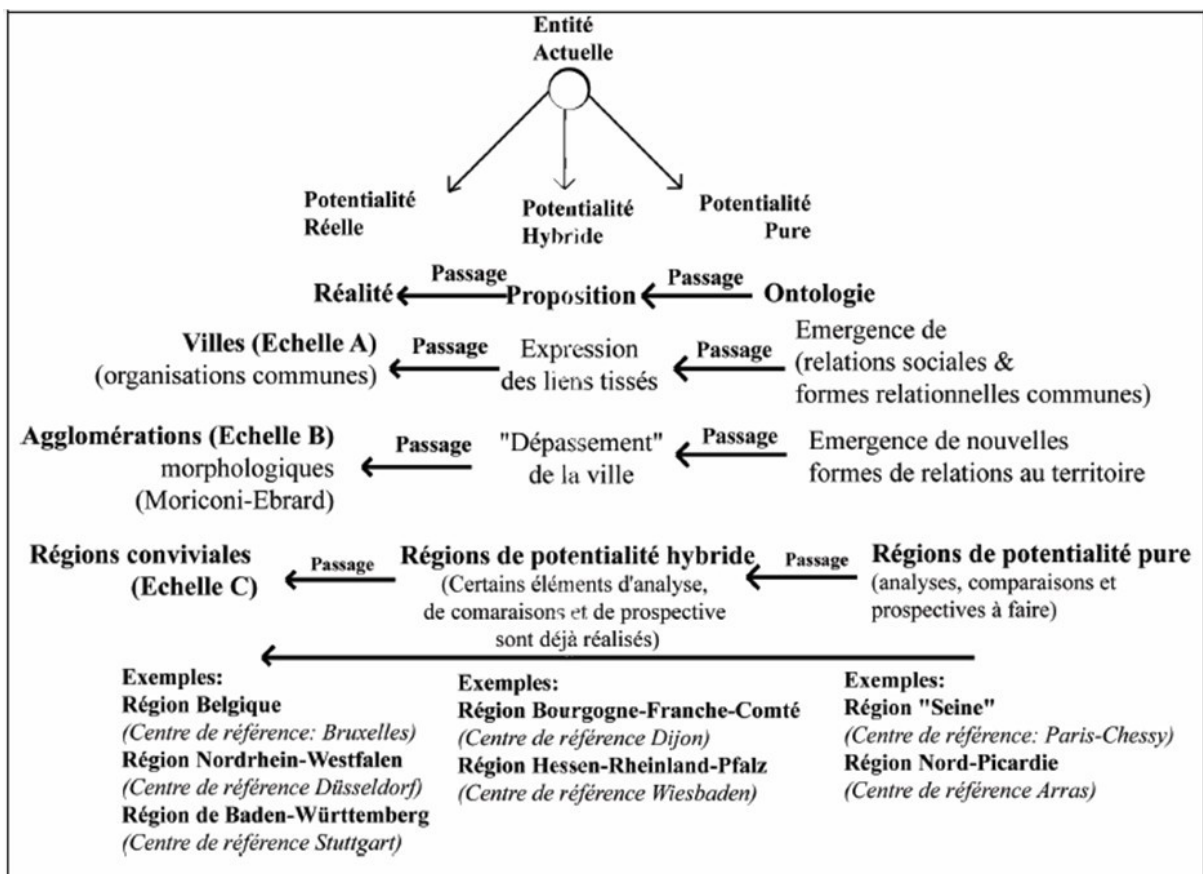


Figure 5 : « The passage from Being to the Real » of geographical objects (Source : Thesis PVaillant, page 440)

The first, *Interactions*, concerns the relationship to anchorage areas concerned and second, the *Decision* relates to the political process of implementation in the territory (as defined in Policy "management" -no *power relations*-). The road still to go on the spur of B.Twitchett appears to be interacting with local stakeholders, and contribute to generate a bottom-up process of local decision for the territories covered (logical bottom-up, not top-down). This is the process initiated by the 5 following examples.

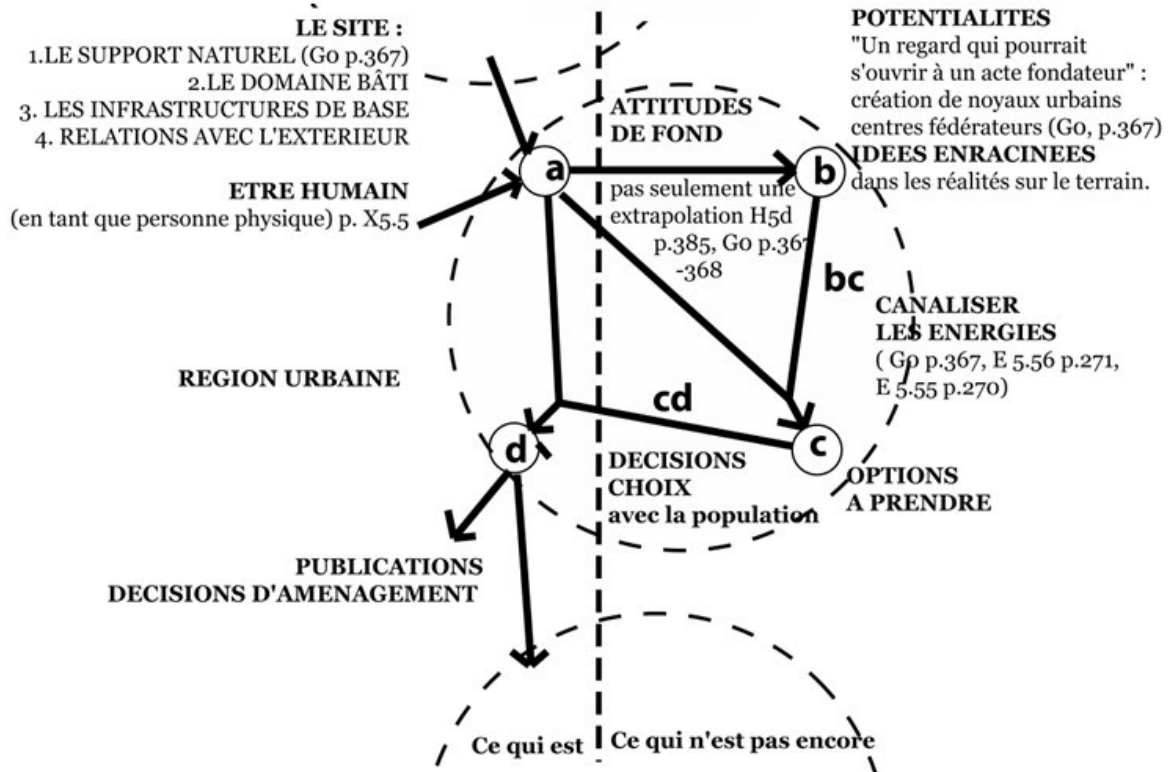


Figure 6 : Diagram of questioning geographical experience across the approach of W.Twitchett (1995). Source: Thesis P.Vaillant 2008 (Ref.3 p)

4.2 – The tool to analyze the scale of the territories

Here is a reminder of the tool of the territory scales as proposed by Bill Twitchett for an interlocking of the scales related to the human body.



Figure 7 : Outil d'emboîtement des échelles de la vie quotidienne W.Twitchett, Thèse 1995

The life of William Twitchett was devoted to seeing, under the tumultuous nature of the territories of the world, their potentialities as convivial regions, as sites of human development, in harmony with nature, be it potential, real, hybrid or pure.

A first comprehensive intuitive global approach was implemented in Atelier in 2008 (Ref.3) It takes into account the research led by Twitchett since 1966. These user-convivial areas are established (real potentiality), in training (hybrid potentiality), or simply prospective (pure

potentiality). *They are the Federating entity which exists or 'is to be created'*. This approach, our way, could find full achievement only in link with autonomous organization of inhabitants on considered regions. A network of correspondents which is to be weaved within each region and between those same regions.

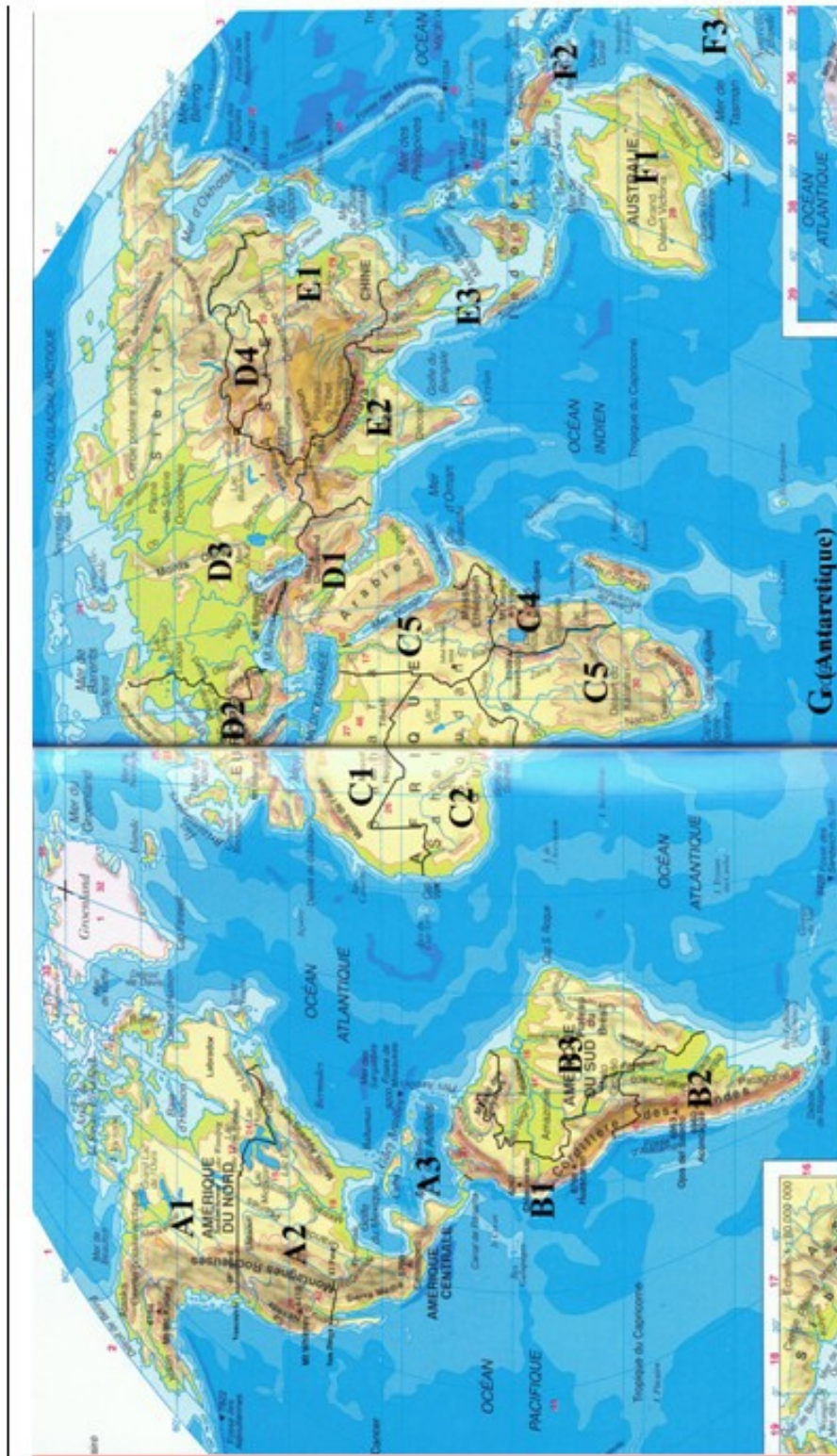


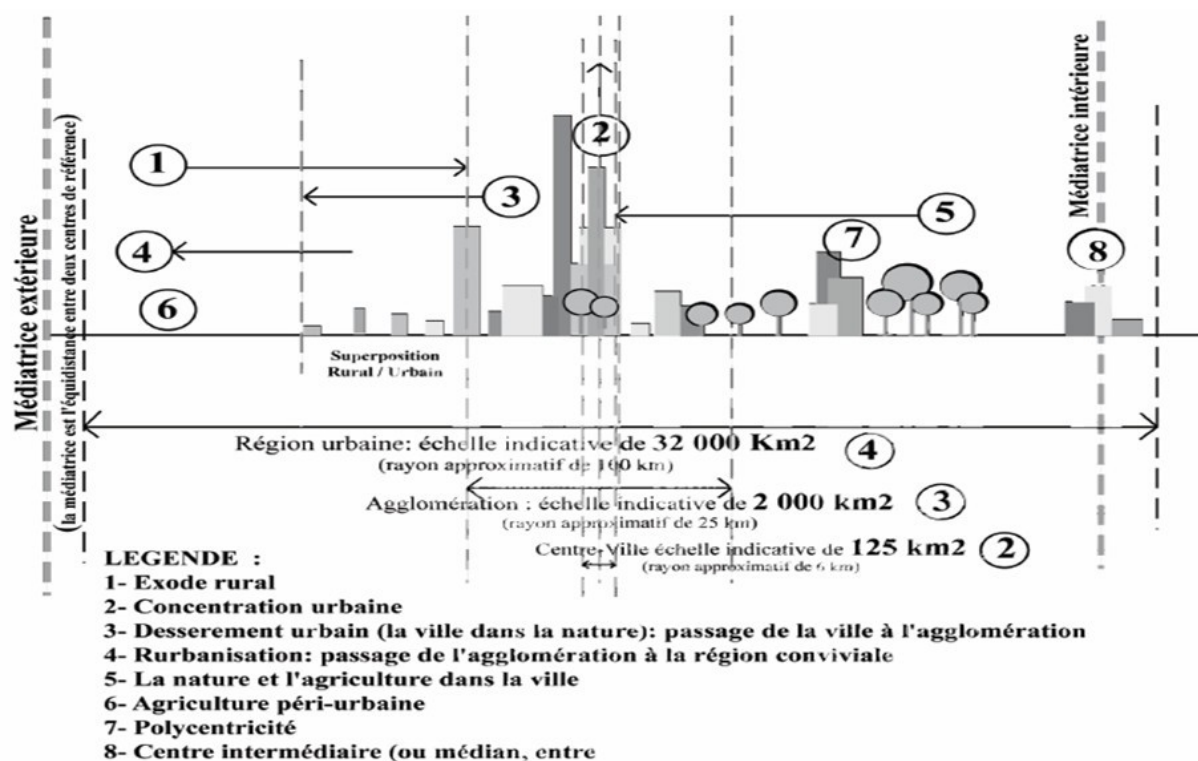
Figure 8: Map of the 21 Sub-Continents Earth: macro-ecological units (Base: World Atlas Mérienne Patrick, Ed West France. 1997) Workshop Pavilion, Arras, Ref. 3, p.504.

	SOUS-CONTINENT	SURFACE	POPULATION	densité	Régions conviviales	Surfe moyenne Reg.conviviales	Population m° Rég. conviviales
A1	Canada	9 985 000	33 100 000	3,3	80	124 813	413 750
A2	Etats-Unis	9 631 400	298 500 000	31,0	130	74 088	2 296 154
A3	Amérique Centrale	2 601 997	180 874 000	69,5	54	48 185	3 349 519
B1	Pays andins N-O	5 099 100	121 410 000	23,8	92	55 425	1 319 674
B2	Pays andins sud	4 106 950	66 045 000	16,1	68	60 396	971 250
B3	Brésil	8 511 000	188 100 000	22,1	130	65 469	1 446 923
C1	Afrique du Nord	5 017 600	82 450 000	16,4	57	88 028	1 446 491
C2	Afrique de l'Ouest	8 200 874	290 514 000	35,4	112	73 222	2 593 875
C3	Sud de l'Afrique	9 314 090	190 492 700	20,5	167	55 773	1 140 675
C4	Afrique de l'Est	3 041 805	146 724 000	48,2	53	57 393	2 768 377
C5	Afrique N-E	4 779 020	200 202 000	41,9	73	65 466	2 742 493
D1	Moyen-Orient	6 180 023	278 099 400	45,0	99	62 424	2 809 085
D2	Com. Européenne	5 085 802	530 282 382	104,3	129	39 425	4 110 716
D3	Transition Eurasie	21 883 600	260 267 000	11,9	333	65 717	781 583
D4	Mongolie	1 564 000	2 850 000	1,8	15	104 267	190 000
E1	Asie de l'Est	10 222 280	1 537 561 000	150,4	167	61 211	9 206 952
E2	Inde&proches	5 141 438	1 490 727 000	289,9	110	46 740	13 552 064
E3	Asie du sud	4 418 203	582 043 000	131,7	107	41 292	5 439 654
F1	Australie	7 700 000	20 265 000	2,6	100	77 000	202 650
F2	Micronésie	512 262	7 570 900	14,8	23	22 272	329 170
F3	Polynésie	272 510	4 489 000	16,5	12	22 709	374 083
	Total	133 268 954	6 512 566 382	48,9	2 111	62 444	2 737 387

Figure 9 : Synthesis of the organization of the planet in twenty one sub-continent. Source: Vaillant, dialogue with Twitchett (thesis p.507)

Out of the 193 countries registered at the United Nations (excluding Kosovo), forty states already have the size of a convivial region (including 12 States in Europe -EEE31-), in other words, one state out of five. Forty states are smaller than a convivial region. Conversely, seven states have the size of one or several subcontinents..

This approach allows to simultaneously take into account a finite world (finite resources, limited water, generalized interactions) and the importance of a local development which was, is or will be as autonomous as possible (application of the principle of subsidiarity). Here, in Figure 10 below, the 8 key processes of *convivial region*.



5 - Examples around the world

5.1 The convivial region of the 'Vosges-Ardennes' in France



Since the 2008 thesis when this region was only a *pure potentiality*, the regions of France were reduced from 22 to 13, and the FTAA region was created in 2015: it will be implemented on January 1, 2016.

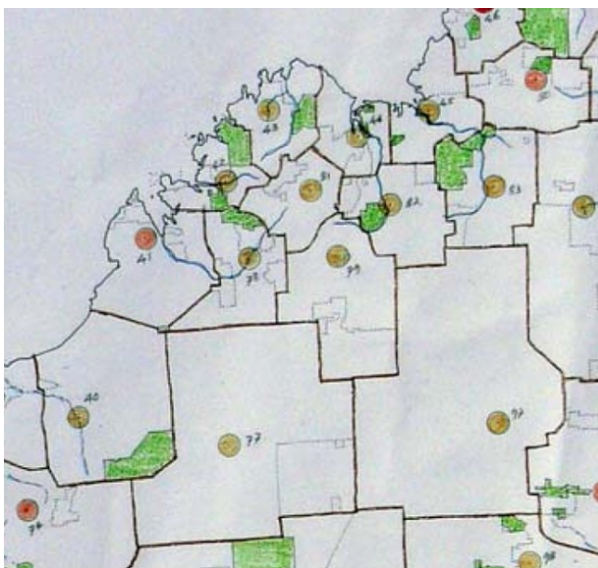
This example clearly illustrates the "passage from the being to the reality" of a new spatial object.

This region can be a model for many other regions of the world as a creative process of a *convivial region*.

Correspondents: JJ Funke, C.Kieny. P. Vaillant and network AITF, including the Working Group GT DST-general

Figure 11: Map of a pure potentiality region in December 2008 from the thesis (P.450 Ref.2, which has become a real potential region in 2015 (official launching on January 1, 2016).

5.2 The convivial region of the Nyikina countries in the Kimberley, Australia



A post-doctoral research done in 2013-2014 helped forge strong links with the Nyikina People of Kimberley (*Interractions* reality). Recent events such as the acceptance of the Nyikina People's territory under the Native Title Act which recognizes them as the traditional owners.

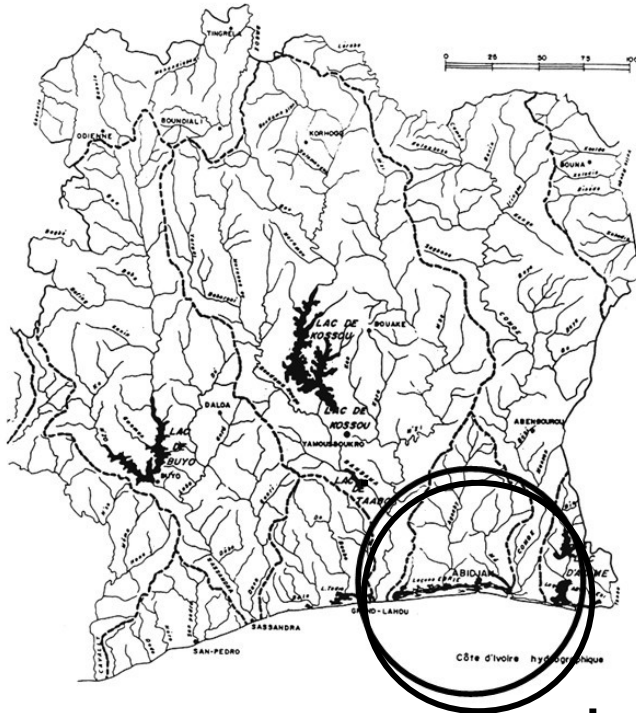
This virgin territory would be appropriate to create an International Ecological Park. The unifying center could be Lower Livingina / Baldingjir, where a Wildlife University is soon ready for commissioning.

Correspondents: Anne Poelina Ian Perdrisat, Nyikina people (ref. 13). Other Links: Martin Préaud and Magali McDuffie

Figure 12: Map of convivial regions of the Kimberley according to Bill Twitchett (Ref 2.X, pX.). The circle was added to mark the "project area", between Broome and Looma.

The Nyikina aboriginal people is a "water people" of the Mardoowarra river (Fitzroy River). An approach of the Water Resource Integrated Management, which has not renewed since 2010, now appears to be urgent. Collaboration can be pursued with the International Water Centre (IWC) and the NGO Madjula Inc., with all the official partners.

5.3 - The convivial region of Abidjan in the Ivory Coast, Africa



The 3rd UNESCO-NGO Forum of Yamoussoukro in July 2014 raised great hopes on the vital issue of drinking water for all. It was also an opportunity to expose the organic approach adjusted to the Integrated Management of Water Resource (IWRM), called "drops of experience" (Ref. 14).

Water is a source of life, and one of the main criteria of the region is its convivial region at the service of each (REF.2, pX)

Correspondents: Jacqueline Adjale, network with Patrick Aubin Moulo and Moussa Cissé

Figure 13: Positioning the convivial region of Abidjan in the Côte d'Ivoire on river system background (FAO map)

5.4 The convivial region of Kashgar in Xinjiang, China

Kachgar (Kashgar, Kashi) (喀什 ; pinyin : Kāshí ; ouïgour : قەشقەر / Qeşqer, ou 2 ئېگىز شەھەر)

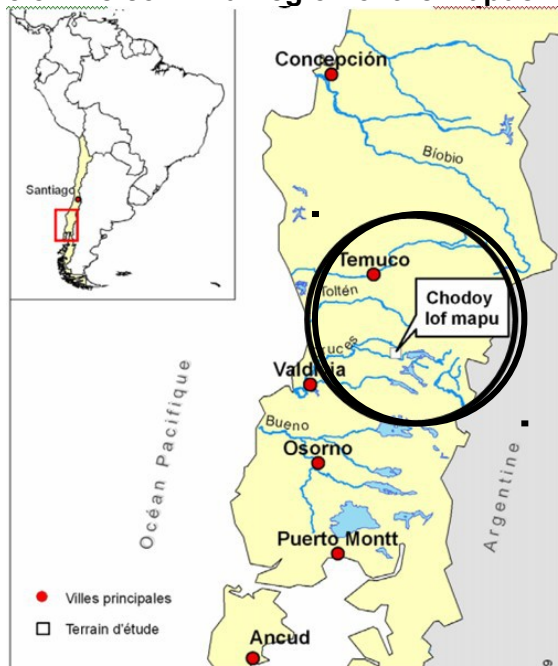


The traditional city of Kashgar is being destroyed in order to be replaced by buildings of international architecture, as shown in the picture on the left. A regional reflection is urgently needed to enable the preservation of this heritage, the safeguarding of the Uighur culture, and the mobilization in that sense of the local resources, in a dialogic approach (Paolo Freire).

Correspondent: a member of the Uighur community (8 million people)

Figure 14 :the convivial region of Kachgar, in Western China, Xinjiang (Ouïghour country). Source : <https://quinsadventure.wordpress.com/tag/kashgar/>

5.5 The convivial region of the Mapuche Indians, Chile, South America



The Mapuche territory extended over 1,700 km from the Pacific Ocean to the Atlantic.

The Mapuche people in Chile represents 600,000 people.

The emergence of a *convivial region* can be achieved with a dialogic and critical approach (Paolo Freire) in matters of mapping (Johnston, Hirt). The context is transcultural, after several centuries of concealment of the indigenous culture.

Correspondents: Chilean Beatrice Amblet.

Figure 15: Hirt Irène, Carte de la zone d'étude Chodoy lof mapu, <http://archive-ouverte.unige.ch/unige:12389> (réf.19-X, figure 1 p.10)

6 - Outcomes :

6.1 Connection to the Earth, generalized interconnection

More than 20 indigenous peoples gathered at X in X expressed this interconnection in the Redstone Declaration. Whitehead and Berque give this Declaration both its philosophical and scientific foundation. It proposes trans-... (cultural, disciplinary) concepts. Is there not here a basis for dialogic relation ? (Paolo Freire (author base ref. 13c)?

6.2 Food security: feeding the world

It is possible to feed the entire planet with organic farming (Olivier de Schutter and Patrick Bourguignon, Ref.20a). Indeed, while mono industrial agriculture has a ration of three to one (three calories produced / one calorie spent), agro-forestry has a 25/1 calorie ratio.

6.3 Climate change

If all the farmers of the planet stopped ploughing, the CO2 problem would be solved (Patrick Bourguignon, Ref. 20b).

To reach a 100% renewable energy in 2050 is a realistic scenario.

France has thus officially recognized four relevant scenarios, called Negawatt, Gas de France, Cler, and Ademe (Ref.21a) For the world, the scenario of X (Ref.21b) is a source of inspiration for each specific situation of a subcontinent, a group of regions or a convivial region.

The negative impact of shale gas on water, on the climate and on the territories is shown in numerous scientific researches. Unfortunately, a "commercial secret" is placed on a number of them, and the issues of immediate profit prevent any debates to take place. Indeed, the multi-national companies falsely claim that it is urgent to extract and use fossil resources.

This urgency is an illusion, as we know that the productivity of the wells drops by 90% by the end of the first year, which leads to new fracturing, with a huge consumption of water. This water remains unfit for any further use. Moreover, the groundwater tables are also polluted. (Ref.22)..

6.3 Integrated water resources management (IWRM)

We can only agree with Roger Lambert when he says that «water science is the science of spatial planning»

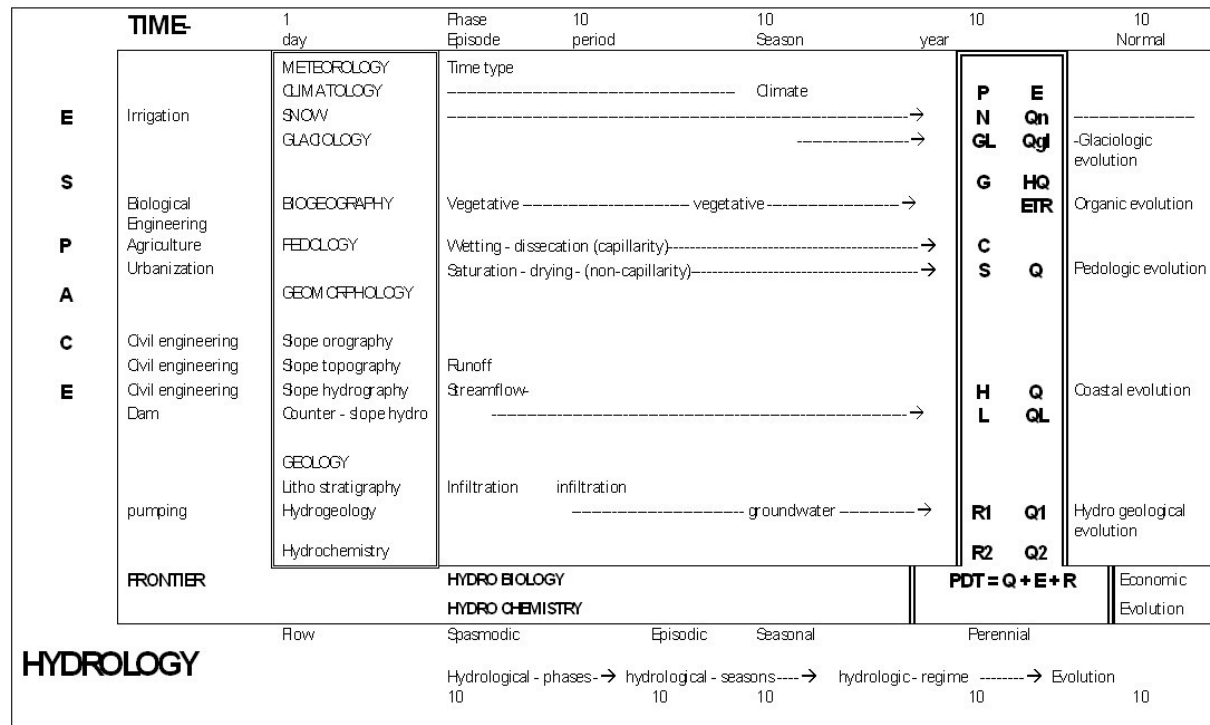


Figure 16 : Diagram of the various sciences contributing to the development of the spatial planning. (Source : Roger Lambert, *Geography of the Water Cycle*, P.U.M., Toulouse, 1996, 448 p. page 232. Ref.22)

As we can see, these various specialized sciences contribute to the study of convivial regions for the establishment of an IWRM. The method of the UNESCO is in strange immediate correspondence with Whitehead's drop of experience (see-above, and reference n ° 14 - Forum of Yamoussoukro-)

6.4 - The global pattern of regional dynamics:

Le schéma qui suit résume l'ensemble des thèmes à aborder pour l'émergence et la consolidation d'une région conviviale. Ce schéma a été mis au point dans le cadre du programme post-doctoral avec l'Australie. Il a été présenté à Brisbane au Congrès ISOCARP d'Octobre 2013.

6.5 Towards organic planning:

With the bursting of the modern approach and the standoff on the issue of interrelations between water, climate, Earth, and development, nature is no longer taken into account by modern planning. On the contrary, the modern approach goes AGAINST nature by demanding resources for the extraction without paying any attention to the consequences. Tools exist, but they are rarely employed in a comprehensive and complete manner (for instance, the ANZECC Guides are not used in the Kimberley on mining projects of Rey resources at Duchess Paradise).

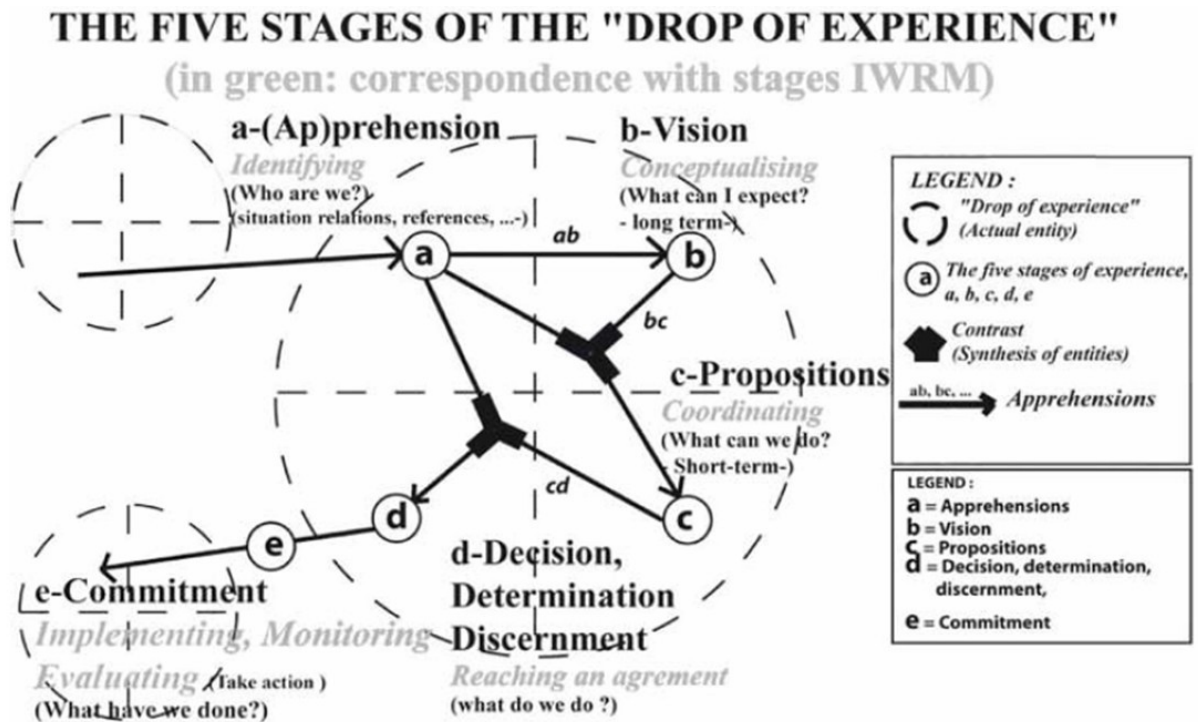


Figure 17: Scheme of the integrated management of water (IWRM) according to the UNESCO and the drop of experience.

AN ORGANIC METHOD FOR KIMBERLEY AND CANNING BASIN

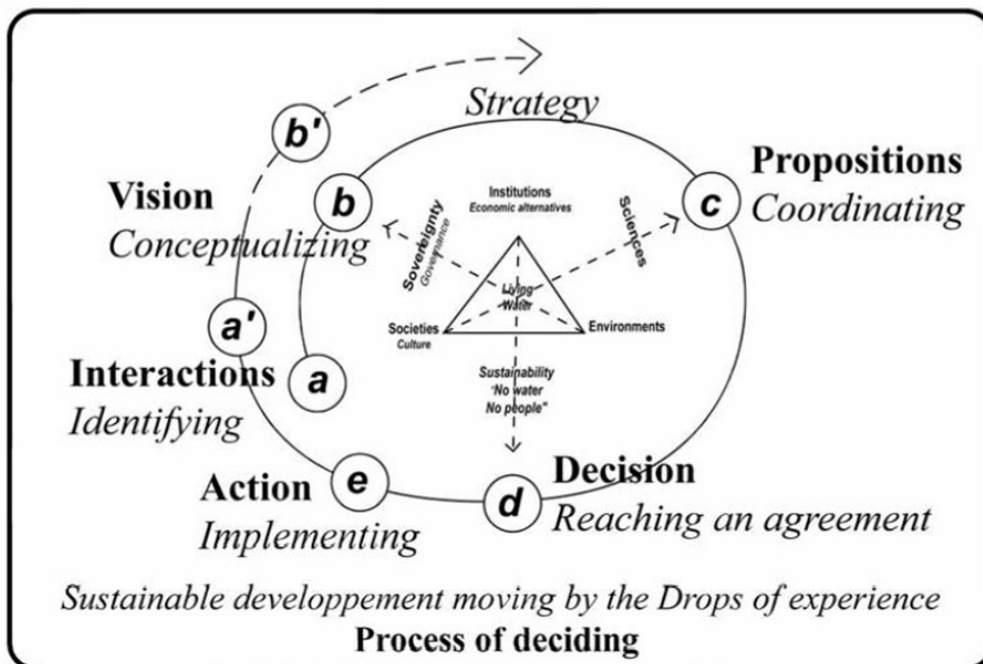


Figure 18: (Scheme presented to Brisbane at the 49th Congress ISOCARP with six research axes)

7 - Creating a guide for convivial regions?

With its *International Manuel of Planning Practice* (IMPP), initiated as early as 1983, and completed in 1995, the ISOCARP contributes greatly to a better understanding between the town planners of all the countries of the world.

This work of understanding between countries is being directed through the IMPP, so, is it not possible now to envision an approach which would be both philosophical and scientific (on the organic basis described above) ?

It is certainly not a normative approach, but a search of the appropriate scale between the local and the global, by successive trial, always in a "bottom-up" and not a «top-down» approach. These regions will need to have the maximum amount of autonomy under the principle of subsidiarity, find their identity in the geography, the history, the issues of the present, and the specific connection of mineral, animal, plant and human societies in this particular territory. The use of geography and ecology is therefore essential, as is that of the local culture, including that of the Aboriginal peoples.

The special role of water in the regional organization and in the local cultures should be noted. All those cultures see water as source of life which must be preserved.

7.1 History of the Guide (IMPP)

ISOCARP created a guide in order to compare the systems of planning for the countries of the world (I.M.P.P.). The starting point was a search for young professionals funded by the UNESCO in partnership with the ISOCARP in 1983. Dusko Bogunovič, Irene Wilson, Philippe Vaillant thus prepared a methodological guide entitled *Understanding the planning system of another country, report prepared for 21st ISOCARP Congress, December 1984*. A strong impetus had been given by Derek Lyndon during the Congress in Braga, Portugal. Then, the initiative was pursued by many other planners.

7.2 - Towards a Guide of convivial regions?

François Beautier's *Maxi Atlas* presents a small easily manageable Manual of 407 pages. The 195 countries of the world are included. Is it not possible to create a manual of about 450 pages for the 21 sub-continent which regroup approximately the 100 convivial regions? (see figure 9 above). The presentation could be done by groups of 20 regions at the most. Indeed, it is accepted that beyond 20 entities, it is difficult to organize a territory (ref. 2-X). 5 to 10 groups by sub-continent lead to a total of 105-210 groups. 2 pages by groups, and 2 pages by sub-continent means that we would have less than 450 pages.

Simultaneously, a presentation of each convivial region by sub-continent could be initiated, for a total of 21 guides.

4 Conclusion

Over the centuries, the notions of city, metropolitan area and cities went from pure potentiality to hybrid potential, and finally to daily reality. In the same manner, the concept of convivial area may become a regular reality, in an organic approach. Many references grouped around the emblematic figures of Whitehead and Berque can help us achieve that goal.

The pedagogy of the Association "Men and Women in the City" can sustain our interest and motivation, paying attention to the experience and the relationship first. The University of Lorraine, in Nancy-CLSH can bring scientific rigor of generalization. The ISOCARP can contribute to the development of a global network around the concept of convivial region. The UNESCO binds together science and culture / spirituality, pedagogy, around the value of Peace and Human Development in accordance to the Common House...

References:

Ref.1 : Twitchett William (2005), *The convivial region : a fundamental entity within the world pattern of development*. Association Internationale des Urbanistes / ISoCaRP : Congrès 2003 Cairo (Planning in a more globalised and competitive world), 12 pages. Included in

published book of congress proceedings, Planning in a more Globalized and Competitive World, Edited by Paolo La Greca, Proceedings of XXXIX International ISoCaRP Congress, Gangemi Editore, 2005, 351 pp., pages 135 à 146 (voir ISoCaRP). Téléchargeable à :

http://www.isocarp.net/Data/case_studies/282.pdf.

This is Bill Twitchett's basic text that enshrines the concept of *convivial region* in the wake of his thesis and Pavilion Workshops (and a Workshop for MWC Association " Policy Reality City").

He explained the origin of the use of the term "convivial" to describe the area in note 1.

Note 1: "1- Adjective Proposed by Philippe Vaillant, member of ISOCARP, During a Land & City "symposium in August 2002 and time immediately integrated into a group project. " ("Note 1 - [Friendly:] Adjective offers by Philippe Vaillant, member ISOCARP during a symposium in August 2002 and immediately integrated into the project group"). It was explained to the symposium that the term refers to the notes of Andrew Rochais "Power Relations Society... Convivial Society" PRH International 1992, in search of the Association "La Chênaie de Mambré" in Brainville-sur-Meuse, France. This association is one of those social transformation ferments described by Josée Landrieu and Edith Heurgon (2003).

Rey etymological and historical dictionary of the French language in section "friendly" refers to the following key work:

ILLICH Ivan (1973), *La convivialité*, Seuil, Paris, 159 pp.

Ref. 2a : Twitchett William (1997), *Le site urbain : potentialités : réflexions sur le développement responsable et équilibré des établissements humains à partir de six exemples français, égyptiens et australiens*, Lille : Éditions du Septentrion, 420 pp. Thèse, Directeur de recherche : Paul CLAVAL. (*The urban site possibilities: Reflections on responsible and balanced development of human settlements from six examples, French Egyptian and Australian*).

A website was created in memory of Bill Twitchett with its main references downloadable at <http://www.twitchett.org/home>

The following publications can be found on the website ISOCARP at the following address:

Ref. 2b : Twitchett William (1997), *Water risks - examples of France, Egypt and South-East Australia* Association Internationale des Urbanistes / ISoCaRP : Ogaki, 1997 (Congress on risk management).

Ref. 2c : Twitchett William (1998), *The case of Sydney*, Association Internationale des Urbanistes / ISoCaRP : Séminaire intermédiaire, 1998, Antalya (Seminar coastal management), 12 p.

Ref. 2d : Twitchett William (1998), *Atherton Rivers* Association Internationale des Urbanistes / ISoCaRP : 1998 Acores. (avec David Rivett) sélectionné pour le rapport final du Congrès.

Ref. 2e : Twitchett William (2003), *Canberra : political decisions, planning and sustainable development*. Association Internationale des Urbanistes / ISoCaRP : Congrès 2002 Athènes (The Pulsar Effect), 12 pages. Included in published book of congress proceedings, *The Pulsar Effect in Urban Planning*, Proceedings of the 38th International ISoCaRP Congress Athens 2002, Edited by E.Beriatos and J.Colman, University of Thessaly Press, Volos, Greece, 2003, pp.124-135 (voir ISoCaRP). Téléchargeable à l'adresse suivante:

http://www.isocarp.net/Data/case_studies/172.pdf

Ref. 2f : Twitchett William (2003), *La région conviviale*, Voir Réf. 1

http://www.isocarp.net/Data/case_studies/282.pdf.

Réf. 2g : Twitchett William (2004), *"Typology of urban regions"*, Association Internationale des Urbanistes / ISoCaRP : Congrès 2004 Genève (Management of urban regions).

Ref. 2h : Twitchett William (2005), *"Regional spaces, creativity and sustainable cities"*, Association Internationale des Urbanistes / ISoCaRP : 2005 Bilbao. (Making spaces for the creative economy). Translated in French by J & E Bonnefoy. Téléchargeable à : http://www.isocarp.net/data/case_studies/621.pdf.

Ref. 2i : Twitchett William, 2008, *Convivial Regions Versus Sprawl : examples within Australia and within sub-continent of comparable physical scale*, 44th ISOCARP Congress http://www.isocarp.net/data/case_studies/1188.pdf.

Urban sprawl is a regional affair: subsidiarity, protection of food production. It is also tributary to decisive sub-continental factors and these need to be identified and dealt with in a way that is complementary to an adapted regional approach.

Ref. 2j : SURVEY OF ISOCARP CONGRESSES 1965 – 2014 : <http://isocarp.org/app/uploads/2014/08/SURVEY-ISOCARP-CONGRESSES-1965-2014.pdf>.

Ref.3a - Vaillant Philippe (2008), *L'Expérience territoriale éclairée par la pensée d'A.N. Whitehead. Potentialités des régions conviviales, et application à la région « Entre Vosges et Ardennes »*, Thèse, Université de Lorraine, Site de Nancy – CLSH, 712 pages, Direction : Jean-Pierre Husson, Laboratoire LOTERR : Directeur Michel Deshaies. (*Territorial Experience enlightened by the thought of AN Whitehead. Potential-convivial regions, and application to the region "Between Vosges and Ardennes"*)

http://docnum.univ-lorraine.fr/public/DDOC_T_2008_NAN21_019_VAILLANT.pdf

This thesis deepens in an whiteheadien organic sense following Bill Twitchett the concept of convivial region and offers an application to the newly baptized ACAL region, possible model for Europe and the World.

Réf.3b: A post-doctoral thesis followed this on the basis of Chapter 2 of the HDR Michel Deshaies, Director LOTERR (UdL, Nancy Website CLSH, EA 1135), published under the title:

DESHAIES Michel, *Les territoires miniers, Exploitation et reconquête*, Ellipses, 2007, 224 p.

Partial results were presented at the 49th Congress ISOCARP in October 2013, under the title: « Mining, environment and society: Contribution of the thought of Whitehead to the methodology of assessing the water that can really be mobilized in the Kimberley and Canning Basin, Australia" Brisbane, téléchargeable à :

http://www.isocarp.net/Data/case_studies/2329.pdf

Ref.4 - Whitehead, Alfred North, *Process and Reality, An essay in cosmology*, corrected edition, The Free Press, New York, 1978. This fundamental work develops organic philosophical scheme on the most rigorous scientific criteria. It allows to found a organic geography, non-dualistic, transcultural and transdisciplinary.

For an introduction, see Michel Weber (2003), Sherburne (1965), Franklin (1990), Breuvart (2014) and all DR Griffin works at Suny Press, New York.

For the application to urban planning and the environment, see

Grange Joseph, 1997, *Nature. An Environmental Cosmology*, SUNY Press, New York, 272 p.& GRANGE Joseph, 1999, *The City. An Urban Cosmology*, SUNY Press, 267 p

Ref. 5a – Berque Augustin, (2000), *Ecumène. Introduction à l'étude des milieux humains*, Belin, Paris, 271 pages.

Ref. 5b – Berque Augustin, (2013), *Poétique de la Terre*, (...)

Réf. 5c – Berque Augustin, (2013), *Lectures at the University of Corsica* 30mn to 1:30, Visible (and downloadable) on You Tube, with the following main titles (not exhaustive):

- ♣ "The question of the place: chora Platonic, Aristotelian topos"
- ♣ "Territoriality, spirituality "
- ♣ "How to overcome the acosmie of reality? "
- ♣ "Are there sacred in nature"
- ♣ "Where lies the spirit of place? "
- ♣ "The mesological hypothesis: history, evolution, trajection"

Réf. 6 – SERRES Michel (2000), *Retour au Contrat Naturel*, Bibliothèque de France, p.15b, (passage illustré dans Vaillant P., Thèse figures 11-6 et 11-7 page 322)

Réf. 7 – MORICONI-EBRARD François, *De Babylone à Tokyo. Les grandes agglomérations du Monde*, Géophysys, Éditions Orphys, Paris, 2000, 344 pp.

Réf. 8 – Pape François (2015), *Loué sois-tu, Lettre encyclique « Laudato Si » sur la sauvegarde de la maison commune*, Artege, Paris, 190 pages. See paragraphe n°146 et N°179 for importance of autochthonous people. For Nyikina People exemple, Kimberley, Australie, see Réf.13.

Réf. 9 – GRIFFIN David Ray , « The Subjectivist Principle and Its Reformed and Unreformed Versions », *Revue Process Studies* 7/1 (1977), pp. 27-36. complemented in the work :

Griffin D.R. (2007), *Whitehead Radically Different Post Modern Philosophy: an Argument for Contemporary Relevance*, SUNY Press, New York, 303 pages, Appendix. French translation Henri Vaillant (on demand).

This text is the "bifurcation of nature" of modernity key output, by rejection of dualism and substance. It analyzes all the interpretations of existing authors on the principle subjectivist, and characterizes the whiteheadian release.

Réf. 10 – Berque Augustin (2015) « Peut-on rationnellement parler de « science naturante » (*shizengaku* 自然学) ? », *Scripta Philosophiæ Naturalis*, 7 : 1-19.

This text expresses the same criticism of dualism and substance that Réf.9 with references and Oriental examples, including "wind bell" and Japanese short poems, "haiku".

Réf. 11 – Epperson Mickael (2010), *Quantum Mechanics and the Philosophy of A.N.Whitehead*, Fordham University Press New York, 2004, 261 p.

Réf. 12 – WEBER Michel and DESMOND William, Jr (Eds), *Handbook of Whiteheadian Process Thought*, Ontos Verlag, Frankfurt, Paris, 2008, Volume 1, 691 p. Volume 2, 720 p. Michel Weber a créé les éditions Chromatika, et anime régulièrement des Séminaires à La Sorbonne.

Réf. 13a – Poelina Anne (2008), PhD, *Action Research to Build the Capacity of Nyikina Indigenous Australians*, University of New England, 341 p.

Réf. 13b – Poelina Anne (2011), dans VERNES, T., WATSON, J., WATSON, A., POELINA, N., WATSON, W. & CAMILLERI, J. (2011) *Nyikina-Mangala Mardoowarra Wila Booroo: Natural and Cultural Heritage Plan*. Nyikina Mangala Aboriginal Corporation and WWF-Australia, published by WWF-Australia. Online at:

http://awsassets.wwf.org.au/downloads/wa032_nyikina_and_mangala_mardoowarra_wila_booroo_heritage_plan_1dec11v2.pdf

Réf. 13c – Redstone Declaration of Indigenous Peoples; See ref. 10. Online at : <http://greenfiretimes.com/2010/08/a-declaration-of-the-rights-of-the-peoples-and-the-earth/>

Réf. 13d – A link is imperative to do with the remarkable work of Barbara Glowczewski, Collège de France, met in May 2014:

GLOWCZEWSKI Barbara, Directrice de recherche au CNRS, Laboratoire d'Anthropologie sociale, Collège de France, auteur avec une contribution de Lex Wotton de l'ouvrage

Guerriers pour la paix. La condition politique des Aborigènes vue de Palm Island. 2008, Montpellier: Indigène Editions. Voir aussi *Du rêve à la loi chez les Aborigènes - mythes, rites et organisation sociale*, Paris, PUF, 1991, (362 p.). En lien avec elle, voir aussi :

PREAUD Martin, 2009, PhD, *Loi et culture en pays aborigène. Anthropologie des réseaux autochtones du Kimberley*, Nord-Ouest de l'Australie, 541 p. See summary at <http://eprints.jcu.edu.au/11819/1/01front.pdf> Access to the thesis: <http://www.idref.fr/145408302>

Réf.14a : Dossier thématique Gestion Intégrée de la Ressource en Eau (GIRE) en Afrique éclairée par la pensée organique :
http://www.ngo-unesco.net/fr/pdf/2014-07-28_DOSSR-GIRE-eJM.pdf

La méthode de Gestion Intégrée de la Ressource en Eau de l'UNESCO est à l'adresse suivante :

Réf. 14b : UNESCO, 2009, *IWRM guidelines at river basin level* Online at :

<http://unesdoc.unesco.org/images/0018/001864/186417e.pdf> and
http://www.gwptoolbox.org/index2.php?option=com_reference&reference_id=198&pop

Réf. 15 – Passet René (2001), *Éloge du mondialisme par un « anti » présumé*, Fayard, Paris, 168 pp.

Réf. 16 – Stengers Isabelle (1983), Prigogine Ilya, *La Nouvelle Alliance. Métamorphose de la Science*, Gallimard, Paris, 1979. Sur W, Ch. 3, pp. 109-113 ; 282-283 291-292. Voir aussi :

STENGERS Isabelle, *Penser avec Whitehead, une libre et sauvage création de concepts*, Éd. du Seuil, Paris, 2002, 534 pages. Note : Ch. IV, Points et volumes, pp. 24-36.

Réf. 17 – Dardel Eric (1990), *L'homme et la terre*, Éditions du Comité des Travaux historiques et scientifiques, 1990 (1ère éd. PUF, Paris, 1952), 198 pp.

Réf. 18a – Les 15 démarches de la thèse (2001-2008) : PRH International, Association HFC, Bernard Vachon, FPH (P. Calame, Paris), William Twitchett, AIU (43^{ème} Congrès, 2007 Anvers, « Trialogue ») Patrice Braconnier, Guy Di Meo & Pascal Buleon, Rodrigo Vidal Rojas, Jacques de Courson, M.C. Malhomme, Pierre Sansot, Eric Dardel, Augustin Berque, AITF France.

Réf. 18b : les 13 démarches supplémentaires (2008-2014) : Louis-Marie Chauvet, Etienne Roy et Guy Vernelet, GIRE / IWRM UNESCO 2008, Checland (2005), Flyvbjerg, TRACK-NAILSMA (2012), IWC : Regina Souter/W.C. Denisson/Peter Oliver, Dana Kelly/VA Brown/David KOLB, Peter Cullan, Muecke/Paddy ROE, G. Philippe Vaillant, Christine Black, Barbara Glowczewski.

Réf. 19a : HIRT, Irène. Cartographies autochtones : Éléments pour une analyse critique Indigenous mapping: elements for a critical analysis. *L'Espace géographique*, 2009, vol. 2, p. 171-186 Available at: <http://archive-ouverte.unige.ch/unige:12389>

Réf. 19b : HIRT I., 2009, « Cartographies autochtones. Éléments pour une analyse critique », *L'Espace géographique*, vol. 38, p. 171-186.

Réf. 19c : HIRT I., 2012, « Mapping Dreams / Dreaming Maps: Bridging Indigenous and Western Geographical Knowledge », *Cartographica*, vol. 47, no 2, p. 105-120.

Réf. 19d : JOHNSON J.T., LOUIS R.P., et al., 2005, « Facing the Future: Encouraging Critical Cartographic Literacies in Indigenous Communities », *ACME: An International E-Journal for Critical Geographies*, vol. 4, no 1, p. 80-98.

Réf. 20a – Schutter Olivier de (2011) « Agroécologie et droit à l'alimentation », Rapport présenté à la 16^{ème} session du Conseil des droits de l'homme de l'ONU [A/HRC/16/49], 8 mars 2011

<http://www.srfood.org/fr/agroecologie>

Réf. 20b – CO2

Réf. 21a – Voici les quatre scénarios retenus pour la France :

- NEGAWATT : <http://www.negawatt.org/scenario-negawatt-2011-p46.html>

- ADEME :

http://www.ademe.fr/sites/default/files/assets/documents/20140519_scenarios-2030-2050-synthese.pdf

-Gaz de France :

http://bibliotheque.grdf.fr/fileadmin/user_upload/images/actualites/DNTE_scenarioGrDF_Facteur_4_avril2013.pdf .

- CLER : <http://www.cler.org/Scenarios-de-sobriete-energetique>

Réf. 21b – Lovins Amory B, Lovins Hunter et Weizsäcker Ernst Ulrich von (1997), *Facteur 4 : deux fois plus de bien-être en consommant deux fois moins de ressources: Rapport au Club de Rome* [« Factor Four: Doubling Wealth - Halving Resource Use: A Report to the Club of Rome »], Terre vivante, 320 p.

Lovins Amory B, Lovins Hunter et Hawken Paul (2008), *Natural Capitalism : Comment réconcilier économie et environnement* [« Natural Capitalism: Creating the Next Industrial Revolution »], Scali, 646 p.

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The Benefits of Surrounding Tongji University for Creative Industry Social Capital and Enterprise Community

(A case study of social capital and enterprise community)

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Abstract: This paper attempts to answer the questions that what functions does social capital play in the interaction between university and its surrounding industry, where does the social capital come from and how can we increase the stock of social capital for building a sustainable knowledge community. The enterprise community surrounding Tongji University is a spontaneous creative industry zone, containing a number of companies providing services on architectural design civil engineering, urban design and graphic design. University provides key elements such as social networks, generalized trust, open educational resources and liberal academic atmosphere which contribute to enhancing place-based knowledge community, forming an elastic labor market and facilitating the generation of social capital. Then university as the core of social capital creates relatively high-level and low-cost human capital and more efficient coordination mechanisms based on informal social rules and norms. Because the economic function of the coordination mechanisms is to reduce production costs and transaction costs, the enterprise community gains competitive advantages comparing with companies which must employ a fixed employees and rely on formal social norms like contracts. In return, the development of enterprise community increases social capital stock.

1 Introduction

With the advent of the knowledge economy era, creative industries play a key role in the transformation of urban functional structure under the context of post-industrial trends. Creative industries are characterized by localization and clustering effect which means clusters of creative enterprises in particular places. Therefore, it is worth exploring that the causes behind the creative firms' gathering location. The enterprise community surrounding Tongji University is a spontaneous creative industry zone, containing a number of companies providing services on architectural design, civil engineering, urban planning, urban design, graphic design and other core industries. The total output of "Tongji knowledge economy circle" increased from 1 billion Yuan in 2002 to 15 billion Yuan in 2010, 26.4 billion Yuan in 2014, showing an average annual growth of 15%. Among them, there are 14 high-tech enterprises whose annual revenue is more than 100 million. When interpreting the interaction mechanism of university and surrounding industry, previous studies tended to focus on the spillover effects that knowledge from universities can enhance the surrounding areas' human capital, ignoring the effect of social capital within the university and in the areas surrounding the university. This paper will review the history of the concept 'social capital', summarize the characteristics of creative industry cluster surrounding Tongji University based on data from Shanghai Second economic census(end of 2008), and explain the interaction mechanism, which is generated by social capital, between Tongji University and the surrounding creative industry.

2 Literature review

Firstly, this paper must clarify what is social capital. Then the paper has to figure out the core elements of the development of creative industries.

2.1 *Social capital*

For the understanding of social capital, until the 1980s, scholars have interpreted it as a collective public goods, or refer to the social environmental quality which will impact personal economic returns. Since the 1980s, driving by Bourdieu, Coleman, Putnam, Fukuyama, and Portes, the concept of social capital comes into the discourse system of social science research.

Bourdieu pioneered the study of social capital from social network analysis, pointing out that social capital is the aggregate of social networks, and the amount of social capital an individual has depends on the size of his network of relationships which can be effectively utilized. More broadly, Coleman argued that social capital originated from tightly linked social networks, and it plays a positive role in the creation, transfer and acquisition of human capital. In addition, he suggested that social capital and human capital were usually complementary. Coleman's definition of social capital was from the functionalism perspective, emphasizing the close ties, while ignoring the weak ties, and denied the possible negative impacts of social capital. Putnam acknowledged Coleman's point of view, but stressed the social norms of reciprocity and mutual trust which are resulting from the so-called dense network structure. Putnam has used the term in his study of democratic governance. He argued that social capital can be defined as some features of social organization, such as interpersonal trust, norms of reciprocity, social networks that will promote active participation by citizens in public community activities. As a consequence, the community shares high degree of interpersonal trust, contributing to cooperative actions which can enhance the social efficiency and bring beneficial outcomes. Fukuyama defines the term as 'an instantiated informal norm that promotes cooperation between two or more individuals'. He also noted that nations having an abundant stock of social capital are more likely to build cooperative relations and promote economy of scale. Therefore it contributes to the development of market capitalism, otherwise hinder it. Whereas Portes proposed the term of negative social capital, highlighting the negative effects of social capital like outsider exclusion, excessive obligations for the group members, and using norms to eliminate differences. He had emphasized it was weaker ties, rather than strong ties, that can be sources of new knowledge and resources. Individuals or groups owning weak ties can control and participate in the dissemination of valuable information, resulting in more resources and greater competitive advantage.

Through reviewing the development process of the concept 'social capital', this paper argues that there are three forms of social capital that must be examined: firstly, social capital can be illustrated as social networks; the second form of social capital is informal social norms and collective trust; the third form of social capital acts as a function of facilitating public interests. Compared with previous empirical research tended to examine social capital at individual level, this paper will illustrate the effect of social capital at group level. It will emphasize the collective property attribute of the social capital and focus on illustrating the interaction mechanisms between Tongji University and the surrounding creative industries from the perspective of collective social capital. The analysis of social capital will conduct from three angles: social networks, informal norms and collective trust, and function of promoting the collective interests.

2.2 The core elements of the development of creative industries

According to “embeddedness” concept proposed by the new economic sociologist Grnaoverttor, economic activities are rooted in the networks and institutions. Moreover, the network and institution is constructed by the society and has cultural significance. Since creative industry as an emerging industries, is the integration of culture, technology and economy, the spark of creative ideas depends heavily on face to face communications. Therefore creative industries demonstrates a notable spatial agglomeration characteristic. The gene of creativity will be rooted in the local organizational structure, forming formal or informal networks of exchanges and cooperation. In his book ‘creative city’, Landry proposed that creative industries embedded in the creative atmosphere, and creative atmosphere is a spatial concept. The core elements of creative atmosphere include both hardware and software. Hardware refers to infrastructure which can provide physical entity for innovative activities and build social networks, such as research institutions, educational institutions, cultural and sports facilities, and public places. Software refers to social networking, informal norms, and community participation which can promote creative thinking between individuals or among group members and organization through the network.

When concerning which kinds of capital creative industries make intensive use of, the answer is human capital and social capital, rather than physical capital. Physical capital, including various forms of wealth, exists outside social participants, but can be occupied by them. Human capital, such as knowledge, skills, creativity, internalizes in social participants, and the stock of human capital will not reduce along with using it. But repeated usage will lead to the reproduction of human capital. The third form of capital is social capital, which exists in the form of network of relationships between various social participants. In essence, social capital is the transferable resources embedded in the social networks. Anyone in the social network social cannot own such resources unilaterally. He can only accumulate and utilize such kind of resources through network itself. In short, social capital originated from interpersonal social relations. This kind of relationship is stable, not immediate. Additionally, unlike rigid relationship based on contracts, emotional involvement and behavior can bring changes to such kind of social relations.

This paper argues that the links between place and creativity can be important and influential in the creative process. And the core elements of the development of creative industries include two aspects: hardware and software. Hardware mainly refers to the specific urban space formed by the creative atmosphere and facilities, especially the public space and public facilities. Software is social networks of a certain region, and informal social norms, the learning organization culture, and local brands.

3 Characteristics of the creative industries cluster surrounding Tongji university

Based in Shanghai Second economic census (end of 2008), this paper intends to select the creative firms located in the study areas. Firstly, according to the census ID ‘310110009’ of Siping road, we can filter companies from all kinds of industries which are located in Siping road, Yangpu district, Shanghai. Then according to the national economy industry classification standard (GB/T4754-2002), we can select the creative companies whose industries code belongs to the creative industry. As a result, there are 624 creative

enterprises located at Siping road. Finally further screening the core industry of the surrounding areas of Tongji University: engineering technology and planning management, we find out a total of 301 enterprises. Then based on descriptive statistical analysis, the characteristics the creative industries cluster surrounding Tongji University were analyzed.

3.1 Spatial extent

Survey area locates in Yangpu district, Shanghai, with a total area of about 2.6 square kilometers (Fig1). The region centers on Siping road campus of Tongji University, and contain s three campus of the university. The north side of the survey area is zhongshan north 2 road. And the southwest side of the survey area is Dalian west road. Siping road is the main channel that connect survey area with the outside areas.



Figure 1: Location of the survey area

3.2 History of development

The rise and fall of Architectural design, urban planning and design, civil engineering consulting is closely related to the phase of a region’s urbanization development and the real estate market’s level of prosperity. Since the late 1990s, housing production and consumption in China started to transform from command economy to market economy. Accompanied by the rapid urbanization process, the prosperous real estate market has formed a strong market demand for engineering consulting, architectural design, and urban design industry. Therefore we can witness a foundation peak of creative companies around Tongji University during 2003-2005 (Fig 2).

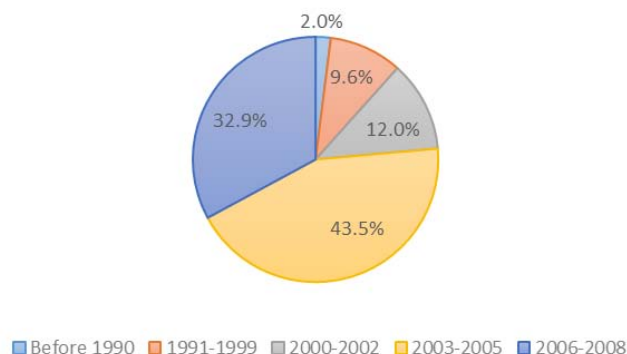


Figure 2: Percentage of enterprises opened in different years

There are tightly links between surrounding creative industries and Tongji University. The preponderant disciplines of Tongji University: architecture, urban planning, landscape and civil engineering, provide abundant qualified workforce and the latest technology which guarantee the competitive advantage of creative industries around university. For instance, College of architecture and urban planning (CAUP) contains three core disciplines: architecture, urban planning and landscape. And the average amount of graduates from CAUP are about 600 per year (Fig 3). Meanwhile, the social relations between students, teachers, alumni, and colleagues have kept on updating and accumulating. Social capital which is rooted in and around Tongji University is continuously reproduced.

Year	Bachelor	Master	PhD	Total
2012	228	286	43	557
2013	200	276	52	528
2014	353	281	50	684

Figure 3: The number of graduates in CAUP 2012-2014

3.3 Characteristics of the creative industries cluster

Based on descriptive statistical analysis, the characteristics the creative industries cluster were illustrated.

3.3.1 More small enterprises than medium-size and large enterprises

Through conducting statistical analysis of employment size of 301 enterprises in engineering technology and planning management industries, it can be found that employment size below 10 accounts for 61.8% of the total business companies (Fig 4). Because in design industry, employers must make a large investment on human capital and social capital, while less investment in fixed assets, the foundation threshold of starting an enterprise in design industry is relatively low. Moreover, in financial operations, employment models, business expansion and other areas, small enterprises have flexibility and resilience, which large companies can hardly own. In addition, small enterprises can response to changes in market demand faster. Meanwhile to small enterprises, the corporation social capital can be substantially equivalent to the social capital of entrepreneurs. Therefore, the entrepreneurs can induce and control the positive effect of his social capital for business development.

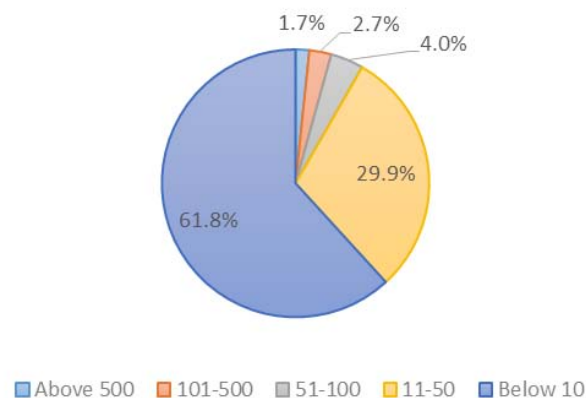


Figure 4: percentage of employees of different size in enterprises

3.3.2 Main industries: engineering technology and planning management

According to the national economy industry classification standard (GB/T4754-2002), a classification statistics of 624 creative enterprises surrounding Tongji University was conducted. As a result, engineering technology and planning management (industry code: 767), which architectural design, civil engineering, urban design and planning belong to, accounts for 60.7% of all enterprises (Fig 5). The second place is the consulting and investigation services industry, accounting for 17.5%. The cluster's core industry greatly fits the professional advantages of Tongji University.

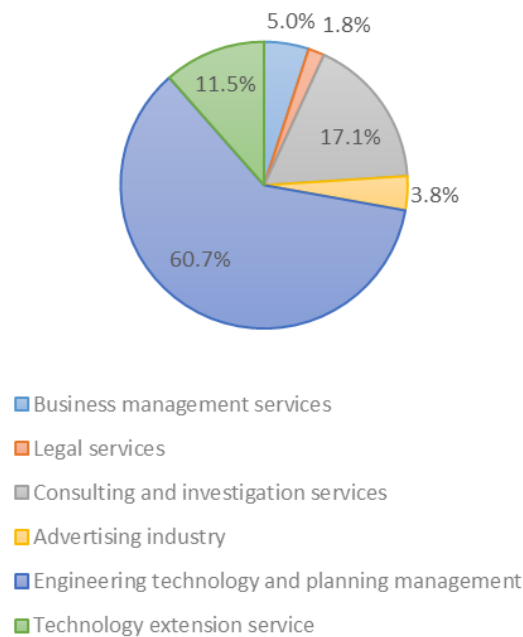


Figure 5: percentage of enterprises in different industries

3.3.3 The entrepreneurs and employees of surrounding creative industries: teachers, students and alumni from Tongji University

80% of the creative industries surrounding Tongji university is founded by teachers, students and alumni from the university. Teachers of the university and the graduates are the main driven force of entrepreneurship. By establishing studios, or running company, they can undertake actual project.

4 The interaction mechanisms of the university and surrounding creative industries from the perspective of the social capital

The mechanism of social capital accumulation around the university depends on the high-density social network system based on the social relations between teachers and students,

students, alumni, colleagues and so on. It also relies on information transferring and sharing mechanism based on social network system. In addition, high levels of interpersonal trust among group members, the monitoring mechanism relying on the reputation effect and social exchange mechanisms based on the informal norms are essential to the social capital accumulation.

4.1 High-density social network system

Contrary to science and technology parks based on the merchants, industrial clusters are formed on the basis of the university around the Tongji University. As a teaching institution, University always need to spend a longer period of time to complete the process of training qualified personnel (four-year undergraduate, three-year graduate, doctoral degree for three years or more). In fact, entrepreneurs of the surrounding industries have been living and learning for a long time in this space before starting their business. This period is helpful to accumulate social network relations, including students, teachers, classmates, friends, employer during internship and clients when assisting their tutors to do the projects. All of these have provided social capital for their entrepreneurship, such as project sources, access to valuable information, trusted partners and the directors in charge of business development or project implementation. These will soon be transferred into economic returns once they started their own business. Naturally, due to the familiarity and trust between each other, they only need to pay low transaction costs in the interactive process. It is very helpful for the development of emerging enterprises. This mutually beneficial relationship between industry and university continues to reproduce by labor mobility existing in surrounding creative industries and student mobility in school, which forms a long-term effect of the accumulation of social capital.

4.2 Information transferring and sharing mechanism

University, as an institution focusing on knowledge production and dissemination, often is the birthplace of the advanced technology, theory and concepts. New technologies and knowledge will spread quickly relying on the high-density social networks around the university. Existing studies have shown that university has notable knowledge spillover effect on its surrounding areas. University continually produces public knowledge, and improve the human capital stock surrounding areas by publishing up-to-date scientific achievements, holding exhibition, organizing academic exchange meeting, conducting short-term refresher training and providing a variety of informal communication channels. The interaction between Tongji University and the surrounding creative industries is a good example of the integration of industry-university. University provides qualified personnel, technologies and social capital for the development of surrounding industries. Meanwhile, the surrounding industries provide feedbacks like changes in market demand to university and provide practical experience. University and surrounding industries form a sustainable learning organization culture, such as the surrounding institute will conduct seminars to share project experiences and achievements. College students, through lectures and face to face communication with professional planners, can get practical knowledge in the discipline. University offers the openness of academic conferences, designer salons and other public exchange places. Public space characterized by intensive interaction is important space for informal learning and promoting positive innovation. Surrounding employee can acknowledge the latest scientific achievements of the related disciplines and design concepts, as well as access to industry information by communicating with teachers and students in school. It is worth paying attention to the spread of new ideas and technology based on Social network sites (SNSs). With the extensively use of SNSs such as Wechat, Weibo and QQ, online and offline networks of relations tend to be mutually reinforcing, which are conducive to effective information channel, as well as dissemination of new ideas and new technologies.

4.3 High level of interpersonal trust and monitoring mechanism relying on the reputation effect

One of social capital-rich manifestation is high level of interpersonal trust among group members. Trust often acts as a coordinating role in social networks, and trust as a moral resources, can make one's vision beyond their own self-interest category, which means group members under uncertain conditions, for instance, whether or not others will comply with the agreement, tend to choose cooperation. Through the promotion of cooperative actions, high-trust society will enhance its operating efficiency, promoting public interests. At the same time, the behavior of group members will build reputation in the social relations. Because opportunities for contact between group members are abundant, if a certain group members have a bad credit record, it is easy to rely on the networks to conduct the collective reward-punish system, and we will remove such kind of member from the social network.

4.4 social exchange mechanisms based on the informal norms

Informal norms is a concept compared to formal norms such as contract, institution, policy etc. The informal norms which are generated by interactive networks of social relations, can be reinforced by the evolutionary changes in social relations. The informal norms also have constraints on the behavior of group members, and have more flexibilities than formal norms. Compared with contract, hierarchy and bureaucratic rules which represent the terms of formal coordination mechanism, coordination based on informal norms, can significantly reduce the associated transaction costs. Taking temporary employment system as an example, this kind of employment is generally used in creative industry, forming an elastic labor market and facilitating the generation of social capital. Since the small companies generally are sensitive to the cost, temporary employment system provides them with a large number of qualified employees: students in the university. College students who directly involved in the project, can obtain practical experience, cultivate the market consciousness, and expand the social relations. While the enterprise through the temporary employment system can acquire a higher level of human resources, and reduce the operating costs.

4.5 Local identity – building a design brand of Tongji University

The sense of identity to Tongji University and its surrounding areas provides cultural identity on the development of university and industry. It makes it possible that different enterprise stakeholders establish close connection between each other and cooperate for maintaining a common design brand.

5 Conclusion

In this paper, the interaction mechanism of Tongji University and its peripheral creative industries is examined, illustrating the mechanism of social capital accumulation within and surrounding the university areas. Because the economic function of the coordination mechanisms, which is generated by social capital, is to reduce production costs and transaction costs, the creative enterprise community gains competitive advantages comparing with companies which must employ a fixed employees and rely on formal social norms like contracts. In return, the development of enterprise community increases social capital stock and reproduce social capital. The results of accumulation and proliferation of social capital are two: one can bring interpersonal trust and norms of reciprocity promoting collective participation, and the other is capable of creating a stable, integrated structure of

social networks. Because social capital can be created and used endlessly, the Tongji surrounding creative industries achieve sustainable competitive advantages.

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Open and Closure – Two Methods of How the College Help to Create a Knowledge City

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Abstract:

The interaction between local neighborhoods and educational facility is frequently neutral or even negative. Admittedly the open or mixture concepts created beautiful blueprint of the future city, and undoubtedly the new technology and advancing education ideas provide this possibility. However, considering many other factors like safety, independence, sense of belonging, closure should be regarded as an indispensable part of educational activities as well. Learning from many exploring cases, we could easily find both open and closure are properties of modern colleges. There are two methods to create a knowledge city depending on the specific features of the college and the neighborhoods it collocated in. Both open and closure should be considered as the methods to create the future knowledge city. Only taking enough respect to both college and city, the city would grow in a sustainable way.

1. Introduction

To create a knowledge city, the interaction between educational attainment and city must be taken into consideration. Any unilateral design isolating these two parts will not help to archive the goal. Many sociologists and educationalists have concerned the negative interactions between neighbors and educational facilities for a long time. However, this problem still remains.

Specifically speaking, this ‘interaction’ could be seen as the level of openness of the campus. At first glance, it seems the higher level of openness the more interactions will be happened. However, it is hardly to find a school without wall (no matter the physical wall or invisible spatial boundary). That is to say, keeping a certain extent of spatial closure has its practical significance.

Open and closure are two opposite but co-existence features of school. Besides the technical design strategy of open campus to neighborhood, following issues should be also taken into consideration to archive a benign relationship between school and city:

- The necessity and feasibility of open school to public;
- The balance between open and closure
- The otherness of the level of openness when facing different urban context

2. Open and Closure – two methods of school design

2.1 Open school in the ancient city

Nowadays, ‘school’ is not the only connotation meaning of education facility. Or in other words, the denotative meaning of ‘school’ has been extended. However, because of the simple educational system, school could be regarded as the whole meaning of the educational attainment in the ancient time.

Unlike most people imagine, the schools in the ancient time were not as closed as modern schools. On the contrary, they opened to all citizens and constituted the urban public space as a crucial part.

Peripatetic school, a school of philosophy in Ancient Greece, is often seen as the origin of modern school. It is one of the most famous educational space (rather than just a campus), which is established by Aristotle. The name of this school comes from two Greek words ‘peripatetikos’ and ‘peripatoi’. ‘Peripatetikos’ means itinerant, wandering, meandering, or walking about and ‘peripatoi’ means colonnade. (Hornblower and Spawforth, 2005) The former word tells us the form of teaching. It is quite a free and open educational activities. While the later word hints the place where Aristotle gave the lectures and lessons. (Furley, 2003) Colonnade is undoubtedly the core part of the ancient urban public space. In a word, school in ancient time was considered as a common space open to all citizens.

Admittedly, the simple urban structure and educational system is the basis of this entire open school. However, we can still find the high level of openness of the school can benefit the city so much. And it shows us an existed possibility to create a knowledge neighborhood with open school while maybe in a small scale. The essential purpose of open the educational facility to city is to maxim its positive externalities.

2.2 Closure school in the modern city

Undoubtedly, a highly closed campus does not benefit the proposed knowledge city. And there are a plenty of researches revealing the necessity and advantage of eliminating the gap between school and city. However looking back to the reality, few so-called learning-

neighborhood and open-campus projects are satisfying. The reason why all these fantastic goals are hardly archived may be that we ignored the existence value of closed campus.

Safety is the first and most important characteristic of a closed space. A closed campus brings strong spatial isolation, which provides security assurance. Enclosing walls not only keep potential danger and interference out of school, but also make students and faculties feel safe psychologically.

Secondly, closure and isolation, to some extent, can provide a sense of belonging and eliminate social class antagonisms. School is always regarded as a pure land or an easy society just because of its independence. The case of Queen's University of Belfast is great example to show how an educational facility benefits the city by providing a closure space. Queen's was founded in 1845 and independent both academically and politically. The Northern Ireland, where Queen's located, was facing a serious social problem: ethno-national conflict. Religion segregation was dramatically obvious between Roman Catholic and Protestant communities. Queen's offered a common place where blend of Roman Catholic and Protestant. University also issued 'A Joint Declaration of Protection' to positively response to the Northern Irish problem. Queen's was created as an area identified with safety and equality. Both students and faculties fell secure enough to interact with others despite of the social segregation. Moreover, Queen's is no more than a mile from the city center and even less from some of the most serious flash points of ethnic confrontation. (Van Der Wusten, 1998) This closure environment bridges two groups and reinforces the communications.

In the modern city, closure campus is crucial and necessary to both school and city. Completely open school is hard to exist in the realistic society. In one word, closure is an indispensable feature of future school as same as open.

2.3 The new trend in the future city

Knowledge city, as a development strategy, is a basic idea of the construction of future city. At E100 Roundtable Forum 2004 in Barcelona, Knowledge City Manifesto was published. It indicates 11 key points of knowledge city. Seven of the eleven points are talking about an open and fully encompassing education system.

In the future city, school is not the only one, which takes the response to education, but together with cultural facilities, sports facilities, mass media, civic center and even the street itself. Interactive teaching mode, emphasis on innovation of urban industry, the lifestyle of lifelong learning, more and more low cost for the exchange of information, all these indicate the role of school in the future city will change. Completely closed campus will not be able to adapt to future demand for the development of the city, and completely open campus seems lack of rationality either. Finding the balance between open and closure is as important as exploring the way of how to open school to city.

3. Exploring cases of educational related design

From the middle of last century, many urban planners, architects and relevant experts had begun to do some practices and put forward a lot of interesting ideas of how improve the connection between educational facilities and city. Some of them proposed new concepts at a regional scale aiming to revitalize an urban area with educational system; some designed new campus to open the school to public; some built up a new institution to reinforce the interaction between educational facilities and neighborhood. By studying and summing up the concepts of these exploring cases, we can deepen our understanding of this issue.

3.1 Pottery Thinkbelt - Cedric Price

Cedric Price is a famous British architect and architectural educator. From "Brain Drain" to the "Knowledge Economy" is one of his most important architectural theory. To put it simply, Price proposed to promote the development of urban economy by effectively integrating the urban regeneration with education system upgrade.

North Staffordshire is known as Britain famous ceramic production area nearly 200 years. Since the third industrial revolution after World War II, this kind of traditional industrial area began to decline. In the project Pottery Thinkbelt, Price proposed turning this desolate industrial district into an enterprises-universities-researches integration urban development belt. The major measure is recapturing the abandoned factories and railway lines as part of the new education system infrastructures in Pottery Thinkbelt. (Rattenbury and Hardingham, 2007)

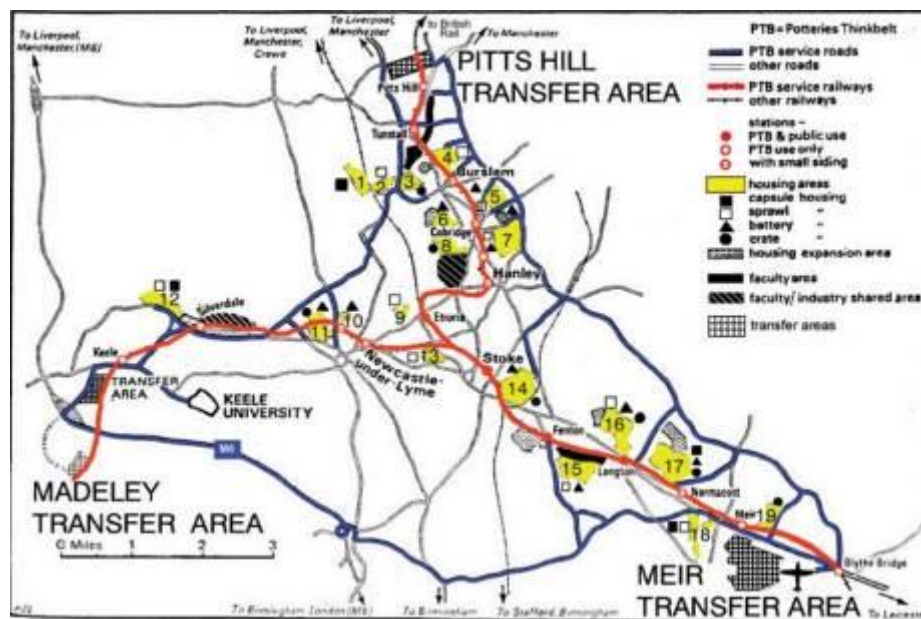


Figure 1. Regional overall plan of Pottery Thinkbelt

Educational facilities promote industrial upgrading

In the development belt, three new functional zones, which connected by the old railway lines, are set up. Besides building up a certain number of new dormitories, office buildings, administrative buildings and basic public service facilities, many old factory buildings are renovated as new teaching area. Utilizing the old large cranes, capsule educational units could be freely combined. The plug-in capsule units will be distributed depending on specific urban context and various stages of development. With these physical constrictions, the new colleges and schools will help to promote the industry transformation.

Community infrastructure supports the development of education

In Price's planning, new schools and colleges will inject new vitality into industrial district. On the other side, urban community helps these new schools becoming more competitive by providing distinctive social resources. Local enterprises and research institutions can easily share ideas and resources with colleges. The industry transformation and economic revival will create more jobs and fiscal revenue. Better job market and urban environment engages highly educated talents to stay here to do scientific research, literary and artistic creations and other cultural activities.

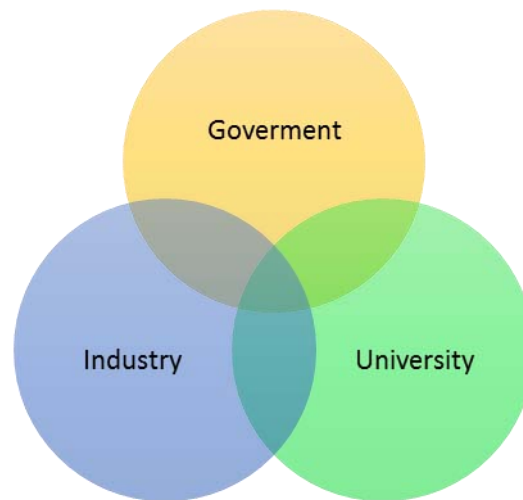


Figure 2: A Triple Helix of University-Industry-Government Relations

Although has not been implemented, Pottery Thinkbelt provides a strategy of how to establish the relationship among government, industry and college in the regional macro scale. To a knowledge city, government together with industry and educational institute are the three main factors. (Leydesdorff. 2013))

3.2 Bocconi University – OMA

In 2012, Bocconi University (Italy) plans to build a new campus. Therefore, it organized a worldwide competition for planning schemes, which called “Campus Design for the New Millennium”. It expected to redefine the relationship among students, campus and the city by means of architects’ thinking. As the authority in architectural field, OMA is also thinking about the issue about the role of education facilities in the city of the new millennium. Although the program they put forward wasn’t implemented, it provides a valuable exploratory idea.

The integration of teaching and social life

Koolhaas, the chief designer of OMA, indicates the future campus should be able to ‘represent a three-dimensional re-learning of humanistic values’. (OMA, 2012) Then how to implement it? That is to break the independent and closed mode of modern campus, and turn them into outgoing learning space with positive interaction with the surrounding communities. It allows students to experience all-around the city and the society, and allows all the citizens to actively participate in the learning and educational activities.

Semi-open and Share-based Campus

For well-organized educational activities and the safety of teachers and students, a completely open campus is certainly unrealistic. After researching the daily operation of the university, OMA divided the whole campus into two relatively independent parts, outgoing and incoming. While the layout of the two parts is around the central square open to all. The designers call outgoing space with a form of annular arena as the city’s “theatre”. Numerous educational and communicational activities are carried out here and full integrated with social activities. The A-shaped tower is a relatively private area for students’ internal activities and living.



Figure 3. Section of Bocconi University, OMA

In addition to the horizontal partition, the semi-open system of the campus is more reasonable due to the vertical layered structure. The hall, the main lecture hall, and the space for urban functions like markets and cafes are arranged on the ground floor. While the classrooms and other relatively quiet functions are arranged on the upper floor. And the residential tower with thirteen floors has its own internal passage linked with other open space.

Koolhaas brought forward a visionary and practical solution for the future urban campus design. New campus in the city must have active interaction with the surrounding communities. Besides, the educational mode of the new millennium will be transitioned from one-way teaching into two-way or multi-way communication-based learning.

3.3 Kominkan – Japanese community education center

Kominkan is a core facility for social education in Japan, which is established in the post-war era. It plays an important role in social education of Japan. In 1960s, with the rise and promotion of the lifelong education idea, Kominkan became a base opening to all the citizens to comprehensively promote lifelong education and spread lifelong learning idea. Compared with school education, lifelong learning has broader learning space and forms in the society. To build a lifelong learning system, the school-centered concept must be changed to make the learning achievements at all stages of life widely recognized and evaluated.

Kominkan is a type of community educational facility serving all citizens in the neighborhood. After half a century of construction and development, the Kominkan has spread all over the Japan till now. According to the statistics of Japan's Ministry of science and technology (MEXT) in 2002, the total number of Kominkan in Japan was 17947. Even more the set rate of some cities had reached 100%.

Relying on its own characteristics, the guarantee of laws and regulations, and the support from citizens, Kominkan is a very successful social educational system. Since the Kominkan system was established, Kominkan has gotten help and support from government in forms of laws, internal industry documents, urban development plans and so on. Additionally, in so many years, it has kept modifying and adjusting based on social development and urbanization. (Wang, 2012)

- Acts:

Establishment and Operation of Kominkan (1946)

Education Basic Law (Kyouiku Kihonhou) (1947)

Social Education Act (1947)

- Industry Documents:

Developing Society and the Operation of Kominkan (1963, Social Education Bureau of MEXT)

Due Modes and Today's Indicators of Kominkans (1967, Japan's National Kominkan Union)

- Urban Development Plans:

Long-term Plan of Social Education in Tokyo (1968)

Pursuit of New Kominkans' Images (1974)

Compared with other knowledge city planning, Kominkan is a very inspiring system that created in the community educational construction practice of Japan. And different from open schools, Kominkan itself is a complete social public space. On the other words, it is a 100% open educational facility.

Learning from Kominkan in Japan, for the design of the open part of school in the future knowledge city, making the target group clear and opening educational activities with higher autonomy are more smart measures.

3.4 Vocational Education Park in Fuyang

Vocational Education Park (VEP) is located at the west side of Fuyang downtown with an area of 8.76 square kilometers. In the development plan, VEP will keep and extend 9 existing schools, build up 2 new schools and reserve 7 pieces of land for future educational using. Different from college park, Schools in VEP are mainly secondary vocational education and higher vocational education colleges. Students here are younger than the ones in college city. And the goal of vocational education is train professional technicians corresponding to social needs. (Duan, 2013)

The purpose of this plan is to strength the connection between VEP and city. On the basis of infrastructure sharing and socialized management idea, the plan will try to maximum the externality of public infrastructures, reinforce the accessibility of these facilities, and maintain harmonious order for both colleges and city. Eventually, VEP will turn this area from an education zone with single function to an urban learning community with high diversity.

Considering the operability and different needs from schools, three measures are taken to share educational resources:

Set up a three-grade model of sharing

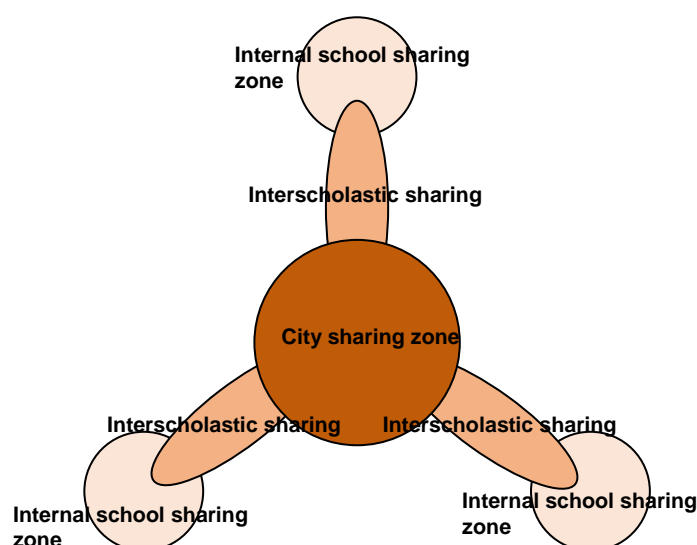


Figure 4. Diagram of three-grade sharing.

- The first grade: city sharing zone。

The infrastructures in this zone will serve the whole city rather than the people in VEP, including social education school, scientific research institute, large public sports facility, and living service facility;

- The second grade: interscholastic sharing zone

The sharing facilities here mainly provide integrated services such as education, consulting, accommodation and professional practice to students and faculties in VEP.

- The third grade: internal school sharing zone

Infrastructures serves teachers and students inside single school while connecting with the city public system.

The open space of schools in VEP become part of urban green landscape system.

Each school's internal core landscape area is a branch of urban landscape system, and well connect with urban green space. In this case, the largest landscape belt is set up combining with the Qiyu River. And the first grade sharing zone utilizes this green belt as the spatial main framework. Considering the commuting pattern of young students, cycling green way system is set along the main rivers and road. A continuous open space experience will reinforce the sense of place in VEP.

Keep communication and coordination with schools, government, enterprises, residents and other stakeholders during the whole process of planning.

By constantly communicating with different groups, various specific requirements of land use and infrastructure can be reflected in the final drawing. The problems of land property right caused by the fuzzy spatial boundary in sharing zone can be pre-solved. So in the future, each sharing resources can be easily accessed by public and have their clear administrators.

Still many problems exist and impede the implement of learning community.

- From the perspective of government policy, to evaluate a school the ministry of education and other social institutions set up a construction standard of all infrastructures. However, the sharing resources are taken into account. To meet the criterion, schools have less motivation to share resources with others and sever the neighborhood.
- From the perspective of administration, different schools belong to different departments so that contradictions among them are hardly coordinated.

From the perspective of construction, schools are not willing to pay for co-construction project but waiting for the government or social investment. Therefore the great investment makes the sharing area become sluggish building area. And the higher sharing grade, the problems are more serious.

3.5 Inspiration and experience

As mentioned at the beginning of this section, there are a plenty of distinctive design and idea for open school. However, to archive the goal of knowledge city and open the school to city in a more realistic way, we can learning some experience from these cases:

- Clarify the target group and their real needs to open the suitable part of school to them;
- Keep a reasonable level of openness and spatial boundary to maintain the independence of school;
- Besides the planning work and architecture design, support from policies and legislation is need;
- From the beginning of planning to the construction and operation stage, multi-collaboration among school, government, enterprise and community is the key factor.

4. A general strategy of balancing open and closure from urban planner perspective

After defining the concept of school in the knowledge city and confirming the possibility of open school by tracing the history of school, it becomes a common point that education facilities should open to city. Then a number of case study has shown some principles of how to design a school in the knowledge city. A general strategy from urban planner perspective comes out. Three steps help us know how to affirm the level, content and spatial design method of open school.

4.1 Define the role of schools in the neighborhood

Schools in different urban conditions will play different roles to meet the specific requirements of neighborhoods. Essentially, it is a method of finding out the level and content of open school depending on requirement of city.

Despite of slight differences within these schools, three main types of roles in neighborhood could be summarized: schools at the center of neighborhood play the role as regeneration catalyst; schools adjacent to different neighborhoods play the role as bridge; schools on the edge of new neighborhoods play the role as urban growing engine.

- At the center of neighborhood

The specific aim of schools at the center of neighborhood may differ because of the urban issues. However, the basic role of the school can be defined as a regeneration catalyst, which aims to transform the life-chances of individual people and respond positively to the family and community contexts. As a senior local authority officer in Forest Villas stated 'Schools can help to raise aspirations in communities by encouraging families to invest in education.... It's about regenerating people'. (Crowther, 2003) The 'aspirations' mentioned above is about the effecting made by schools that transform the local people's underlying attitudes and value system. In this pattern, what should be opened to public is more about the culture place and family education classes rather than playground.

- Adjacent to different neighborhoods

The school located adjacent to different neighborhoods could be considered as a fuzzy boundary of different groups. More than providing a public resource, a common place bridging different groups becomes the main role of schools in this situation. "Our education institutions should be leading the nation in encouraging the expression of all views and the pursuit of the best views..." (Madness, 1990) In the divided urban context, or say adjacent to different neighborhoods, schools do have the responsibility to promote the community integration. In this pattern, school would better to keep a higher level of closure to maintain the isolation and independence.

- On the edge of new neighborhood

As the rapid pace of city growing, many new neighborhoods are under construction and partly used. Schools play a crucial role as a heart of neighborhood. It identifies the culture and social position. (Toffler, 1968) And schools also provide possibility access to high-educated human resources. Schools bring the neighborhood vitality and learning atmosphere. Therefore, education facilities could be regarded as a start point in the new neighborhood. In this pattern, research institution and professional education are welcome to the neighborhood.

4.2 Deconstruct school by its spatial attributes

Generally, a highly opened school is much welcome by the neighborhood. However, closure is another essential method of designing a reasonable school. Through the development of more than a century, the main functions of the modern school has been identified. (Baker, 2012) School can be deconstructed into several sectors based on different functions: classroom building, teaching auxiliary, office building, sports venue, cultural events venue, service facility, dormitory and open space. According to P.Nair and R.Fielding's opinion, every part of school space corresponds to its unique psychological, physiological and behavioral attributes. (Nair and Fielding, 2005) Depending on these attributes, a hierarchy of openness can be created. So from the perspective of school's need, different part of school should be designed with different design principles and space handling techniques as the OMA did.

In order to facilitate the operation, the openness hierarchy can be boiled down to a three-tier system: Open to all part; Share with limitation part; Internal use part. Learning from the case of Pottery Thinkbelt and Fuyang vocational education park, this system will help urban designer to coordinate education facilities with city at the policy and land management level.

4.3 Reconciling the city and school versions

However it is a problem to reconcile the city and school version well. A variety of positions will lead to different design methods of open or closure. Out of respect for each individual, the requirement of closure should be prior to the willing of open. For example, many contradictions will be found in the urban design of a conservatory in an elderly community. To the students and faculties, they need an extremely quiet music classroom for practicing and teaching. To the local residents, a place for musical activities is also needed. But it will not be a good idea to share the music classroom. On the contrary, keeping the independence and isolation of music classroom should be the key point in the design process. Protecting the interest of community is important as well. For the elderly people, a peaceful dwelling space is the most primary demand. So creating two mutual independent residential zones with their own auxiliary facilities and open spaces is a sustainable way to develop this neighborhood. In one word, well handling the closure part is the first and most important measure to ensure the open part functioning sustainably.

5. An application project in Tangier

5.1 Background

Located at the gateway to the Strait of Gibraltar on the North African shore of the Mediterranean, Tangier presents a unique case of a rapidly globalizing city-region. After a short time of depression, which caused by an unstable political transition, Tangier's economy jumped impressively accompanied by a rapidly city growing. This kind of bombing urbanization is attributed to rapid industrial progress and large number of immigrants. The level of education facilities is lagging far behind the development of city. Not only talking about the quantity but also the positive impact should have.

Taking an overall review of schools in Tangier, the wall of school comes into mind as the most impressive character. For the security considering and more or less influenced by Arabic social structure, the clear spatial closure isolate the learning activities from daily life.

School of ibent Toumart is a college located on the edge of city near by the industry zone. The campus is separated by an expressway and surrounded by village, which will sooner become new community of city. School planning must begin with certain assumptions about the future of the kinds of cities they are designed to serve. According to the existing policy and planning of urbanization, this neighborhood will be developing by retaining the existing

residential function. (Brini, 2013) So the future target groups for this school should be indigenous people and new residents who potentially working in the industry zone.

5.2 The role of school – Bridging and Promoting

The south part is the industrial zone of Tangier and north part is the residential area. And close to the industrial area there is a college, which has few connections with the companies inside the industrial area. As it has dual attribute in neighborhood classify: it is located on the boundary of different neighborhoods and city. The role of this project is not only to bridging two groups but also speeding up the pace of urban growing.



Figure 5. Urban context

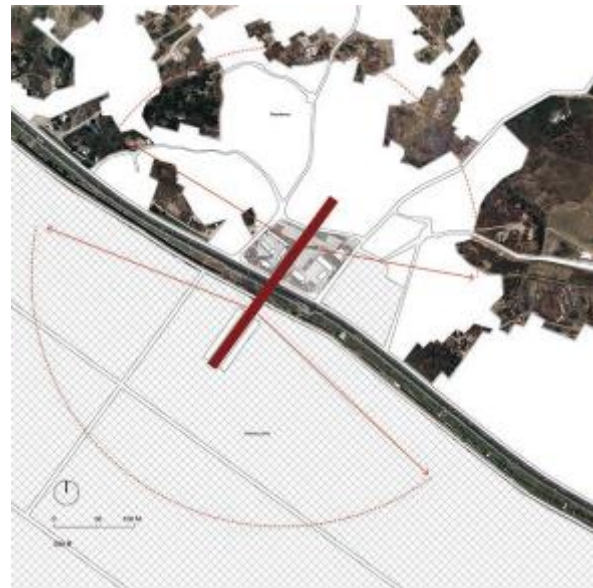


Figure 6. Bridging and promoting

Apparently, the physical barrier between School of ibent Toumart and companies in industry zone is the largest problem of turning the college into a growing engine. However, the invisible disconnection between the education system and enterprises is the underlying issue. Establishing a cooperation relationship benefits all the residents here: a better knowing of practical works could clarify the teaching objectives; cooperating with high education institute will improve enterprise innovation ability; sharing of some science and technology infrastructure will substantially reduce cost. The new educational center will serve both residential area and industry zone. A better development of economic will provide more jobs and then accelerate the pace of urbanization. And this growing will significantly reduce the unemployment rate here and raise the willingness of getting higher education. The school will not only be the study place for students but also an idea-exchanging plaza, which brings vitality and energy into neighborhood. Increasing return from this virtuous cycle will be the crucial factor of sustainable development of neighborhood.

5.3 Urban design strategy

The project is mainly considered as a directly link between the education and industry. To deal with the extremely difference between two parts, a complete geometry form is proposed to reinforce the sense of place. The big scale wall can easily fit into the industry area. And the small-scaled spaces inside the bridge are responding to the residential neighborhood. Changing the expressway into an underpass way keeps the continual of open space and makes better use of the obsolescent green belt which is isolated by two motor ways.

Creating a new ground floor gives different education facilities a closer connection. This floating new ground also provides an interesting section to show the balance between open and closure. The space is divided into four quadrants by the floating flat and expressway.

Each quadrant has its own attributes and openness. Generally, the upper two quadrants are more closed than the other two. The facilities in these two quadrants are for inner use or sharing in a limited time or with specific group. The space in the lower quadrants is open and connected to the city. The north end of the bridge is mainly feeding the local residence and students in the school. So the scale here is much smaller than the other side. The idea of the connection point in the industry area is keeping the original size and structure of the factory and turning the function into the educational usage. The exhibition hall and studio is designed mainly for enterprises in the industry zone. And it can potentially become the interaction space for students and labor market.

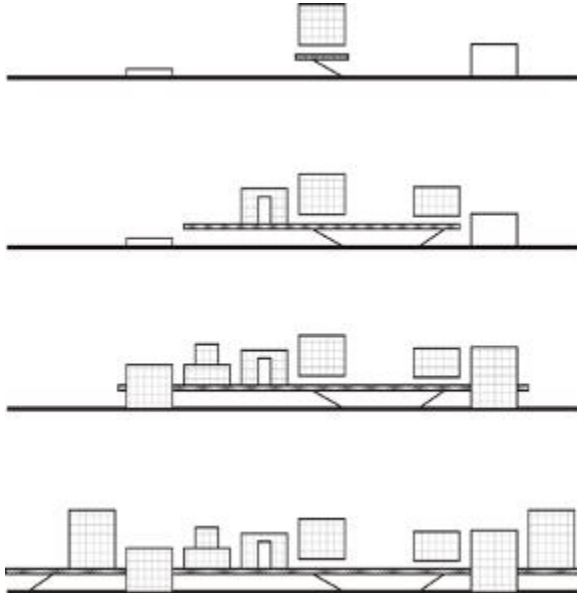


Figure 7. Growing process of educational flat

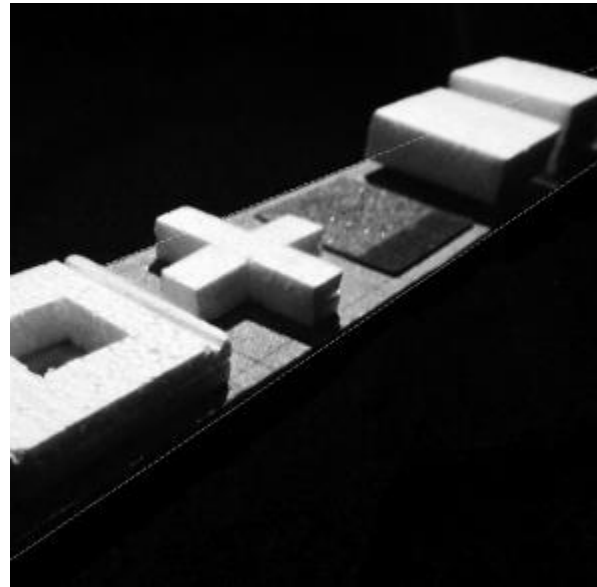


Figure 8. Floating flat

And because of the comparatively large scale of education buildings, such as library, teaching building, laboratory, and this new ground floor provide an extra urban space. Moreover, this floating ground is more talking about the investment pattern of this continually construction. In Morocco, all levels of education have two types based on its investor: public one, which is totally free to people; private one, which is expensive however providing a better education. So a tripartite cooperation could be the reasonable way to develop this comprehensive project. Government firstly starts this project by constructing the floating level. Then the private investor follows on the specific education facilities cooperated with the schools.

6. Conclusion

A plenty of great architects and urban planners are endeavoring to open school to city. And indeed, the knowledge city needs positive interaction between education facilities and neighborhood. However, both open and closure should be considered as the methods to create the future knowledge city. Only taking enough respect to both college and city, the city would grow in a sustainable way.

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How to Implement a (National) Legal Framework through Local Integrated Planning?



Reinventing the planning process: Monitoring and Evaluation Istanbul case study

(Reinventing the planning process: Monitoring and Evaluation. Istanbul case study)

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INTRODUCTION

With recent developments in planning approaches and increasing importance of strategic planning, building a proper planning process is becoming more important than ever. Subsequently, the importance of the implementation process and specifically monitoring and evaluation (M&E) make significant debate in planning theory and practice today.

Lack of coordination between plans and planning institutions and inefficient legal frameworks have impaired the plan implementation processes in developed and developing countries. Moreover, with the added flexibility strategic planning brings, new approaches transform the planning process negatively in developing countries that don't have proper M&E background or systems.

This paper argues that the existence of an effective M&E system in a well-designed planning process is the key driver to strengthen relations between different plans; leading to fewer problems in plan execution. The first section of the research summarizes the planning process concerning the development of planning approaches, the relations between different plans and also effects of strategic planning on these. The next section is based on research analysing Istanbul Metropolitan Area plans' M&E stages. As part of this research, the planning process and M&E activity in various plans are revealed by face-to-face interviews with several members of governmental bodies in Istanbul Metropolitan Area who participate actively in the planning process. In the final section, research findings are used to propose a general M&E model for Istanbul Metropolitan Area. The study model aims to provide solutions to the integration problems of different plans that are prepared by different planning institutions, in order to increase the efficiency of the planning process by way of improving the M&E system.

This paper is intended to become a guide for cities that experience similar problems centred around integration of different plans and coordination between different planning institutions; for creating an easier, better and faster decision making structure by using the provided M&E model in reinventing the planning process.

1. Development of Planning Approaches and M&E Process

Since the 1940's, no significant change has occurred in the definition of the planning process, which was identified as plan preparation, implementation and revision stages. Ratcliffe (1974) has also summarized the planning process as "decision to adopt planning; formulation of goals; identification of objectives; preparation of alternative strategies; evaluation; implementation; monitoring and review".

Yet from 1970's planning approach has started to evolve from 'rigid' comprehensive planning to 'flexible' strategic planning and the importance of these stages have changed (Ayrancı, 2013). The implementation phase in the planning process became much more important than ever with strategic planning approach.

On the other hand, changes in planning approaches created new issues due to increasing number of plans and planning institutions and also variety of stakeholders. In addition to this, the power of local governance and importance of participation have become key factors in planning. However all of these developments have involuntarily led to an apparent lack of coordination between planning institutions and plans. This research focuses on the planning process, specifically on the implementation and revision of (Figure 1).

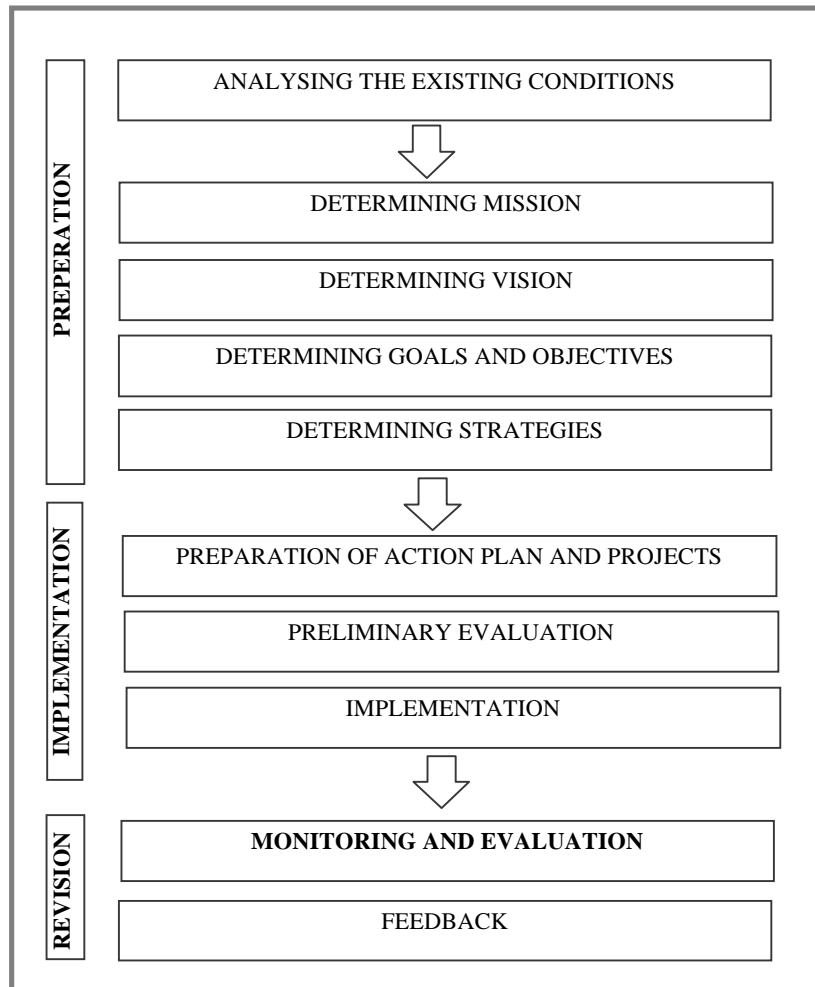


Figure 1. Planning process (Ayrancı and Zeren Gülersoy, 2009)

Focusing on the planning process, Monitoring and Evaluation (M&E) is found to be the key driver to strengthen relations between different plans; leading to fewer problems in plan execution and success at implementation. Considering literary definitions of M&E, monitoring is “the systematic documentation of aspects of performance that indicate whether or not activities are functioning as intended or according to some appropriate standard” (Rossi, Freeman, and Lipsey, 1999). And evaluation is “the systematic assessment of the operation and/or outcomes of a program or policy, compared to a set of explicit or implicit standards, as a means of contributing to the improvement” of the activity (Weiss, 1998).

During the past decade, monitoring and evaluation in planning gained importance with the strategic planning approach and became the main subject of development of planning policies, academic discussions and planning implementation studies (UN-Habitat, 2009). Especially in developed countries, not only planners but also governance authorities have recognised the importance of M&E and started to use it effectively in planning (Chen, 2009).

Period	Planning Approach	Planning Characteristics	Monitoring and Evaluation
Late 19th century	Classical Planning/City Beautiful	Non-governmental, individual planning	(-) none
1930-1945	Comprehensive Planning	Central, state governance and planning	(*) insignificant
1945-1960	Incremental Planning	Central but more flexible and fragmentary planning	
1960-1980	Advocacy Planning and Pluralism	Criticising central planning	(**) less important
1980-1990	Collaborative Planning	Neoliberal strategies	(***) increasingly
1990-2000	Strategic Planning	Participation	(****) important
After 2000	Flexible planning	Coordination problem	(*****) very important

Figure 2. Development of Planning Approach (Ayrancı, 2013. Unpublished PhD Thesis)

In developing countries, planning process is centered on preparation and implementation of the plan which is seen a purely technical work and is rarely followed by a well-designed M&E practice.

2. M&E in Istanbul Metropolitan Area

The conceptual background of M&E has still not matured in Turkey despite the growing number of academic research. Planning process is still not considered as a whole that indicates also the revision phase. Preparation and implementation of the plan is seen a purely technical work and rarely followed by a well-designed M&E practice. And the fact that an appropriate M&E system can increase efficiency of the planning process by integrating different plans has still not been recognised. Focusing on the top to down urban governance structure in Istanbul, has still not been recognized problems about the links between different plans prepared by different authorities are easily perceived (Figure 3).

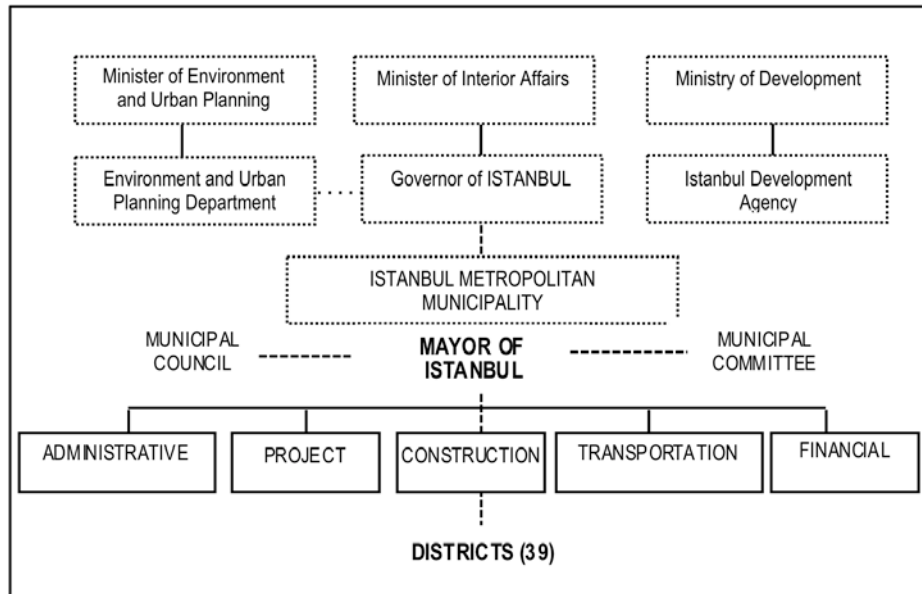


Figure 3. Istanbul Governance Structure (Ayrancı, 2013. Unpublished PhD Thesis)

In Istanbul, there are numerous planning authorities, which generally focus on the preparation of the plan and disregard the broader planning process.

Istanbul is the leading city in Turkey with its population and economic significance. But it did not have an integrated plan until 2005, when Istanbul's boundary was overlapped with Istanbul Metropolitan Municipality (IMM) jurisdiction area. Though this was an attempt to resolve plan implementation and coordination problems by preparing a single plan per area, it proved to be inadequate.

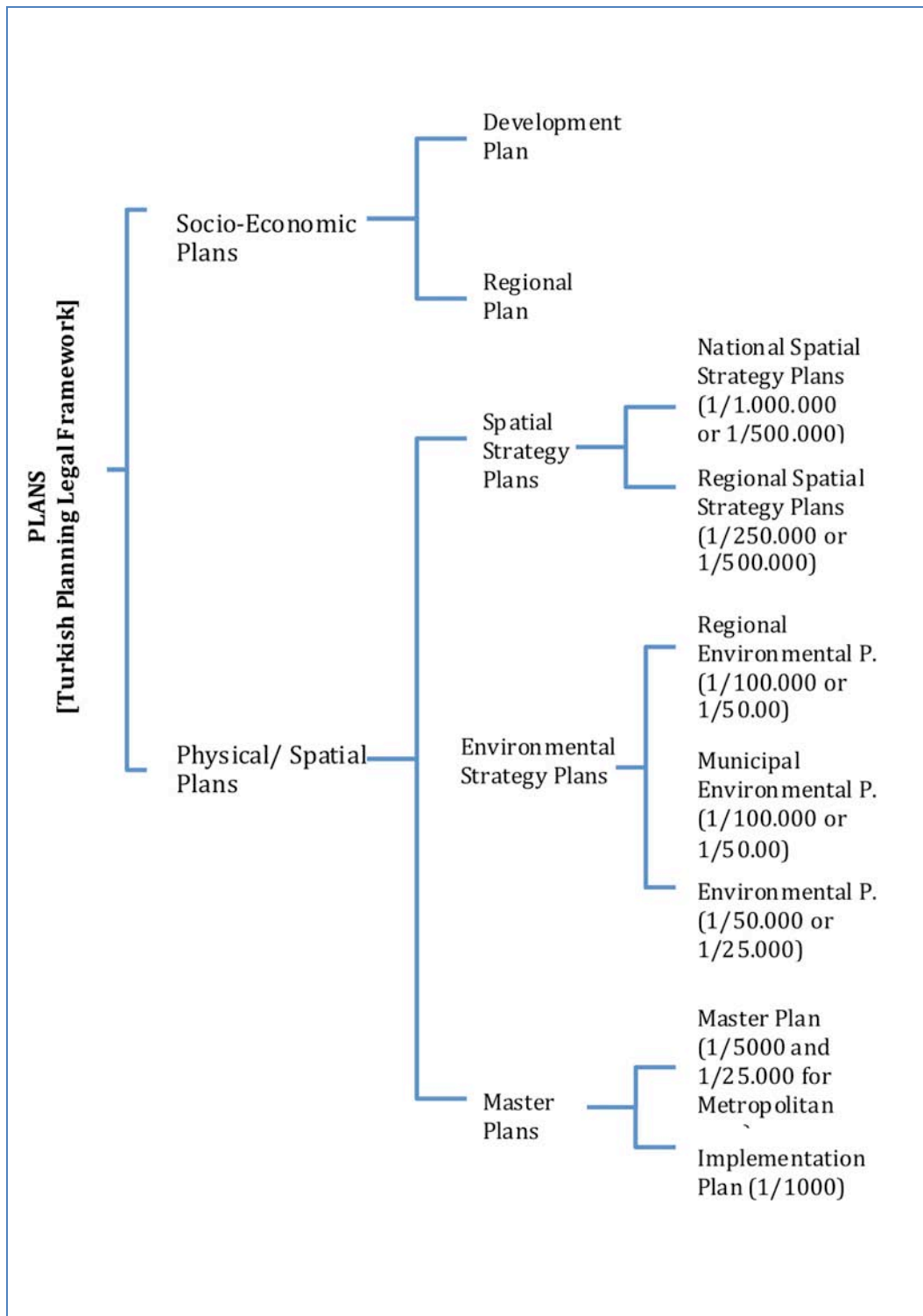


Figure 4. Turkish Planning System (Ünal, 2015)

This research evaluates Istanbul's plan and jurisdiction hierarchy with regards to M&E stages in these plans. Responsible authorities in Istanbul's plan hierarchy are listed below:

- Istanbul Regional Plan – Istanbul Development Agency
- Environmental Master Plan (1/100.000) – IMM Department of Housing and Urban Development, Urban Planning Directorate
- Istanbul Metropolitan Area Plan (1/50.000) – IMM (cancelled)
- Master Plan (1/5.000) – IMM

Other plans:

- Istanbul Transportation Master Plan – IMM Transportation Department, Transportation Planning Directorate
- Istanbul Historic Peninsula Site Management Plan – Istanbul Site Management Directorate, IMM Investigation and Projects Department, the Historic Environment Conservation Directorate
- IMM Strategic Plan – IMM Strategic Planning Directorate

This study is based on a PhD research on the relation of planning and urban development management in Istanbul Metropolitan Area by İrem Ayrancı at Istanbul Technical University. The research question posed was “How is the relation between planning and urban management structured in Istanbul Metropolitan Area?”. In this context the research discovers monitoring and evaluation in Istanbul Planning System.

As a method, face-to-face interviews were conducted by a structured questionnaire. This interview strategy enabled the comparison different participants and allowed opposing opinions to be shared. It is important to have open-ended questions, in order not to restrict the participant and bring forward different approaches.

Interviews were carried out with the people actively involved in the planning and plan execution of Istanbul planning system. The interviews executed with regional and local governance bodies (top-down) are grouped under the following headings:

- Ministry of Development, Istanbul Development Agency,
- Istanbul Metropolitan Municipality, Urban Planning Directorate,
- Istanbul Metropolitan Municipality, Planning Directorate,
- Istanbul Metropolitan Municipality, Transportation Planning Directorate,
- Istanbul Metropolitan Municipality, Historic Environment Conservation Directorate,
- Istanbul Metropolitan Municipality, Strategic Planning Directorate.

All plans were analysed on effectiveness and efficiency of M&E during the interviews. However, since there isn't any systematic M&E framework explicitly defined in Istanbul Planning System, questions were prepared to find out whether M&E exists in the planning process and how it works in Istanbul's planning system. The aim was to put forth the importance of M&E in planning process for better urban governance. The interviews with managers and technical staff show that (Ayrancı, 2013):

- There is no systematic M&E framework in any plans.
- Despite describing M&E in the planning process of Istanbul Regional Plan and Istanbul Environmental Master Plan, there is no defined M&E system put in place in the planning and implementation process.
- There is project-based M&E existing in the Regional Plan, which is mandatory for performance evaluation of the funding program.
- The managers/planners, who are responsible for large-scale plans progressively realised the importance of M&E due to the strategic planning approach.
- There is a gap between plan preparation and implementation in Istanbul Metropolitan Municipality. Different people are responsible for preparation and implementation phases. This causes a critical coordination problem in and in between the plans.
- Evaluation is more of a political process especially on large-scale, more visible plans/projects. Evaluation and revision depend on politicians and policies in these plans.
- Istanbul Transportation Master Plan (ITMP) and Istanbul Historic Peninsula Site Management Plan (HPMP) are found to be exceptions in the research. Despite the lack of a systematic and active system, M&E is defined in the plans for planners and managers to become more knowledgeable about the process. In both ITMP and HPMP, planning process evaluations are reported and shared with the stakeholders, which provides a knowledge flow and integration.

The research proposes proper implementation of M&E into the Istanbul Planning System because the findings indicate that Planning System is lacking these stages. Interview findings indicate that M&E in planning aims at “controlling plan implementation; increasing efficiency and productivity; accelerating feasibility, providing feedback; specializing on

implementation; inspecting the plan". It is important that M&E is perceived as a 'positive' process that is necessary for effective planning.

Findings show that the general perception of planning process mainly consists of plan preparation and implementation. M&E is not outlined in planning process and none of the revisions are carried out with/as a result of systematic M&E. Most of the plan revisions are mainly conducted as a result of political conflicts (in large-scale regional plans) and personal objections or property value contradictions (in master plans).

It is clearly evident that M&E is widely neglected in the Istanbul planning system. Lack of M&E does not only damage the planning process itself; but also, it impairs the link between the different plans and also entire planning system.

3. M&E Model Proposal for Istanbul Metropolitan Area

Based on the results of the research, a comprehensive M&E model has been prepared for Istanbul Metropolitan Area. The model has been structured around a matrix which has four main subjects: stakeholders, process, tools and results and communication (Figure 5).

3.1 Stakeholders

First and most important point at the model proposal is determining the stakeholders of M&E process. In this context, M&E should be defined in the current planning and management structures with the main actors being central and local governance bodies, NGO's / associations, neighbourhood councils, investors and others. Determining the stakeholders are also important for the integration of the different plans.

Another important point is the roles and responsibilities of the actors. Two separate project units are proposed for the Model. The monitoring unit must incorporate a core selection of the planning team involved. Its actions must be sustained through the whole planning process and be communicated at regular intervals. The evaluation unit should incorporate a core selection of the monitoring unit and can include other stakeholders as well. At some cases, it might be suitable to totally outsource the evaluation process.

3.2 Process

Considering the variety of the plans in Istanbul, structuring the M&E process of the plan is a very critical issue. M&E process must be designed depending on the type and scale of the plan. Building blocks of M&E process are feedbacks mechanisms, such as conferences, meetings, round table discussions, workshops, documents, surveys, polls, on-line tools and etc.

Phasing the process and M&E frequency must be structured with in the planning process, during preparation of the plan.

As an on-going process, monitoring progress must be reported on regular intervals. The reporting frequency can be determined according to the plan, quarterly, annually, etc. These interim reports will form the basis of the evaluation.

Evaluation, depending on the plan type and scale can be carried out before, during and after the implementation phase.

3.3 Tools

The effectiveness of M&E model depends of determining the indicators and criteria. Data collection methodology is diversified with a mixture of qualitative and quantitative methods. Commonly used qualitative technics are face-to-face interviews, examination of external-source documents, measurement and subjective observations, surveys, etc. Quantitative technics are questionnaire and statistical data / GIS applications.

Multiple KPI's for the plan are determined by using a participatory approach; such as stakeholder meetings. Strategic goals of the plan should be used for determining these KPI's. For secondary goals, softer indicators can be used where a hard targeted and measured KPI cannot be put in place. Evaluation criteria are led by monitoring indicators and plan objectives.

STAKEHOLDERS	PROCESS	TOOLS	RESULTS AND COMMUNICATION
Actors / Stakeholders / List of participants	Building blocks	Data collection methodology	Communication
Central government <ul style="list-style-type: none"> Ministry of Environment and Urban Pl. Ministry of Development Development Agencies Local government <ul style="list-style-type: none"> Met. Municipalities District Municipalities NGO's / Associations Neighbourhood councils Investors and others...	Feedback mechanisms: <ul style="list-style-type: none"> conferences meetings round table discussions workshops documents surveys polls on-line tools others 	Qualitative Face-to-face interviews Examination of external-source documents Measurement and subjective observations Surveys Quantitative Questionnaire Statistical data/ GIS applications	The interim reports of the Monitoring Unit must be made available on many mediums as they become available. (web, e-book, print, others) The final Evaluation report must be announced with a press conference and be opened for discussion via a general stakeholder meeting.
Roles / Responsibilities	Phasing and M&E frequency	Indicators / criteria	Turning results into action
Two separate project units are proposed for the Monitoring and Evaluation processes: MONITORING UNIT The monitoring unit must incorporate a core selection of the planning team involved. Its actions must be sustained through the whole planning process; And be communicated at regular intervals EVALUATION UNIT The evaluation unit should incorporate a core selection of the monitoring unit and can include other stakeholders as well. At some cases, it might be suitable to totally outsource the evaluation process.	MONITORING As Monitoring is an ongoing process, its progress must be reported on regular intervals. The reporting frequency can be determined according to the plan, quarterly, annually, etc. These interim reports will form the basis of the evaluation. EVALUATION Evaluation, depending on the plan type and scale can be carried out before, during and after the implementation phase. <ul style="list-style-type: none"> Pre-evaluation Peri-evaluation Post-evaluation 	Monitoring indicators / KPI's Multiple KPI's for the plan are determined by using a participatory approach; such as stakeholder meetings. Strategic goals of the plan should be used for determining these KPI's. For secondary goals softer indicators can be used where a hard targeted and measured KPI cannot be put in place. Evaluation criteria Evaluation criteria are led by monitoring indicators and plan objectives.	Revision of the plan.

Figure 5. M&E matrix in planning (Ayrancı, 2013. Unpublished PhD Thesis)

3.4 Results and communication

Results and communication are very significant for the M&E model. Most important result of M&E is receiving feedback for the plan. A successful planning process depends on communicating the M&E results. In this context, interim reports of the Monitoring Unit must

be made available on many mediums as they become available (web, e-book, print, others). And also the final evaluation report must be announced with a press conference and be opened for discussion via a general stakeholder meeting.

M&E in planning

M&E model proposal was prepared on the basis of the M&E matrix and was defined in Istanbul Historic Peninsula Site Management Plan, which was prepared with strategic planning approach. According to the model, monitoring and evaluation processes flow together with the planning process. Following chart displays stakeholders, tools and results for M&E process (Figure 6).

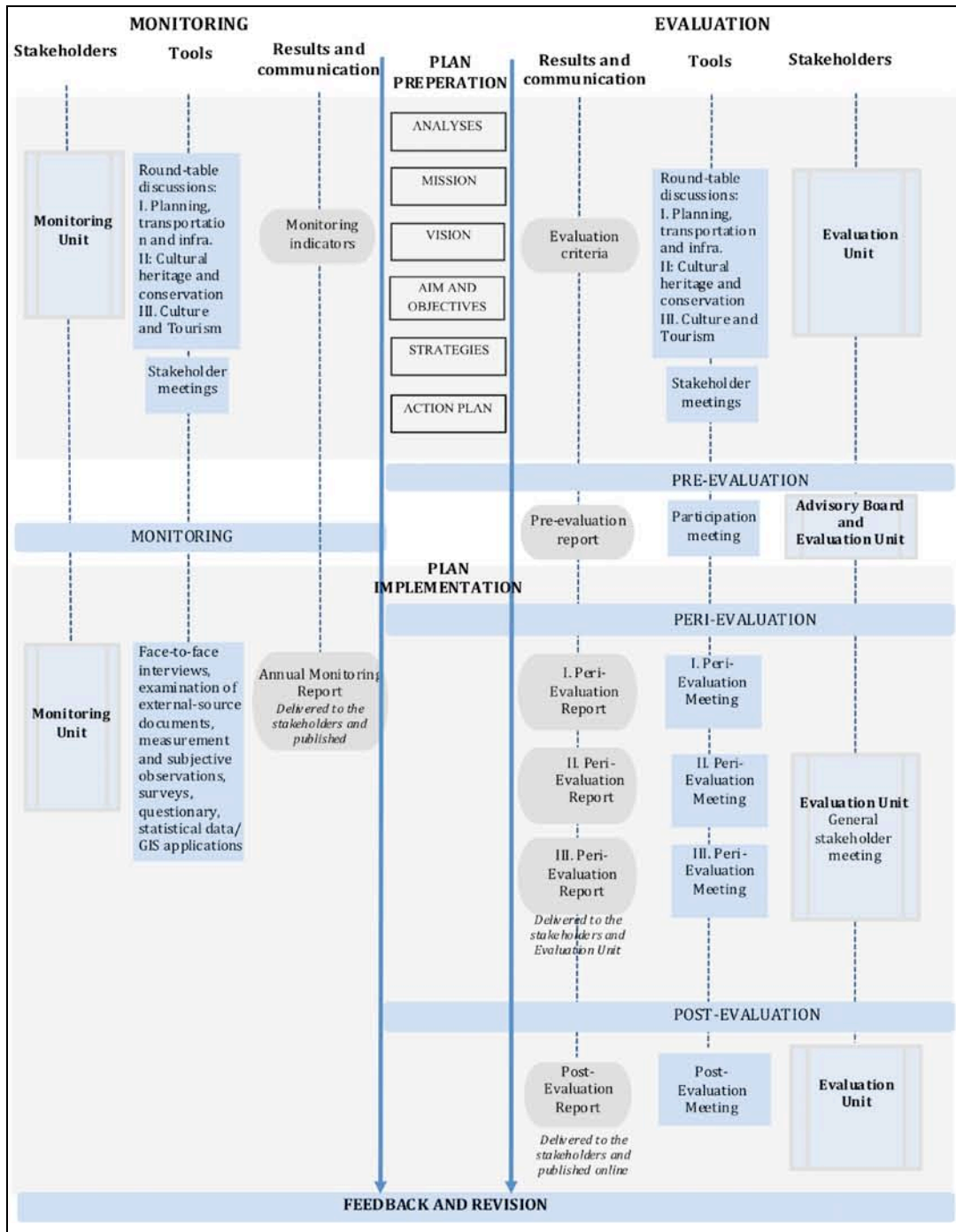


Figure 6. M&E in planning process (Ayrancı, 2013. Unpublished PhD Thesis)

As seen in the model chart, stakeholders actively participate in the whole process, requiring the inclusion of all responsible institutions of relevant plans for Istanbul. In M&E process, the participants and participation tools are defined properly, which is very important for the success of implementation process and also the relation between the different plans.

4. Conclusion

A well-designed planning process is one of the founding stones of efficient urban governance. Especially due to recent developments in planning theory leading to the predominance of strategic planning, the connection between planning practice and urban governance has become more important than ever.

In this context, efficient urban governance requires a comprehensive understanding of the planning process, with an emphasis on the fact that at times, management of the implementation is becoming even more important than the preparation of the plan itself.

The proposed M&E model aims to provide solutions to the integration problems of different plans prepared by different planning institutions in order to increase the efficiency of planning. Developing M&E in all plans will support implementation and management of the plans, construct a link between the plans and and policies from top to down.

This paper aims to become a guide for cities that experience similar problems centred around integration of different plans and coordination of different planning institutions; for creating an easier, better and faster decision making structure by using the provided M&E model in reinventing the planning process.

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Interaction between national planning and local spatial plans in Greece

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1. Introduction

According to the Greek constitution the policy for spatial planning at all levels (urban and regional, national) is a competence of central administration. Local authorities are only competent for the implementation of the planning policy and the relevant spatial plans. However, they have a significant contribution to the formulation of this policy by their proposals during consultation processes as well as by their involvement to the elaboration and supervision of planning studies. They also play an important role during the stage of implementation of the plans and relevant projects.

Five years ago, a new reform regarding territorial reorganization took place changing significantly, the size and the competence of first tier local authorities. As a result, there has been a series of problems, in relation to the scale and specifications of local spatial plans, which led to a less efficient planning process and consequently had an impact on the program concerning the elaboration of such plans, still in progress.

This intervention aims to give an overview of the planning system in Greece. Besides, it tries to investigate the relation between local and national planning in order to make the appropriate suggestions for improving the efficiency of planning policy. Furthermore, there is an approach of the recent reform at local level, in an attempt to measure compatibility between administrative and spatial structures.

2. Important Steps of the Recent Planning History in Greece

To understand the current spatial policy in Greece it is necessary to have an idea of the recent planning history in relation to the political situation of the country. Thus, the most significant steps/ milestones of spatial planning, the last 40 years (period of the 3rd Greek Republic) are the following:

1975: The Article 24 on Spatial Planning and environmental protection of the Constitution

After the establishment of the 3rd Greek Republic and the consequent adoption of a new Constitution of the country, Spatial planning, through the provisions of the article 24, became an exclusive obligation /competence of the state. This enhanced the legislative framework and generated (during the period 1976 - 1981) a series of laws concerning city and regional planning which influenced the elaboration of spatial plans and consequently, to a certain extent, the 'production' of space in the country.

1982-1985. "Urban Reconstruction Operation": A great moment in Greek planning history

The launching and start-up of the so called "Urban Reconstruction Operation" constitutes a great moment in Greek planning history. The objective of this unique and ambitious initiative was to achieve a more balanced and uniform development and pattern of growth with the aim

of acquiring better life conditions according to the values, aspirations and expectations of local societies.

In the framework of this Operation there has been a tremendous effort in order to elaborate (through participatory processes) the General Urban Plans (i.e. the local structure plans) for 350 small and medium sized cities and towns as well as the detailed plans for the extension (urban development) of the built-up areas of these urban agglomerations. At the same time, a parallel project, for the elementary spatial organization of the 11.000 rural settlements throughout the national territory, was launched by the Ministry of planning and managed by local administrative authorities. Furthermore, there have been elaborated and approved, for the first time, the Master Plans (for urban development and environmental protection) of the two metropolitan areas of Athens and Thessaloniki.

At sub-regional level there has been another project for the elaboration of the «structure plans» in the 49 districts, the preparation of which needed a tremendous effort of all bodies involved with procedures ranging from staff meetings on ministerial level to residents' meetings at local level. This operation was a task that had to be accomplished simultaneously in all parts of the country and within a short time period of two years ('82-'84). In comparison with similar operations in other more developed countries, it represented a large amount of work which in addition was carried out in the absence of a specific statutory planning framework. It must also be noticed that this operation led to a nation-wide mobilisation of all ministerial services, public and private agencies and local authorities.

Thus, the purpose of spatial planning policy in Greece, at that period, was to reduce inequalities between cities and countryside, aggravated by the economic growth system, which created two «Greeces» (centre and periphery) with two different development pulse-rates. Moreover, inside each region, planning aimed to co-ordinate all social, economic and cultural activities in order to express them into terms of space, establishing a close relationship between physical, environmental and socio-economic factors. In other words, the kind of planning adopted was supposed to serve as an indispensable instrument in local and regional development process.

1997-1999. A new planning legislation for the 21st century

During this period another ambitious task has taken place: The modernization of planning legislation towards 21st century by the adoption of two important institutional laws based on the article 24 of the Greek constitution and two related documents : a) the European Spatial Development Perspectives (ESDP) of EU and b) the Guiding Principles for the Sustainable Spatial development of the European Continent (GPSSDEC) of the Council of Europe. The first of these laws referred to the “Sustainable urban development” (1997) and the second to “Spatial planning and sustainable development” (1999). Thanks to this new institutional framework the spatial plans for all regions of the country have been elaborated and approved in 2003, as well as the National Framework for Spatial planning and other Special (thematic or sectoral) National Plans (e.g. for tourism activities, industrial activities, renewable resources installations, aquacultures etc.) in 2008.

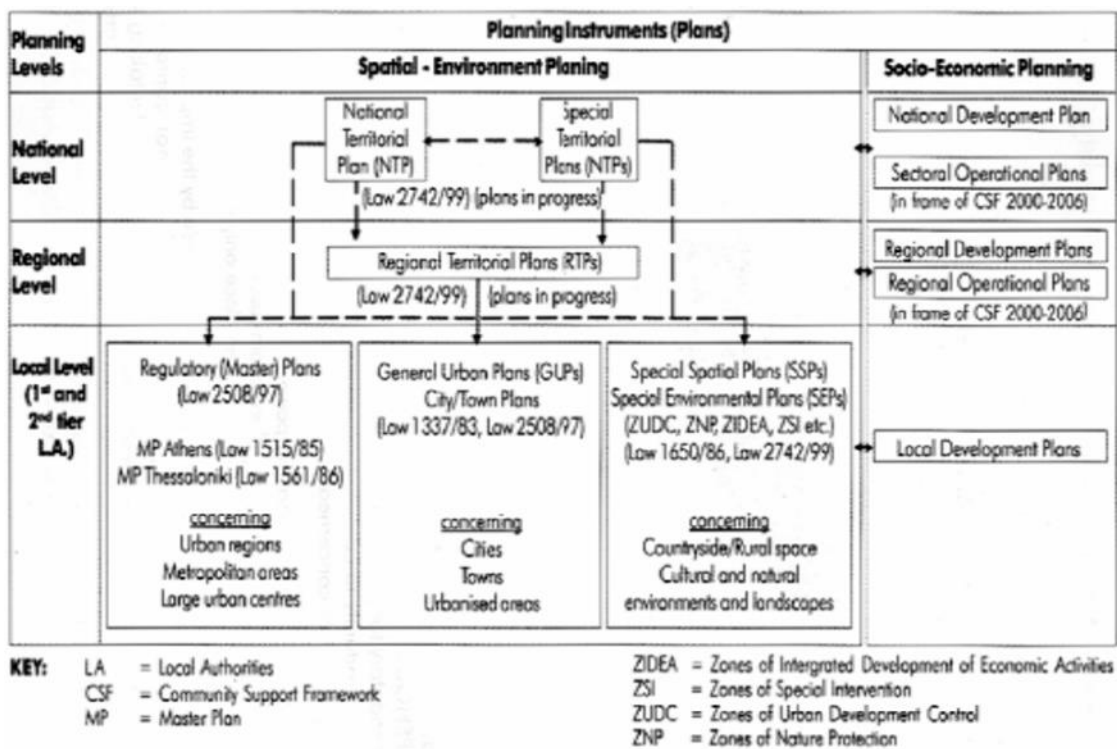
3. Existing situation: problems between national planning and local plans

The existing legislation on Strategic spatial planning (L 2742/99) is quite recent and thus fully adapted and complied to the relevant European policy documents (e.g. European Spatial development perspectives-ESDP). It was also the product of a broader consensus of public

agencies as well as numerous scientific, social and other relevant NGOs. Of course improvements are always welcome. However, the problems of the current planning situation are due, not to the content of legislative documents, but to the overall implementation of the institutional framework in general.

For instance, the planning instruments (strategic plans at national and regional levels) elaborated in accordance to the institutional law 2742/99, have a regulatory and binding character which is contradictory with the strategic spirit of the law. As a consequence, these first planning “products” undermined the hierarchy of plans and caused a serious “disturbance” to the plans at local (and regional) levels. Besides there has been a lack of harmonization between regional plans and urban (local) plans. The above mentioned malfunctions changed completely the philosophy of the system and the role of each planning instrument.

Table 1 . Overview of the Planning system in Greece

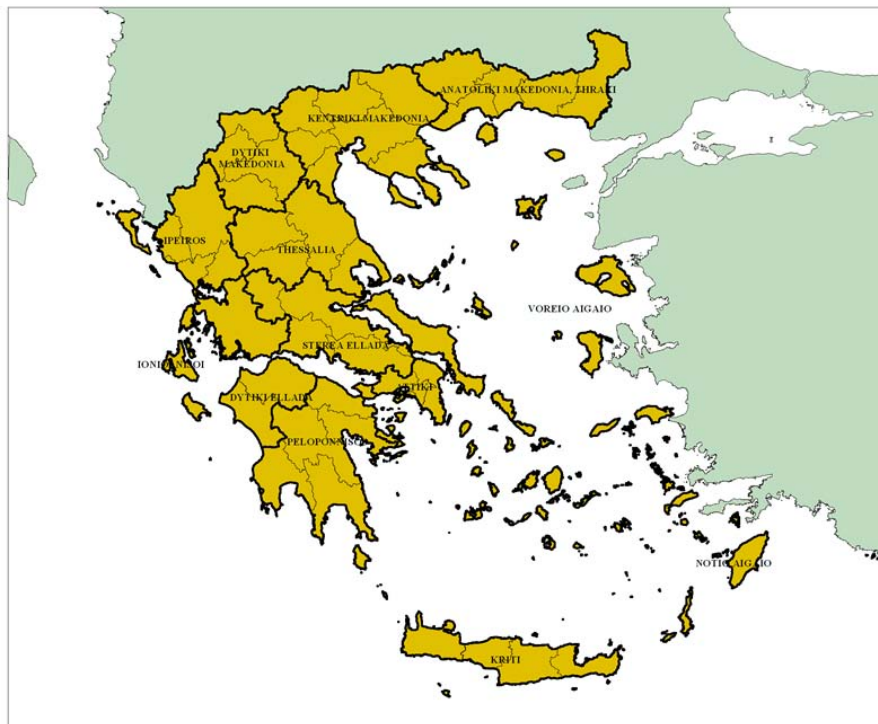


Source :Processed by the author

On the other hand a reform of territorial and administrative reorganization (under the title: “Kallikratis project” on the new architecture of Greek territory)changed drastically the boundaries of first tier local authorities by increasing (tripling) their size. In other words the number of municipalities decreased from 1033 to 325. The impact of this change on spatial planning caused a serious problem : the specification of local plans (general urban plans) are no more convenient to the size of the territorial entity of the new municipalities. As a result the whole program of the elaboration and approval of local plans at municipal level was suspended. It must be noted that in a relatively recent legislative act (4269/2014) the territorial entity suitable for the elaboration of local plans was decided to be a sup-municipal unit in order to correspond to the size of the previous municipal entity (before the reorganization). However, the content of municipal plans have also changed and so there is

a need for updating specifications in order to start a new program of planning studies, which is not an easy task, especially in period of financial and political crisis.

Fig 1. Greece: Administrative boundaries (of regions and sub-regions)



A third major problem is the public participation process. Although planning legislation provides for all necessary consultation and participation procedures, in practice, there are a lot of obstacles and difficulties, mainly due to the lack of political will on behalf of public bodies and local authorities. Consequently participation process often becomes a typical and non-essential task of spatial planning. It is not by accident that, in some cases, under certain circumstances, informal forms of participation are more successful than the formal ones. (The only real form of formal and substantial participation of the general public took place at early 80s through the so-called Neighborhood Planning Committee elected by citizens in order to express their opinion before the competent Municipal Council).

It is needless to say that the most significant and essential participation procedures take place at local level where citizens feel closer to the decision makers /making. At regional level there is only consultation process within the framework of regional council where a formal procedure takes place, open to institutions, NGOs and other regional actors and stakeholders) as well as to the general public. The problem at this level is that plans have still a strategic character and therefore citizens are not interested to participate, since plans are not referring to legally binding restrictions and have no direct impact to their properties.

The same situation occurs at national level with national strategic plans. Participatory process is limited to a formal consultation within the framework of the so called National Council for Spatial Planning and Sustainable Development (NNCSPSD) which acts as forum for social dialogue. This body can play an important role on condition that there is a good

relationship and cooperation with the political leadership of the Ministry of Planning. In any case the consultations of this council do not affect plans at local level.

Table 2 : Planning tools (plans) and decision making procedures

PLANNING LEVELS	'TOOLS' (PLANS)	PROCEDURES/COMPETENT AUTHORITIES			
		ELABORATION	CONSULTATION	APPROVAL	REMARKS
NATIONAL LEVEL	National Plan (National strategy document)	Ministry of EE&CC	National Council of Spatial Planning & SD	- Ministerial Council	Announcement to Parliament /National Assembly
	National Spatial Plans	Ministry of EE&CC	National Council of Spatial Planning & SD	- Common Ministerial decision	
REGIONAL LEVEL 2 nd tier Local authorities	Regional Plans	- Ministry of EE&CC or - Region	-National Council of Spatial Planning & SD -Regional Council	Ministerial decision of EE&CC	
LOCAL LEVEL 1 st tier local authorities	Master Plans	- Ministry of EE&CC	- Regional Council - Relevant municipal councils	Ministry of EE&CC by Presidential Decree	Athens and Thessaloniki M.A.s are approved by laws
	Municipal (Local) Structure Plans	- Municipality or - Region, or - Decentralized Administration	- Region - Municipal Council	Secretary General of the Decentralized Administration	
	Urban Development Plans	- Municipality, or - Region, or Decentralized Administration	- Region - Municipal Council	Ministry of EE&CC or Presidential Decree	
	Implementation Plans	Municipality		Region	

MEE&CC means Ministry of Environment, Energy and Climate Change/ Processed by the author

4. Epilogue

Interaction between all levels of planning is malfunctioning in Greece. The hierarchy of plans does not work in a sense that plans of lower levels prevail -when they are more recent than the plans of upper level- even if their content is opposed to guidelines of upper plans. On the other hand, lower level plans do not give any input to the upper levels. So, the necessary interaction with the top-down and bottom-up procedures does not exist, at least to the appropriate extent.

This is mainly due to the lack of a more simplified and clear institutional framework which could play a positive role. There are also other problems related to the decision making mechanisms and the competences between the different public authorities which aggravates the above mentioned difficulties. This situation caused a lot of malfunctions at the elaboration

as well as at the implementation levels. Another decisive fact is the lack of coordination between the state and local authorities of both 1st and 2nd tier. Finally, in times of economic crisis, the lack of financial resources has a serious impact on spatial planning procedures. For these reasons the ministry of Planning has the responsibility and the duty to facilitate and develop new types of bottom-up and to-down procedures in order to reinforce interaction between all planning levels.

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Pattern of Multiple Plans Integration

— Study of Shunde Planning System Construction

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1. Why China's Plans Need Integration

1.1 The conflicts and replications in planning policy

As an important public policy, planning plays a key role in guiding and coordinating local development. For historical reasons, in most of the cities in China there existed parallel spatial plans developed by different official departments for various purposes. These plans have supported local development in many ways for the past decades. However, they also triggered growing conflict and competition among themselves.

According to the statistics from the Urban Planning Society of China, there are 83 kinds of statutory plans that are required from all levels of government. Among them, the five-year national economic and social development plan, the city master plan, the general land usage plan, and the environmental protection plan play the most important roles in a city's development. In addition to the statutory plans, there are a large number of other relevant planning and research documents. Due to the lack of clear distribution of power and responsibilities, different planning systems tend to design spatial plans for their own benefits, resulting in multiple plans for the same space with overlapping content and functions. This phenomenon deeply affects the administrative efficiency of the state administration, resulting in a waste of administrative resources.

1.2 Adjustment in China's social economic development model

Recently, China is experiencing major changes in its social and economic development. The economic growth rate has begun to decline. The growth of the third industry segment has exceeded that of the secondary industry segment since 2013. The economic growth model is transiting from factor-driven to innovation-driven, from relying heavily on resource consumption to relying on scientific and technological progress, labor quality improvement, and management innovation. Limitations on new land permissions for development and rapidly growing land prices have changed the direction of planning from planning on the incremental to inventory. The rising ecological and environmental concerns also have pushed planning to put more emphasis on environmental protection. As China's development mode transforms, planning focuses will follow.

1.3 Pilot for "Multiple-Plan Syncretized"

The "National New-type Urbanization Plan (2014-2020)" said: "All levels of government should strengthen the linkage between urban planning and economic and

social development planning, prime function zone planning, land-use planning, environmental protection planning, infrastructure planning and etc. The local government with suitable conditions should also promote 'Multiple-Plan Syncretized', which integrates social and economic planning, urban planning, land planning and etc." Subsequently, the four ministries in charge of planning jointly issued the "Notice for Multiple-Plan Syncretized City and County-level Pilot Projects," initiating plan integration from the top.

2. Shunde's Situation

Shunde is in southern China, the center of the Pearl River Delta Area, close to Hong Kong and Macao. It extends over an area of 806 square kilometers, with 2.48 million people and annual GDP of \$45 billion.

2.1 Shunde's governmental reform

In the past, planning responsibility in Shunde was divided into a number of government agencies. Due to the diverging purposes, principles, and techniques, the lack of consistency in land classification and data results, as well as lack of coordination in the planning and execution agenda, it was very difficult to integrate different plans on the platform of one single department. As a result, the spatial plans were not able to guide governments' macro-control function. The lack of coordination negatively affected implementation effectiveness and wasted numerous manpower, material, and financial resources. In order to resolve the dilemma, in 2009, Shunde granted its Development Planning and Statistics Bureau full authority to establish all spatial plans, breaking the regulatory barrier on horizontal coordination and laying the foundation for resolving power struggles between different departments, aligning planning focus and technical standards, and eliminating incompatibility between different plans. In other words, the new organizational structure and policy provided a sound ground for the establishment of the planning system.

2.2 Current Planning in Shunde

2.2.1 The Existing Plans

In the period 2008-2014, the Shunde District Development Planning and Statistics Bureau completed a total of 104 planning and related research projects.

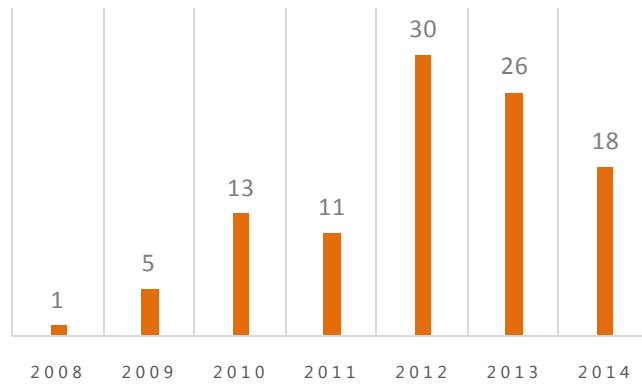


Figure 1: Annual Project Numbers

There was a relatively small overall volume of various types of planning projects before 2011, yet micro and macro planning projects during the period were roughly equal in number.

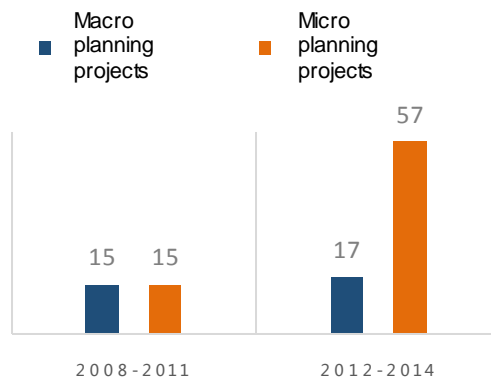


Figure 2: Project Types in Two Time Periods

The number of planning projects grew substantially in 2012 and remained high in the next few years. The growth mainly came from micro projects, while the number of macro projects did not see substantial growth.

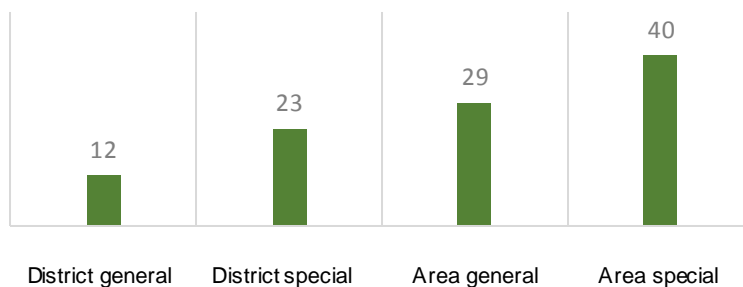


Figure 3: Scale of Plans

The 104 planned projects can be categorized into four levels: district general, district special, area general, and area special. There are 12 district general plans, the least of the four types, and 40 area special plans, the most of the four. From the macro to micro, the plans constitute a relatively complete planning system. Their incremental sequence fulfills practical demands. The system is in a pyramid-shape structure with top-level plans addressing comprehensive strategies and area plans addressing planning focus and resolutions of specific issues.

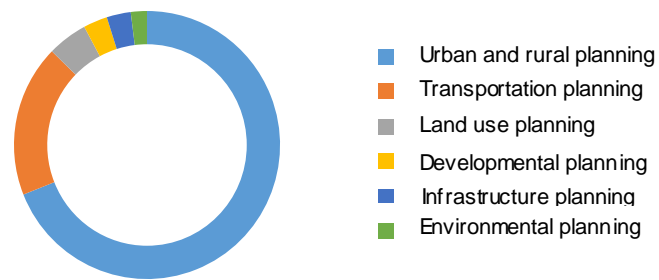


Figure 4: Type of Plans

Concerning the types of planning, urban and rural planning weighed most heavily, with a total number of 71, followed by 19 transportation planning, and a dozen of other plans with lesser numbers. The weight of different plan types is closely related to the development situation of the city. Shunde is expanding and is in need of a number of development-related plans. In addition, transportation planning, which often takes place simultaneously to support spatial development planning, takes up a high proportion as well.

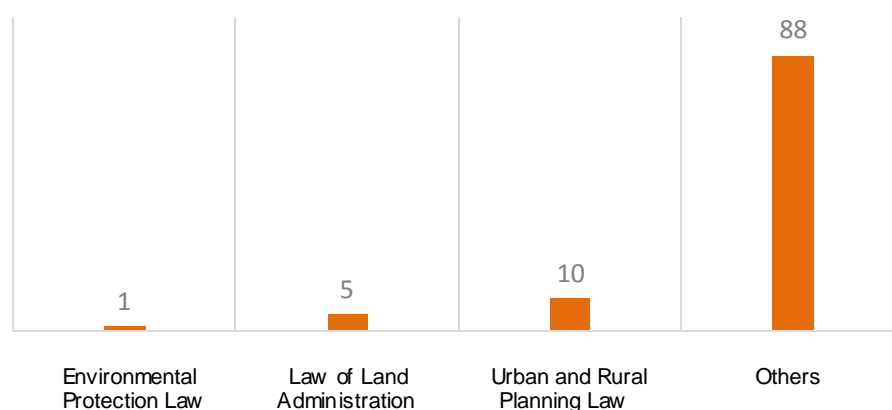


Figure 5: Base of Plans

Concerning the legitimacy of the planning, most of the plans are research-based, a total of 88, while only 16 are categorized as statutory planning. Most of these statutory planning documents constitute urban and rural planning regulated by the "Town and Country Planning Act."

2.2.2 Shunde's planning system

After its organizational structure reform in 2009, the Shunde government has been trying to establish a new planning system. In 2010, it proposed a "Multiple-Plan Syncretized" scenario and its requirements. However, it has not been effectively promoted and implemented.

Although the Development Planning and Statistics Bureau has consolidated authority on economic and social development planning, city master planning, land-use planning, and environmental protection planning, the plans are still made during the actual planning stage by different departments with no coordination. As the plans are entrusted to various units without knowledge of one another, and no guidance of overall strategy, they are being developed independent from one another.

After reviewing Shunde's existing planning by levels and relevance, we can conclude that Shunde has a comprehensive planning system. However, linkages between the plans are weak, and on each level of the planning system there is no overall plan that could guide the others. In addition, research and applied planning are not closely related. There are also flaws and inadequacies in several planning sections.

Shunde Current Spatial Planning System

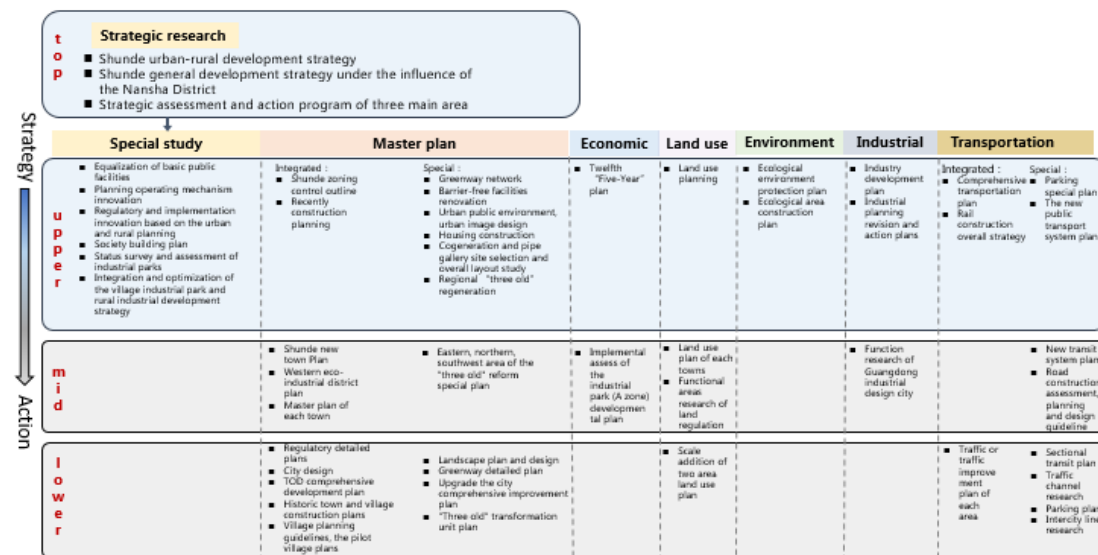


Figure 6: Current Spatial Planning System

Other than the lack of unified strategic coordination, the boundaries between the plans are not clear. The planning procedure still follows the usual routine, with pattern,

methods, and content unchanged from the past. As a result, the old problems, such as the replications of and contradictions between different plans, still exist.

2.3 Shunde's Challenges in Planning

In the absence of a unified system, there are signs of obvious internal contradictions and conflicts between plans in Shunde.

2.3.1 The conflicts between major plans

Currently, Shunde's four major plans are inconsistent in their planning period, index value for evaluating development goals, and direction of development.

		Urban master plan	Twelfth "Five-Year" plan	Land use plan	Environment protection plan
Planning period		2009-2020	2011-2015	2010-2020	2011-2020
Indicator	Construction land	396km ² (2020)		352km ² (2020)	
	Per capita green area	11m ² (2015)	16.5m ²		12m ² (2015)
	Household garbage treatment rate	100%	Above 90%		Above 95%(2015)

Table 1: Conflicts between Four Major Plans

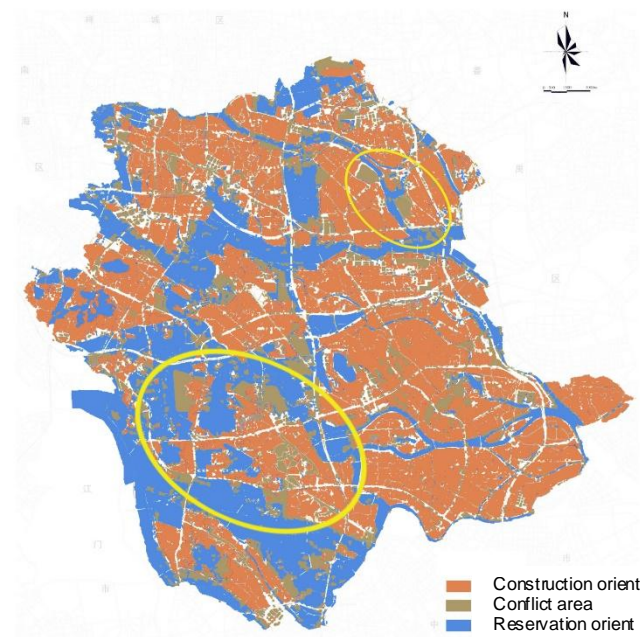


Figure 7: Congruency Map of Development Directions

As can be seen from various government bureaus' maps for spatial planning, the direction of Shunde's overall planning matches the ones of specific plans on a basic level, but due to the different technicality and focus of environment, land, and other departments, there have been contradictions in plans' development directions in some areas, such as the urban and rural integration area in the south-eastern part of Shunde and the Chen Village in the northern part of Shunde.

2.3.2 Conflicts on Strategies

At the strategic level, the "Research on Shunde Urban and Rural Development Strategy," "Twelfth Five-Year Plan," "Revision of Shunde District's Master Plan," "Spatial Development Strategy of Shunde under Nansha's influence," and a few other plans have conducted SWOT analyses on Shunde. However, each plan has a different evaluation of the strengths, weaknesses, opportunities, and threats. Even the parts the analyses did agree on were insufficient for planning. There is not one single strategic factor defined in the four major plans that was in the consensus part of the analyses.

When evaluating strengths, "developed a competitive modern industrial system, and reputation for products 'Made in Shunde,'" and "tradition in innovation and high quality local human capital" are the only two agreed by all three plans. Concerning the weaknesses, the three plans only agreed on "lack of independence in spatial system, the scattered market area, and insufficient regional integration." The three plans achieved more consensus in the opportunity part, including "global level labor division," "national industrial restructuring, regional economic integration, city-level integration of Guangzhou and Foshan," and "comprehensive reform pilot projects." In the threats level, there is almost no consistent content.

		S W	
<ul style="list-style-type: none"> Good natural and humanistic environment. Strength and rapid growth of the economy. Endogenous economic development, the economy is strong rooted. Already formed a competitive modern industrial system, establish a "Shunde create" advantage. with an excellent tradition of innovation and has high quality local human capital. Conducted a comprehensive integrated reform, and establish a "Shunde service" advantage. Wealth based, good social security system, full employment, stable social development 		<ul style="list-style-type: none"> Mineral resources and energy scarcity Lack of adequate financial and infrastructure support Lack of overall planning of urban and rural and regional development Extensive development model Non-independent spatial systems, lack of regional integration development Lack of new economic growth point and construction highlights Producer-led economy, low level economic structure Less attractive living environment Unique Water system background, but the feature is not significant 	
<ul style="list-style-type: none"> Global industrial division, the national industrial structure adjustment Regional economic integration Shunde is the regional sub-center by "Pearl River Delta Townships coordinated development plan (2004 to 2020)". Countries to create "the Pearl River Estuary International Economic Bay" Comprehensive reform pilot Construction and improvement of regional and rail infrastructure Ecological and human resources to enhance the city of Shunde 		<ul style="list-style-type: none"> The global financial crisis increasing shortage of resources for development The arduous task of industrial restructuring The surrounding area in an increasingly competitive Regional integration process slowly From the pursuit of development quantity into quality The spatial pattern will be from town to city The low level of urbanization, urban and rural development is not well coordination Increasing policy limits The city's soft power is not strong Comprehensive reform has long way to go 	

Table 2: SWOT Analyses in four Strategic Plans

2.3.3 Conflicts between Short-term plans

Three recent planning exercises—short-term construction planning in the master plan (2009), short-term construction plan (2011), and strategic assessment and action

guidance of Shunde's three major areas (2012)—have all arranged specific locations for recent prime development projects, determined by the twelfth five-year plan and the city upgraded five-year action plan. However, the priority location, the scale of development, and the usage of specific locations are different in each plan.

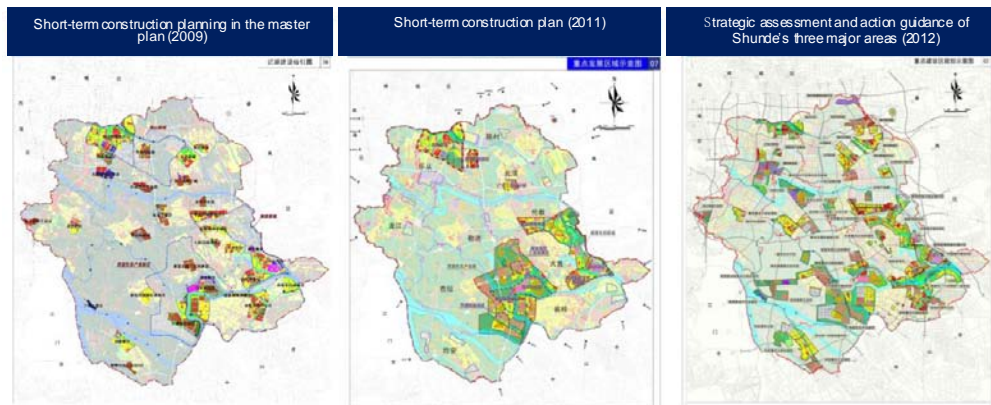


Figure 8: Comparison of Short-term Plans' Prime Construction Sites

3. How to Integrate Plans

3.1 Stratify plans and then establish a planning system

Under China's current legal framework and distribution of power between sectors, it is almost impossible for any local governments to conduct "Multiple-Plan Syncretized" on the basis of any existing plans. In reality, each program will be bounded by its planning rules and department's responsibilities, which are more or less rigid and single-sided. It is difficult to make timely and effective adjustments or to achieve full coordination with other programs. Therefore, to re-establish a proper planning framework, we must jump out of the existing planning constraints.

Based on the relevant national-level legal requirements and status of Shunde's planning, we propose a planning system as a tool to achieve synergies between plans. We recommend establishing a "strategy – guidance – execution" procedure and developing one guiding plan on each stage to lead others on the same level in order to ensure consistency of plans vertically and horizontally.

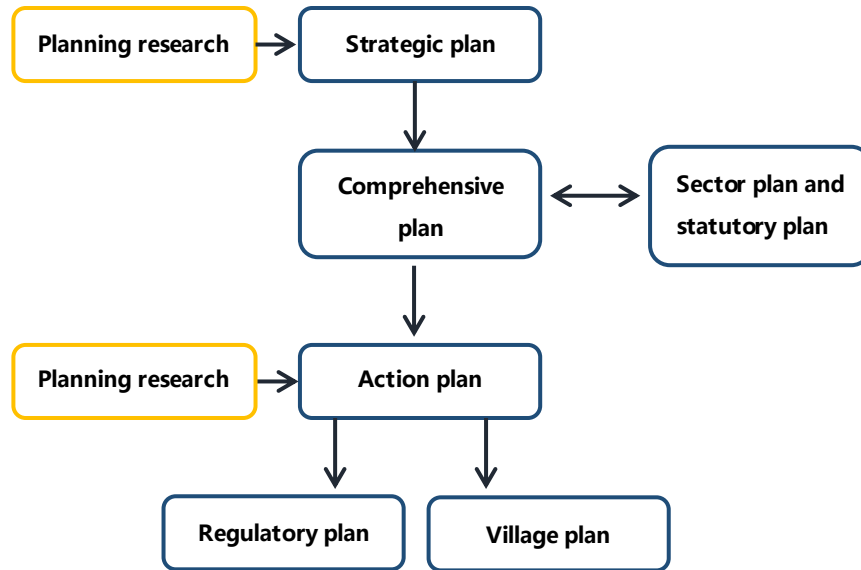


Figure 9: Shunde's Planning Framework

To develop Shunde's planning system, we must first establish a general strategic plan to guide and coordinate the regional development. With respect to the existing plan, the plan should focus on being strategic, comprehensive, and systematic, instead of focusing on specific details. It should mainly offer strategy for regional macro development, unify development positioning, goals, and ideas, approve important basic data and indicators (population, land use, economic growth, environmental standards, etc.), and delineate all kinds of space and boundaries for land-use control, etc.

Under the guidance of the strategic plan, we should then breakdown and deepen our analysis of the objectives to create a comprehensive development plan. The comprehensive plan should be the core of the Shunde planning system. It should implement the development goals and requirements of the proposed strategic plan while guiding, coordinating, and integrating other plans. The rest of the statutory programs and departments' plans should use the comprehensive plan as guidance for appropriately "downsizing" in respective to laws, regulations and professional requirements. Using the basic analysis and development goals of the comprehensive plan as a reference, they should simplify their non-core content overlapping with other plans while developing and updating plans according to their technicality and content; the significant part of planning outcome will be included in the comprehensive plan and relevant special plans. These actions can achieve alignment in development and regulatory demands on the comprehensive planning level and ensure positive interaction between the various statutory planning activities and sector planning and comprehensive planning activities.

The comprehensive plan will need to strengthen its vertical coordination, especially at the area and township levels, in order to ensure an effective implementation and execution of the unified macro development strategy. Therefore, there is a demand for

a district-wide implementation plan to guide lower-level micro planning. The implementation plan will effectively coordinate the region's land use and construction projects. It will also need to ensure consistency of spatial delineation and land control in urban and rural planning and land-use planning. Finally, the local governmental agencies should improve and expand regulatory detailed planning and village planning based on the implementation plan.

Research is one key component in the planning system. Transforming the research result to practical planning is an important stage of creating impact from research. Except statutory planning, most of the planning is better off taking the form of research studies, and the research results should be reserved for application. In this way, the local government could reduce the plans and therefore lower the possibility of conflict between plans. Moreover, this would help related agencies to recognize and resolve planning issues in time. It is important to conduct the research in accordance with strategy and implementation planning, in order to improve the feasibility of the research.

3.2 Strengthen Execution

Under the guidance of the implementation plan, the local government should gradually promote regulatory detailed planning and village planning until it achieves full coverage of its domain. The two types of planning mentioned above should be used as reference when assigning planning permissions.

In cities and counties, the local government could prioritize key development sites according to practical needs. For the practicality in development of different types of regions, the depth of the regulatory plan can vary as long as it fulfills basic requirements.

Village planning should be conducted with knowledge of a village's development situation. The village plan should be used to drive village renovation and improve the efficiency of land use. It should incorporate village economic and industrial features, initiate public participation, and utilize local tradition in bottom-up administration to improve the feasibility of the plans and promote the implementation procedure.

When the implementation plan goes to the lower level, the local area can choose between the regulatory detailed plans or the village plan as a guideline for micro-planning based on the importance of the region and local development needs. Because the regulatory detailed plan usually follows set routines, it is very different from village planning and emphasizes control over development. So it is still advisable for some of the "urban villages" to promote social and economic through "village plans." However, concerning the complexity of Shunde village development and land-usage conditions, in order to solve control and coordination issues, the usage regulation of village plans should be referred to the regulatory detailed plans.

3.3 Establishing an application mechanism for research results

Under the influence of the “New Normal” in China’s economic development and the new type urbanization, Shunde’s economic and social development, as well as its spatial development mode, will change significantly, while there are a lot of uncertainties in the direction and result of such change. So it is necessary to strengthen research to clarify the goals of planning and reduce randomness in the planning process.

First, annual conventional research and case studies should be conducted. Annual conventional research will need to analyze Shunde’s development situation timely and accurately, evaluate its strategic plan, and offer advice on adjustment according to changes in the internal and external environment. Case studies focus on long-term national strategy, major regional changes, and complicated local issues. These studies will have long-term and structural impact on Shunde’s development and on the need for comprehensive and detailed research. So it is recommended that by the end of every year, Shunde should establish the next year’s research direction and content in conjunction with Shunde development, thus ensuring its control over the research agenda.

Second, in response to intense changes in development conditions, research projects concerning emergency response mechanisms should be established. The studies should focus on responses to rapid changes in the environment, propose major response plans, and provide a foundation for adjustments to the original plans (e.g., research on major policy changes on higher level, major changes in regional development, and major infrastructure projects’ impact).

3.4 Improve Planning Integration Platform

Planning results need to be managed and integrated through a planning system platform. This planning system platform should build a "unique plan map" on the comprehensive planning level. All the maps and data in the existing statutory plans should be integrated to ensure the map and data of the comprehensive plan can be applied to all statutory plans without mistakes. "The unique plan map" needs to ensure alignment in maps and consistency in data. The alignment of maps requires a standard system with high compatibility, which will include important information from all statutory plans. Therefore, Shunde needs to use relevant laws, regulations, norms, and standards as a foundation to establish a map standard based on comprehensive plans in response to practical local development needs. The map standard will regulate content, expression, and depth of the icons, to ensure uniqueness of planning elements on the same spatial coordinates.

The data consistency has two folds of meanings. First, it represents consistency between the different plans’ data. Due to different statistical standard and year of initiation, the usage of data for “current situation” will be different. And due to the difference between analytical methods and year of completion, the target numbers of

the plans are also different. As a result, there exist numerous differences and contradictions between different planning results. To resolve the issue, Shunde needs to build a core database of the current situation and planning target, based on its strategic planning. Second, it also points to the consistency between graphics and numbers in the same plan; in other words, figure numbers match. On the implementation level, there is a need to ensure consistency between the area of the map and the digital scale in order to strengthen the accuracy of the drawing.

During the permission stage, Shunde needs to build a unified business collaboration platform for information sharing and business collaboration across departments, and to promote reform of the approval system. Based on this platform, information required for approval by different departments can be integrated in the same service package and shared between all the offices for approval, allowing a once for all examination, thereby significantly reducing the time required for examination and approval, streamlining replication in reporting, and eliminating unnecessary material submission.

4. Conclusion

China is currently in a period of rapid change, with a huge population, complex legal framework and power distribution in the government. So on the city and county level, it is difficult to resolve all the development plans and control spatial construction within one single plan. Yet it is very much necessary to effectively coordinate and integrate a large number of plans to eliminate conflicts and to accelerate planning permission.

The Impending Revolution in Urban Planning Practice: Intelligent and automated, but will it be garbage in, garbage out?

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Synopsis

New technologies promise plans for new cities in months and planning permits in an instant, revolutionising the relationship between the national or provincial legal framework and more local integrated planning. Combined, they will create a revolution in urban planning, but will the outcome be “garbage in, garbage out”?

Abstract

UN population forecasts translate into a need to build three complete new cities the size of Brisbane every month for the next thirty-five years. Mostly in the massive arc stretching from northern Africa through the Middle East, and across all of Asia to Oceania.

Current planning systems struggle to produce quality plans for new urban areas at anything like that rate. Notwithstanding geographic information systems, on-line lodgement and word processing, plan making techniques and approvals processes have barely changed over the last hundred years: start with a metropolitan planning strategy, convert this to local statutory ‘land use zoning’ plans, prepare detailed master plans for new or regenerating areas and then pass these to surveyors and civil engineers for implementation (engineering design, procurement and construction). But each step takes two to five years. Typically, planning takes something like ten years from initiation to a significant level of development on the ground, but only if each plan in the chain is good enough to achieve political support and be implementable. If not twenty years is still a ‘good’ result.

After the planning is done and the infrastructure is underway the planning approvals process kicks in, a process so fraught with complexity and value judgements that development application delays are the bane of every architect and developer. In some places all aspects of urban planning and design are subservient to the statutory process, when it should be the reverse.

The one advantage of this slow grind is that it allows for extensive community, peer, political and judicial review: a net of safeguards against dangerous and inappropriate development.

However, to house an additional 3 billion people in cities by 2050 administrations seeking to manage urban development and population growth in a resource efficient and environmentally sensitive manner will increasingly turn to recent innovations that are already being deployed piecemeal around the world, e.g.:

- Daily satellite imagery;
- Drones;
- Big data, powerful algorithms and deep learning;
- Transect based planning;
- Form based codes; and
- Automated applications approvals software.

These and other technologies, if properly integrated, promise plans for new cities in months and planning permits in an instant, revolutionising the relationship between the national or provincial legal framework and more local integrated planning, but at the cost of many existing safeguards. Combined, they will create a revolution in urban planning, but will the outcome be “garbage in, garbage out”?

Keywords

urban planning, big data, transect planning, approvals software

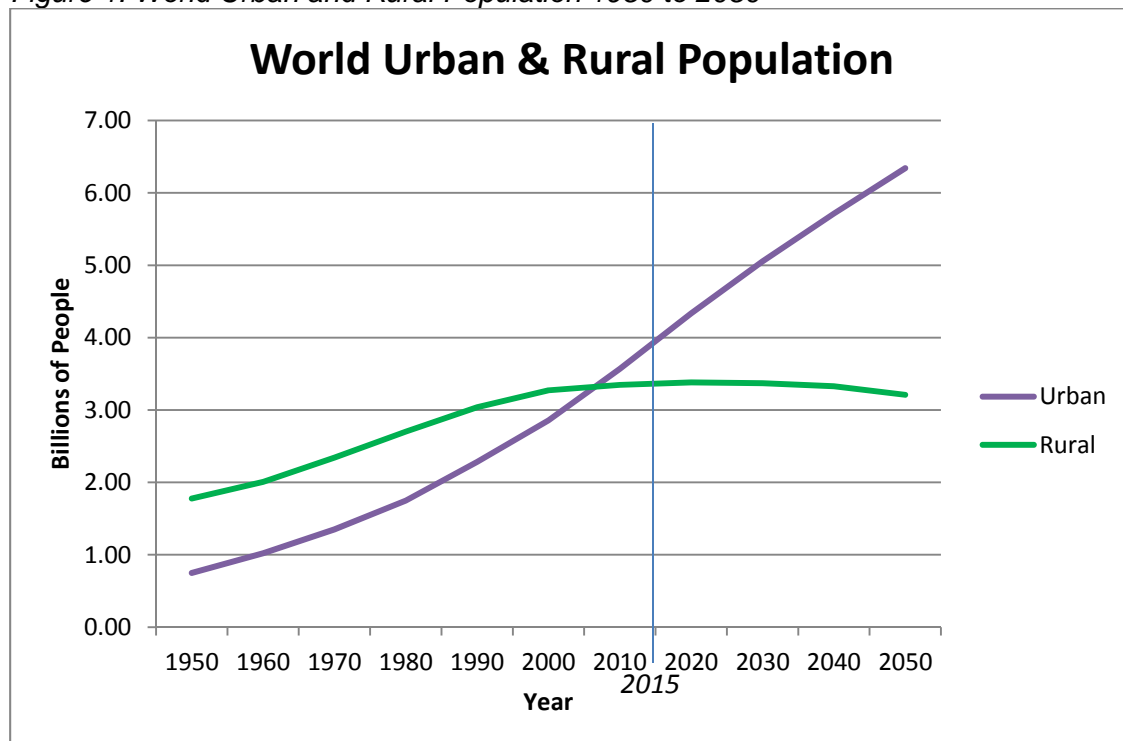
The Impending Revolution in Urban Planning Practice: Intelligent and automated, but will it be garbage in, garbage out?

by E. Stephen GOLDIE, RFD, BTP, MPA, CPP, City Planning Advisor, Abu Dhabi Department of Municipal Affairs

Increasing Urban Population

In 1950 three quarters of a billion people lived in large towns and cities, or 30% of the total world population of over 2.5 billion. In 2009 this had grown to 3.42 billion, just over half of a total population of over 6.8 billion. The United Nations Secretariat forecasts (see fig. 1 below) that by 2050 6.4 billion, 67% of a total of almost 9.6 billion people will live in urban areas.

Figure 1: World Urban and Rural Population 1950 to 2050



United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, custom data acquired via website July 2015 (see <http://www.un.org/en/development/desa/population/>)

Just over a third of that growth is expected to be in China, India and Nigeria, but the remaining two-thirds will be in the countries around those countries: a massive arc stretching from North Africa through the Middle East, across Asia and into the Pacific.

An additional 3 billion urban residents in forty years translates into a need to build a new city for a population of one million people, complete with hospitals, schools, workplaces, recreation and all the rest, at a rate of six a month, because:

$$1,000,000 \text{ residents} \times 6 \text{ cities} \times 12 \text{ months} \times 40 \text{ years} = 3,080,000,000 \text{ residents}$$

However, planners are more used to dealing with rates of growth than global population totals. From this perspective, an increase in urban population from 2009 to 2050 of 3.42 billion to 6.4 billion is a compounded annual increase of 1.54%, because:

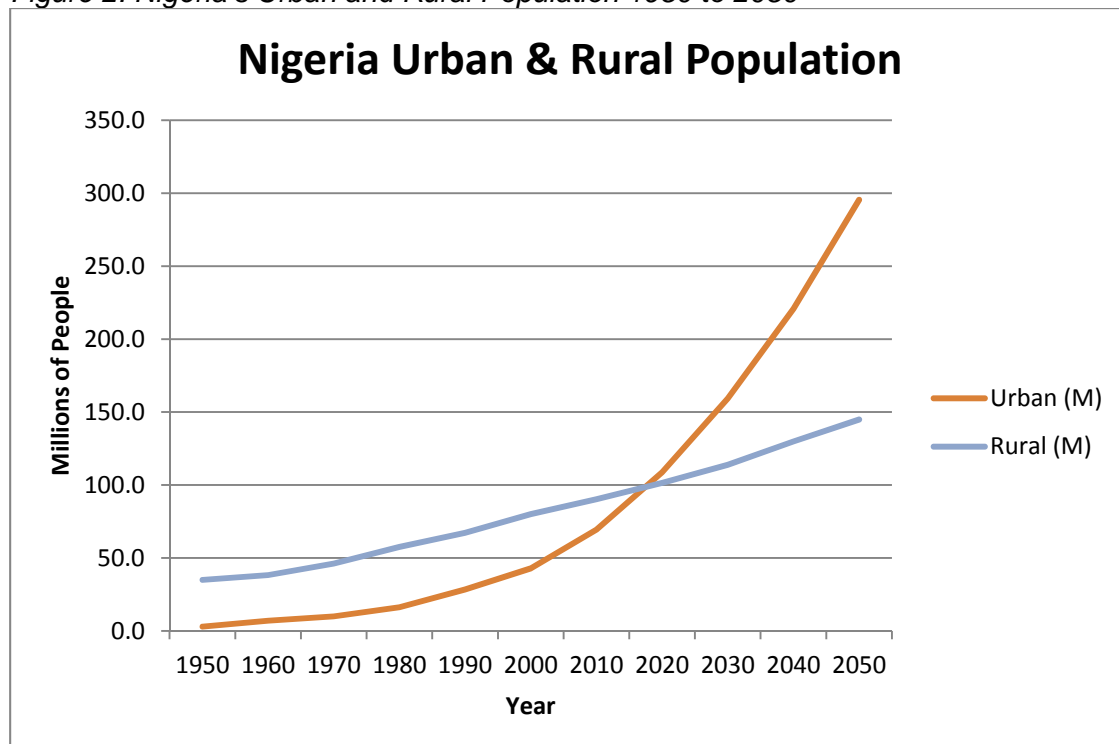
$$6,400,000,000 = 3,420,000,000 \times 1.0154^{41}$$

1.54% doesn't sound too difficult as a planning task, but of course it is envisaged that this growth will mostly happen in the rural areas of the world, not the already urbanised 'west'.

In Nigeria, for example (see fig. 2), the urban population growth from 2010 to 2050 is forecast to be 3.69% p.a., which is a much harder planning task. This is shown graphically at figure 2 and can be demonstrated mathematically as:

$$295,500,000 = 69,400,000 \times 1.0369^{40}$$

Figure 2: Nigeria's Urban and Rural Population 1950 to 2050



United Nations, Department of Economic and Social Affairs, Population Division (2014). *World Urbanization Prospects: The 2014 Revision*, custom data acquired via website July 2015 (see <http://www.un.org/en/development/desa/population/>)

Similarly, the total, national growth over the same period is forecast by the United Nations' Population Division at 2.57% and the rural sector at 1.19%. However, the rural growth will mostly be absorbed in incremental village expansion, the need to house the additional 226.1 million city dwellers, as expressed mathematically below, will be the main task.

$$295,500,000 - 69,400,000 = 226,100,000 \text{ residents}$$
$$1,000,000 \text{ residents} \times 5.6525 \text{ cities} \times 40 \text{ years} = 226,100,000 \text{ residents}$$

One city of one million people, fully built and completed in 15 years is a very difficult task, so is planning and building five to six such cities each year for forty years in a country such as Nigeria an impossibility? Firstly, giving up is not an option, secondly the calculation above is a simplification, much of the growth will be incremental to existing cities, cities that have an existing governance and private enterprise capability to manage and deliver urban growth, but clearly it is still a massive task, and at the same time we have to manage and maintain the existing urbanism. There is also an ongoing requirement to replan to rectify past errors, to rebuild what was destroyed by war or natural disaster, and to replace that which can no longer be used, or which is no longer loved. As a consequence the figures above are a minimum. We should not be surprised if local demand assessments are fractionally higher, perhaps an additional five percent or more.

So, if giving up is not an option, current planning administrations that currently struggle to produce plans for new urban areas at anything like the rate required will need to implement efficiencies of at least one order of magnitude. What previously took ten years will need to be done in one. So, if currently it takes something like ten years from the initial instruction to identify to commencing construction on the ground then it will need to be achieved in twelve months instead.

The "3S" menace: scale, speed, and scarcity of means

"Let's start with the global challenge of urbanization. It's a fact that people are moving towards cities. and even if counterintuitive, it's good news. Evidence shows that people are better off in cities. But there's a problem that I would call the "3S" menace: The scale, speed, and scarcity of means with which we will have to respond to this phenomenon has no precedence in history. For you to have an idea, out of the three billion people living in cities today, one billion are under the line of poverty. By 2030, out of the five billion people that will be living in cities, two billion are going to be under the line of poverty. That means that we will have to build a one million-person city per week with 10,000 dollars per family during the next 15 years. A one million-person city per week with 10,000 dollars per family. **If we don't solve this equation, it is not that people will stop coming to cities. They will come anyhow, but they will live in slums, favelas and informal settlements.**" [my emphasis]

Alejandro Arevena

Clearly this is a '3S Problem' as defined by Chilean architect Alejandro Arevena: a problem that is simultaneously large scale, requires a speedy response and must be dealt with by individuals or teams suffering a scarcity of means (see text box above and his TED Talk: *My architectural philosophy? Bring the community into the process*, posted Nov 2014), but it would be good if it was that simple, there are also climate change and technological innovation to consider as well.

Environmental Push Factors

It is neither my position nor my expertise to make any pronouncement on climate change, but it is my responsibility as an urban planner to assess how we should respond. So what should we respond to?

Firstly, it is clear that it is a global issue. The leaders of the world's nations and/or their relevant ministers will not be converging in Paris in November 2015 just for two weeks of theatre and sightseeing. "France will be hosting and presiding the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21/CMP11), otherwise known as 'Paris 2015' from November 30th to December 11th. COP21 will be a crucial conference, as it needs to achieve a new international agreement on the climate, applicable to all countries, with the aim of keeping global warming below 2°C." (COP21, 2 August 2015: <http://www.cop21.gouv.fr/en/cop21-cmp11/what-cop21-cmp11>)

Secondly, there are already reports (see text box below) of the impact of sea level rise on low lying islands, such as the Sunderbans, a vast archipelago in the delta region of the Bay of Bengal, partly in India and partly in Bangladesh.

Sea Level Rise in the Sunderbans

In a study conducted in 2012, the Zoological Society of London (ZSL) found out that the Sunderban coast was retreating up to 200 meters in a year.

Researchers from the School of Oceanographic Studies, Jadavpur University, estimated the annual rise in sea level to be 8mm in 2010. It had doubled from 3.14 mm recorded in 2000. The rising sea levels had also submerged around 7500 ha of forest areas. This, coupled with around 1.5°C rise in surface water temperatures and increased levels of salinity have posed a problem for the survival of the indigenous flora and fauna.

Loss of the mangrove forest will result in the loss of the protective biological shield against cyclones and tsunamis. This may put the surrounding coastal communities at high risk. Moreover, the submergence of land mass have rendered up to 6000 families homeless and around 70,000 people are immediately threatened with the same. This is causing the flight of human capital to the mainland, about 13% in the decade of 2000-2010.

A 2015 ethnographic study, conducted by a team of researchers from Heiderberg university in Germany, found a crisis brewing in the Sunderbans. The study contended that poor planning on the part of the India and Bangladesh governments coupled with natural ecological changes were forcing the flight of human capital from the region.

Already, Lohachara Island and New Moore Island/South Talpatti Island have disappeared under the sea, and Ghoramara Island is half submerged.

(Wikipedia 2 August 2015: *Sundarbans: 9. Climate change impact*)

Other island nations, such as the Maldives are also affected. The Intergovernmental Panel on Climate Change's 2007 report predicted the upper limit of the sea level rises will be 59 centimetres (23 in) by 2100, which means that most of the Maldives' 200 inhabited islands may need to be abandoned. (Wikipedia 2 August 2015, *Maldives: 3.2 Climate*)



Former Maldivian president Mohamed Nasheed, has stated, "If carbon emissions were to stop today, the planet would not see a difference for 60 to 70 years." "If carbon emissions continue at the rate they are climbing today, my country will be underwater in seven years."

Finally, the United Nations Higher Commission for Refugees commissioned a report on this issue. Its key findings are listed in the text box below.

Effects of climate change on human migration and displacement

- Climate change is already contributing to displacement and migration. Although economic and political factors are the dominant drivers of displacement and migration today, climate change is already having a detectable effect.
- The breakdown of ecosystem-dependent livelihoods is likely to remain the premier driver of long-term migration during the next two to three decades. Climate change will exacerbate this situation unless vulnerable populations, especially the poorest, are assisted in building climate-resilient livelihoods.
- Disasters continue to be a major driver of shorter-term displacement and migration. As climate change increases the frequency and intensity of natural hazards such as cyclones, floods, and droughts, the number of temporarily displaced people will rise. This will be especially true in countries that fail to invest now in disaster risk reduction and where the official response to disasters is limited.
- Seasonal migration already plays an important part in many families' struggle to deal with environmental change. This is likely to become even more common, as is the practice of migrating from place to place in search of ecosystems that can still support rural livelihoods.
- Glacier melt will affect major agricultural systems in Asia. As the storage capacity of glaciers declines, short-term flood risks increase. This will be followed by decreasing water flows in the medium- and long-term. Both consequences of glacier melt would threaten food production in some of the world's most densely populated regions.
- Sea level rise will worsen saline intrusions, inundation, storm surges, erosion, and other coastal hazards. The threat is particularly grave vis-à-vis island communities. There is strong evidence that the impacts of climate change will devastate subsistence and commercial agriculture on many small islands.
- In the densely populated Ganges, Mekong, and Nile River deltas, a sea level rise of 1 meter could affect 23.5 million people and reduce the land currently under intensive agriculture by at least 1.5 million hectares. A sea level rise of 2 meters would impact an additional 10.8 million people and render at least 969 thousand more hectares of agricultural land unproductive.
- Many people won't be able to flee far enough to adequately avoid the negative impacts of climate change—unless they receive support. Migration requires resources (including financial, social, and political capital) that the most vulnerable populations frequently don't have. Case studies indicate that poorer environmental migrants can find their destinations as precarious as the places they left behind.

(Dr Koko Warner, Dr Charles Erhart & ors: In search of shelter - Mapping the effects of climate change on human migration and displacement, United Nations University Institute for Environment and Human Security & ors, Nov 2009)

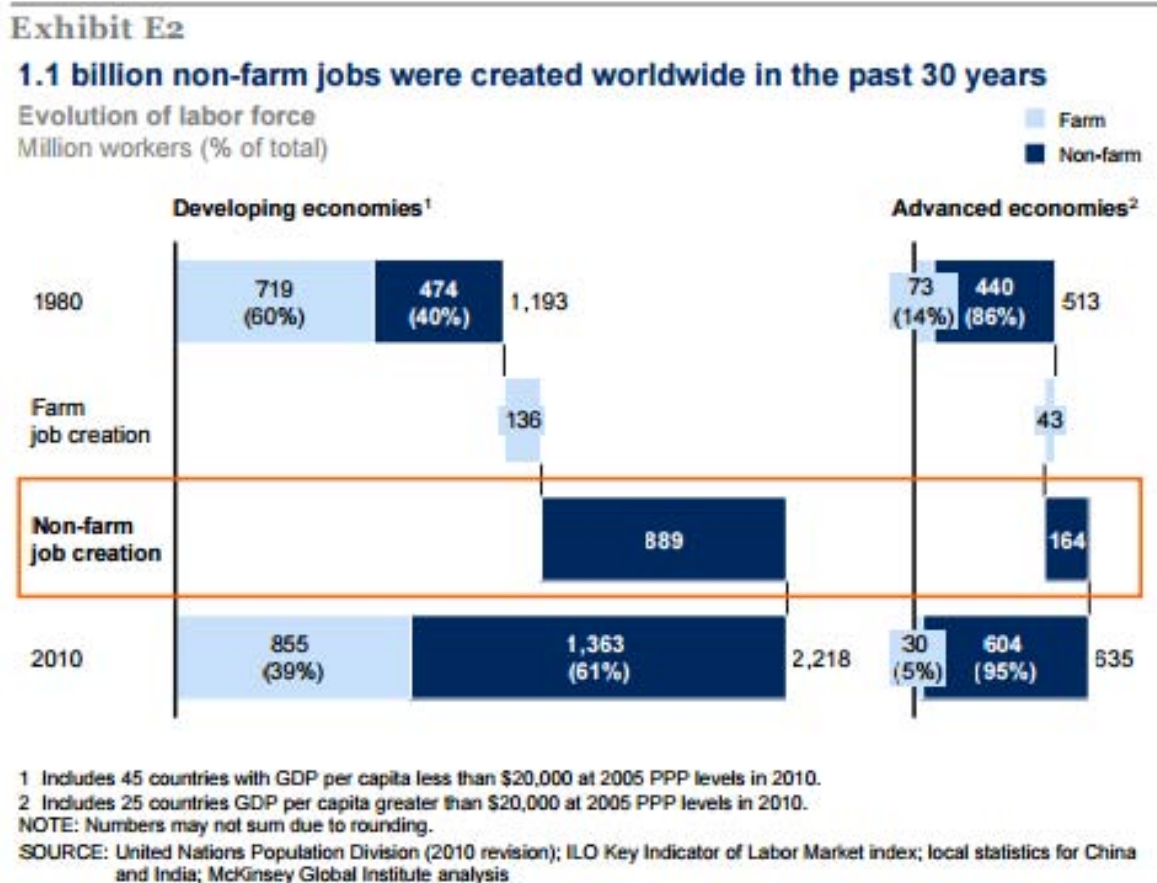
The report does not calculate the numerical effect of sea level rise, but it refers to a study by the International Organisation for Migration (Brown, Oli. 2008. *Migration and Climate Change*. International Organization for Migration: Research Series No. 31. Geneva: IOM) that estimates “IOM takes the middle road with an estimate of 200 million environmentally-induced migrants by 2050.” as being ‘middle of the road’. That’s an additional 200 million-person cities required by 2050!

Economic Pull Factors

As I discuss later, technological innovation may give us some tools to help us in the response to these problems, but it must also be recognised that it is one of the contributing factors. Simply put, climate change is pushing people to the cities at the same time that technological innovation is pulling them in.

McKinsey’s have calculated that in the thirty years from 1980 to 2010 1.1 billion new jobs were created in the non-farm sector, 900 million of these in developing economies, as demonstrated in exhibit E2 from that report reproduced below as figure 3.

Figure 3: The growth of urban jobs from 1980 to 2010.



(Dobbs, Richard & others, *The World at Work: Jobs, pay and skills for 3.5 Billion people*, for McKinsey Global Institute June 2012)

The report then goes on to detail massive skill gaps that will only be able to be solved by improving education standards, something that is only likely to happen with increased urbanisation.

The Situation

It is clear that Franklin's Law is as true today as when the great man first coined it: "If the poor folks are happier at home than they can be abroad, they will not be lightly prevailed with to cross the ocean." (Benjamin Franklin quoted at p 46 Zolberg, Aristide R., *A Nation by Design: Immigration Policy in the Fashioning of America*, Russell Sage Foundation.)

In summary, global population is increasing rapidly, environmental change, along with corrupt governments and conflicts in some parts of the world, are pushing poor people to migrate to already successful urban areas, while the employment growth in urban areas is pulling people towards those areas. This has led many countries to engage in urbanisation programs, notably India and China.

China's story is well known, "In 1978, less than 20 percent of China's population lived in cities; now the share is more than half. ... China's urbanization is projected to reach about 70 percent—some 1 billion people—by 2030." (p3 *Urban China - Toward Efficient, Inclusive, and Sustainable Urbanization*, World Bank, 2014). With a strong, centralised government and an efficient public sector, China has implemented this plan without an unseemly rush to the cities, and has therefore averted the development of shanty towns, urban slums and the like.

However, India's urban slums are legendary, and nothing will stop the migration, so the strategy there is about improvement, as promoted in Indian Prime Minister Narendra Modi's vision of 100 smart cities (see fig. 4).

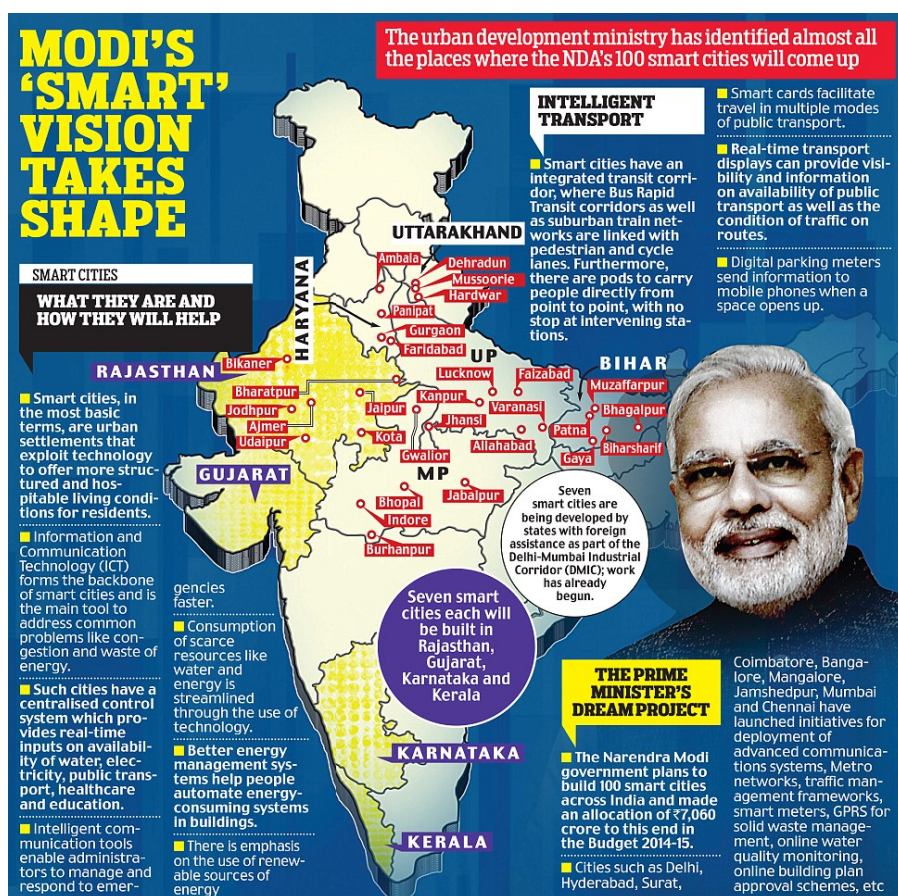


Figure 4: 100 smart cities for India

(Vikram, Kumar Modi's vision of 'smart cities' takes shape as government commits to delivering first three hubs by 2019. Mail Online India, 29 August 2014)

Wherever urbanisation occurs it usually leads to improved incomes, better education, particularly for girls, and subsequently falling birth rates and generally an improved quality of life. Which are all good outcomes, but they depend upon governments managing the process to minimise the bad outcomes: slums, sickness, fires, crime, riots, political instability and so on. To do this we, the urban planners and designers, need to help our governments by providing effective plans and then to administer them efficiently, in an environment where the task is of a massive scale, where it must be done at unprecedented speed and where, as always, there will be a scarcity of resources. All of these circumstances mean that a revolution in urban planning is now a necessity.

To achieve this we will be forced to adopt new technologies while ensuring that we make best use of our usually scarce resources.

Technological Innovation and Urban Planning

Whether or not humanity is approaching a knowledge singularity, it is clear that discovery and innovation are proceeding at a very rapid pace. So rapid that in preparing this paper I was aware of relevant new understandings, philosophic and scientific, and technologies at least weekly. Most of this information comes via digital media and informative television such as TED Talks and the BBC's *Click* program. The information technology journals are too difficult to follow for the layman, and there are too many of them to manage, while the professional planning journals seem not to be interested. I can see no solution to the dilemma of coping with the quantity of knowledge other than the development of a new specialisation within the profession, the urban planning technologist.

So what would an urban planning technologist be expert in? In order to give some structure to this analysis, I have grouped the items as follows:

- Technological innovation in satellite photography;
- Remote sensing and data;
- Technological innovation in the planning process; and
- The application of technological innovation in urban planning.

Technological Innovation in Satellite Photography

At the global level Google Earth has put aerial photography onto everyone's desktop, laptop, tablet and smart phone, but the resolution ranges from 15 metres per pixel for most areas of land to 150 millimetres per pixel in some frequently viewed urban areas and it is updated sporadically, every few years or so. It is very useful for virtual site visits or quick comparisons of places, but for more detailed purposes the in-house geographic information systems (GIS) are much more useful. Except of course that GIS is updated on a transaction basis, usually tentatively when something is approved and then permanently when the 'as built' drawings are received. Changes outside of this process are not recorded. These include illegal building works, minor structures that do not require approval, the growth and decline of vegetation, parking occupancy, increase and decrease of water bodies, and many other things. What if daily aerial photography was available? What if it was in infra-red as well as the normal spectrum?

The San Francisco based company *Planet Labs* was founded in 2010 as *Cosmogia Inc.* and its progress since then, according to Wikipedia is:

- April 2013, successfully launched two demonstration CubeSats, Dove 1 and Dove 2;
- November 2013, Dove 3 and Dove 4 were launched.

- June 2013, it announced plans for Flock-1, a constellation of 28 very small (4kg and 10x10x30 cm in size) Earth-observing satellites to provide daily imagery with a resolution of 3–5 m (9–15 feet);
- February 2014, Flock-1 CubeSats were successfully deployed from the International Space Station;
- May 2015, Planet Labs had raised a total amount of \$183 million in venture capital financing;
- July 2015, Planet Labs acquired BlackBridge and its RapidEye constellation. BlackBridge was a German geospatial information provider focused on assisting in management decision-making through services based on their own Earth observation imagery. The company operated a five satellite constellation producing 5 meter resolution imagery over 4 million km² in 5-band color imagery every day.

Note that there is 149 million km² of land on the surface of this planet, so 4 million km² every day equates to a refresh every 35 days. Planet Labs' has announced that it is working towards a flock of 131 satellites very soon. These will give whole earth coverage with good resolution in 5-bands and will be updated daily.

But the above is at only 3 to 5 metre accuracy, planners, and particularly urban designers need a much higher level of accuracy. This is where high precision computer modelling comes in. *GeoSim* (<http://www.geosimcities.com/#02>) has taken 14 sq km of Vancouver to 1cm per pixel and ± 1.10 cm precision by using aerial photography and a LIDAR equipped car that stops every 20 m to take a complete scan. Uses include utility analysis, development visualisation, virtual visits for real estate marketing and on-line shopping, energy consumption, flood mapping, traffic forecasting, etc, etc. Their on-line simulation of flood waters entering the city is worth watching.

There are even more accurate digitisations than that. *Urban Circus* has modelled Melbourne's CBD to building information modelling (BIM) accuracy, that's ± 1.5 mm, as shown in figure 5, below.

Figure 5: Melbourne Central Business District as a composite building information model



Image courtesy of Urban Circus <<http://www.urbancircus.com.au/>>

All technologies come with a cost in both time and money, but the trend is clearly towards every built structure and its natural landscape being able to be modelled to a precise level of detail. The issue is not cost, but how best to use it.

Finally, camera equipped, remote controlled, quadcopters, otherwise known as civilian drones, are now almost ubiquitous. Their utility in capturing aerial video as part of a planning tour is clear, but in this role they are probably a supplement to the frequent satellite photography and fine grained digital models discussed above.

Remote Sensing and Data

Along with the mapping of terrain and structures, more and more information is being stored on computers, but there are two important drivers that will make this useful to urban planners. The first is the rise in sensors and the second the increasing proficiency of machine learning.

Sensors are anything that can record data and transmit it in digital form to a computer. As well as satellite photography discussed above, these include weather stations, financial transactions, metadata about telephone calls, data from electricity grids, self-driving cars, customer preference data from on-line shopping, etc, etc. The mass of seemingly unrelated data is way too large to be processed by specific software routines devised by humans, it is a job for semi-intelligent machines.

“Machine learning is a branch of artificial intelligence, which itself is a branch of computer science. The general idea is that instead of instructing a computer what to do, we are going to simply throw data at the problem and tell the computer to figure it out for itself.” (Kenneth Cukier: *Big data is better data* TED Talks, Sep 2014.)

Stanford professor Arthur Lee Samuel (1901 – 1990) wrote the first version of the *Samuel Checkers-Playing Program*, the world's first self-learning program, in 1959. Essentially, the computer, an IBM 701, remembered what worked and didn't and taught itself to maximise its winning opportunities. After a few improvements to the software, it was soon able to beat most amateurs and by 1970 it was good enough to challenge professionals. (https://en.wikipedia.org/wiki/Arthur_Samuel Wikipedia, 9 August 2015).

Going back to Google Earth, have you ever wondered how you can just type in an address for anywhere in the world and it will take you there? Initially Google used mapping data provided from GIS systems to create the addressing layer in their system, but this was slow and not all governments were cooperative.

Figure 6: Examples of house numbers from Google's Street View.



However, after their StreetView cars had taken images of most urban areas on the planet it was easy. They developed software incorporating complex algorithms that could identify the house numbers (see fig. 3) and then to read the numbers from the images. Reportedly, the software has automatically detected and transcribed close to 100 million physical street numbers at 98% accuracy, worldwide. Google engineers are reported as saying “We can

transcribe all the views we have of street numbers in France in less than an hour.” (<http://www.technologyreview.com/view/523326/how-google-cracked-house-number-identification-in-street-view/> MIT Technology Review, posted 6 January 2014.)

So, while it might be difficult to get a planning agency to fund software that plays checkers, it would be much more likely to commission a satellite data company to give it a monthly report on actual changes to land use compared to permitted land uses, for example.

Technological Innovation in the Planning Process

Concurrent with the advances in satellite photography, sensor gathered big data and the use of machine learning to analyse that data, the geographic information systems (GIS) already established within government and local government are becoming ever more powerful in their application.

Trilogis, a specialist GIS application company in northern Italy (Chief Technical Officer, Guiseppi Conti presented at ISOCARP 2014), has developed and implemented in the Italian autonomous provinces of Trento and Polzano systems that mostly use existing GIS, to automate the planning and building application processes to the point where most of the assessment is carried out by the computer. In addition, other actions by other officers, for example utility works planned near the site of a new development, are automatically cross-notified.

There are many other innovations that space prevents me from describing. These include, but are not limited to pedshed mapping, social network mapping, comparative indexes of various kinds and so on.

The Application of Technological Innovation in Urban Planning

There is no doubt that the systems implemented by *Trilogis* and others will progress to the point where applications encoded in BIM formats will be assessed and approved or rejected automatically, but this opens up a question first asked of Charles Babbage, co-inventor of the Difference Engine, a mechanical calculator, in the 1820's:

On two occasions I have been asked, "Pray, Mr. Babbage, if you put into the machine wrong figures, will the right answers come out?"

(p. 67, Babbage, Charles: *Passages from the Life of a Philosopher*, Longman and Co. 1864.)

By the 1960's the answer to this question had been reduced to 'Garbage in, garbage out' (GIGO). In the fields of computer science and information and communications technology this refers to the fact that computers, since they operate by logical processes, will unquestioningly process unintended, even nonsensical, input data ("garbage in") and produce undesired, often nonsensical, output ("garbage out"). This leads to what I consider to be the core challenge facing senior urban planners and designers today: the development of a coherent planning philosophy and concomitant practices that can adapt and absorb the technologies described above and produce good, workable plans quickly, so that the engineers, architects and landscape architects can design and build the urbanism required for an additional three billion people by 2050.

Thankfully, I think that the New Urbanism is a coherent philosophy and set of practices that has already demonstrated an ability to produce good urban outcomes, but the process of learning this set of practices is difficult outside of north America, and of course it must not

only be learnt, it also needs to be adapted both to the locale and to the technologies that have or will soon impact on our profession.

The New Urbanism

The description of a whole philosophy of planning is a task requiring many books, not just part of one paper, so I will simply discuss three key breakthroughs pioneered by the New Urbanists and leave the interested reader to inspect the 1993 Charter of the New Urbanism at <http://cnu.org/who-we-are/charter-new-urbanism> and then read one of any number of books about the movement (e.g. Katz, Peter: *The New Urbanism – Towards an Architecture of Community*, McGraw Hill, 1994). Of the many innovations and improvements that can be attributed to the New Urbanism, the three that I have chosen are the charrette, form based codes and the rural to urban transect.

The Charrette

“A charrette is an intensive planning session [typically five days] where citizens, designers and others collaborate on a vision for development. It provides a forum for ideas and offers the unique advantage of giving immediate feedback to the designers. More importantly, it allows everyone who participates to be a mutual author of the plan.” (CNU <http://cnu.org/resources/tools> 10 August 2015).

Before the charrette a planning process could take many years, but following its introduction most projects that used this process properly reduced their time frame to eighteen months or even less. Typically this comprises a month to six weeks to identify the expert studies required (environment, flooding, heritage, noise, social, traffic, etc.) commission the sub-consultants and allow them two to three months to complete their studies and write their reports. Concurrently, mapping is assembled, stakeholders identified, they and the general public informed, venues booked and so on. In total this takes four to six months after which the planning is conducted in about one week, interactively with the public and stakeholders. Thereafter it takes another four to six months to refine the drawings and write up the process after which the proposed plan usually requires formal advertising and political deliberation, say a further six months.

Clearly future time savings are unlikely to be in the one week charrette that is the main part of the ‘planning’ element of the process. We need instead to concentrate on intelligent methods to use satellite photography and other sources of data to produce the specialist inputs into the planning process within a few weeks rather than months. Similarly, the writing and fine-drawing process needs to be automated or conducted concurrently with the charrette. Many charrettes already employ a professional illustrator and photographer during the charrette, there is no reason that professional planning report writers and planning draughtsmen cannot be included too. Finally, on-line opinion polling pushed to the community has the potential to shorten the formal approval process. Although it should be noted that no planner should accept a 51% result, anything less than 80% of the relevant community in favour probably means that the plan is suspect. In total, the use of new technologies and better management of the process has the potential to reduce plan making to less than six months, including formal approval.

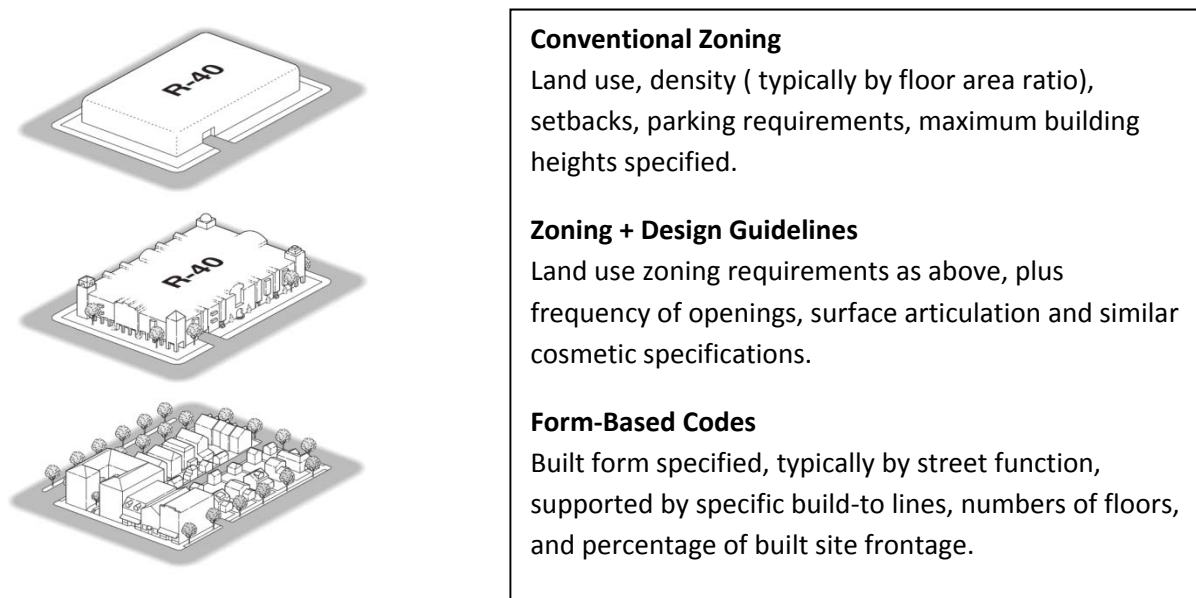
Finally, regarding charrettes, they are not for the faint-hearted, they expose the planning director to considerable professional risk, so s/he must ensure that the charrette leader and his/er team are suitably qualified and experienced (e.g. NCI certified).

Form Based Codes

Many statutory planning systems use land use as their primary organising principle and then control built form by regulations specific to particular land uses. From the town of Seaside (1981, by Andre Duany and Elizabeth Plater-Zyberk of DPZ, Miami, USA for Robert Davis) onwards the New Urbanists have instead regulated built form first and then controlled land use, as necessary, by specific regulations. This approach, in my opinion, has repeatedly demonstrated simpler regulation and better urban outcomes.

As with any statutory planning technique there is a lot of 'devil in the detail', but in essence "Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. The regulations and standards in form-based codes are presented in both words and clearly drawn diagrams and other visuals. They are keyed to a regulating plan that designates the appropriate form and scale (and therefore, character) of development, rather than only distinctions in land-use types." (CNU <http://cnu.org/resources/tools> 11 August 2015).

Figure 9: Illustration of typical outcomes from three coding paradigms.



(adapted from the Form-Based Codes Institute <http://formbasedcodes.org/definition>, 11 August 2015)

Importantly, most aspects of a form based code have the potential to be translated into algorithms (by an urban planning technologist) that can test a digitally lodged application in a recognised BIM format, so this is certainly an area worth exploring. However, when combined with transect based planning, form based codes are even more powerful.

The Transect

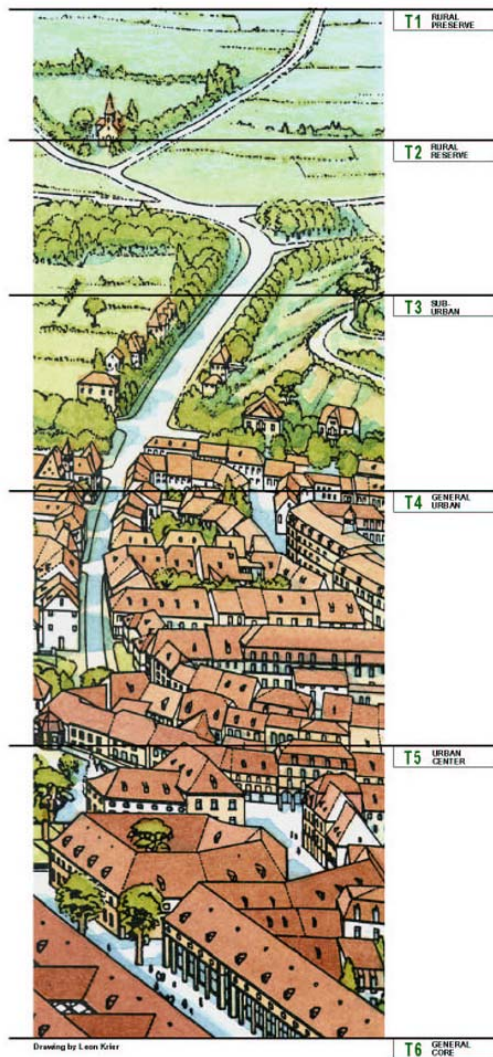
The use of the transect as a framework for spanning environmental analysis, urban existing conditions analysis and to provide a descriptive framework as an integral part of an urban plan was first published in the American Planning Association Journal in 2002 (pp 245-266, Duany, Andres & Talen, Emily *Transect Planning*, *APA Journal*, Summer 2002, Vol 68, No. 3). I was first introduced to it by Andres himself the year that article was published. His company, DPZ were engaged by a developer to prepare a plan for a 112 hectare green

fields project in the northwest corridor of metropolitan Perth known as Jindee and I was then the Executive Director for Local and Regional Planning with the Western Australian Department of Planning and Infrastructure. Jindee is still a live project and notably the website even describes the masterplan by a drop down menu listing only the shorthand for the transect elements: “T1”, “T2”, “T3”, etc. (see <http://www.jindee.com.au/main.html>).

Many useful images, including figures 7 and 8 below, and the latest version of SmartCode *The SmartCode v9 and Manual*, the document aligning its use to the United States context are available from the Centre for Applied Transect Studies website (see <http://transect.org/index.html>).

From before 2002, the transect has been used as a basis for urban survey, planning and regulation of everything from road design to hours of operation in the entertainment industry. In Al Ain we used it to better understand the structure of the city, so it is certainly also applicable to the desert cities of the gulf states.

Figure 7: European Transect – Oblique Aerial Sketch



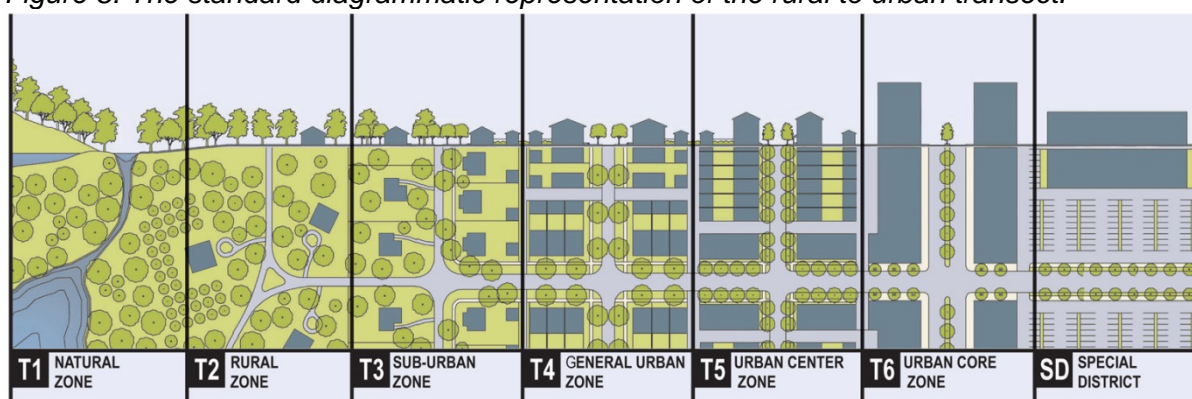
Title: Calibrated Transect Illustration
Source: Leon Krier

The CNU website describes it thus: “Naturalists use a concept called the transect to describe the characteristics of ecosystems and the transition from one ecosystem to another. Andres Duany has applied this concept to human settlements, and since about 2000 this idea has permeated the thinking of new urbanists. The rural-to-urban Transect is divided into six zones: core (T6), center (T5), general urban (T4), sub-urban (T3), rural (T2), and natural (T1). The remaining category, Special District, applies to parts of the built environment with specialty uses that do not fit into neighborhoods. Examples include power plants, airports, college campuses, and big-box power centers.

“The Transect is useful for designing and developing what Duany calls “immersive environments”: urban places in which the whole is greater than the sum of its parts. Duany Plater-Zyberk & Company describes the concept thus: ‘The Transect arranges in useful order the elements of urbanism by classifying them from rural to urban. Every urban element finds a place within its continuum. For example, a street is more urban than a road, a curb more urban than a swale, a brick wall more urban than a wooden one, and an allee of trees more urban than a cluster. Even the character of streetlights can be assigned in the Transect according to the fabrication from cast iron (most urban), extruded pipe, or wood posts (most rural).’”

(Centre for Applied Transect Studies 2008)

Figure 8: The standard diagrammatic representation of the rural to urban transect.



(Centre for Applied Transect Studies 2008)

Physical Resources – The Planning Staff

Finally, whatever the technologies used, there will always be a need for trained urban planners and designers to apply them to the process of synthesising the situation and the analysis that we know as “plan making.”

The resources applied to planning depend upon many local factors, not least of which are the relevant laws, but in my experience most of these factors can be subsumed into one constant, the size of community that one local government planner can manage if it is growing at 1% a year. Let us call this population the single planner population (SPP). For example, assume that this factor is constant for any particular state then the number of planning staff (S) will be given by the population (P) and the rate of growth, actual or desired, whichever is the greater, (R) as follows:

$$S = \frac{P \times R \times 100}{SPP}$$

So if SPP, the population that requires one local government planner to manage it effectively and efficiently if it is growing at only 1%, is 12,500 then:

$$S = (12,500 \times 0.01 \times 100) / 12,500$$

$$S = 1$$

Scaling this up to a city of 1,000,000 growing at 1.5% we get a staff requirement of one hundred and twenty, as follows:

$$120 = (1,000,000 \times 0.015 \times 100) / 12,500$$

Clearly, the same city, growing at twice the rate, requires twice the staff, because

$$240 = (1,000,000 \times 0.03 \times 100) / 12,500$$

Finding the value of the single planner population (SPP) for any jurisdiction is simply a matter of auditing all planning organisations in that jurisdiction and taking the average (of course the audit has to normalise for consultant budgets and professional-to-support staff ratios in order to ensure an accurate comparison). As always there will be special cases and

varying preferences for in-house teams over consultants, but in my experience this simple formula gives remarkably consistent results.

Unfortunately, budget makers rarely recognise that in town planning increased size and/or rate of growth creates more problems, not fewer, and therefore this ratio is constant. Cities exist because they give economies of scale, but in the planning of a city there are no economies of scale.

These same budget makers might also express a tendency to assume that technologies such as automated approvals will allow a reduction in staff. However, if this is done I am confident that the “garbage in, garbage out” rule will quickly assert itself and more planners, rather than fewer, will be required to sort out a mess that we do not have the time to deal with. It would be much more prudent to redeploy statutory planners to planning, urban design and as urban planning technologists in order to ensure that the plans that are being converted into computer algorithms are sound, and that the outputs are audited for consistency with those plans.

If there is a short-term spare capacity in planning staff then it would be wise of an agency (or group of agencies) to send them to undertake projects in less privileged jurisdictions. Revising Franklins Law slightly: "If poor people are able to move to nice towns and cities in their own countries, they will not be likely to seek refuge in ours."

Conclusions

Urban planners and designers are faced with the task of housing an additional three billion people in towns and cities by the year 2050. This is the equivalent of building six one million-person cities every month for forty years. If climate change displaces another 200 million people the task will be that much greater. It is truly one of Alejandro Arevena's “3S Problems”: a problem that is simultaneously large scale, requires a speedy response and must be dealt with by individuals or teams suffering a scarcity of means.

Compounding this problem, but also demonstrating that it might be part of the solution, the developing economies are generating large scale employment in their urban areas, some 900 million jobs in the thirty years from 1980 to 2010, but most of these jobs require the level of education that only a well-designed and managed large town or a city can provide.

China, since the 1980's, and India more recently have recognised this issue and responded with massive city building or urban improvement programs, but only one-third of the additional three billion new urban dwellers are expected to be in China, India and Nigeria, the remaining two-thirds will be in the countries around those countries: a massive arc stretching from North Africa through the Middle East, across Asia and into the Pacific.

Clearly, if massive new urban areas are required very quickly, the planning process must be fast and reliable, and conducted within, or for, efficient well managed planning agencies. This requires not only the adoption of all that the new technologies have to offer, but also the development of a plan making paradigm that optimises the application of that technology in a way that produces good urbanism. In short a planning paradigm that avoids the possibility of “garbage in, garbage out”.

The most significant advances in the understanding of urban areas and in the practice of producing good urban planning, and built outcomes, has been by the movement known as the New Urbanism. Three of these advances, the charrette, form based codes and transect planning are particularly relevant.

Many planners are already familiar with the two-fold improvement in efficiency that a good charrette process provides. Firstly, by shortening the plan making process through simultaneously interactive and iterative plan preparation and secondly by increasing the level of support for the plan across all stakeholders and concerned citizens, thereby shortening the approval process.

However, it is the combination of transect based planning and form based codes that, in my opinion, gives the opportunity to develop the New Urbanism further towards a systemisation that simultaneously enables localisation, which is, perhaps, the core conundrum of urban planning across the ages. Success will enable automation of the approvals process with the possibility of some eighty percent of applications being approved, almost instantaneously, on-line.

If it is feasible to shorten the plan making process and the development approvals process then perhaps we can, collectively as a profession, enable from now to the year 2050, an additional three billion people to live, learn, work and play in good, new cities and towns. Perhaps some of these cities will even stand the test of time and become the great cities of the Twenty-first Century!

Discussing Collaborative Planning in Cape Town?

A case study on insitu informal settlement upgrading and the role of planners and local government in bottom-up projects.

Antje HEYER; Stockholm University, Sweden

1. Introduction: Informal Urbanisation

Cities are worldwide growing and in 2050 around 66% of the world population are expected to be living in urban agglomerations (UN 2014). Hereby the so called Global South and especially the African Continent, are the most rapidly increasing regions. What has been called informal settlements or slums, are the main driver of the urbanisation process, yet often poorly acknowledged by governments and authorities. A rapid rise of the informality has also been taken over in South Africa where the after Apartheid government has started several programmes to fight the increase of informal settlements and 'provide the poor with decent shelter' until 2003 (White paper on Housing). However, these goals have obviously not been reached so far as the number of informal settlements has increased from 300 to 2600 since 1994 (CORC Annual Report 2014). In 1999 South Africa, developed the 'Cities without Slums' action plan which became part of the UN-millennium goals 'to have achieved a significant improvement in the lives of at least 100 million slum dwellers' by 2020 (Cities Alliance).

In practice however, South African municipalities still consider informal settlements as threatening towards the society and cities, since local governments have not managed to cope with the situation. Therefore many municipalities run a security driven approach, which in fact means that new informal structures get demolished or entire settlements get evicted. Even though the national *Upgrading of Informal Settlements Programme (UISP)* was launched in 2009, which clearly focusses on the participation of local residents into an upgrading process, this practice has mainly been failed to implement. Informal settlements are still considered as temporary and their negative aspects are on focus, yet neglecting that these are still homes to millions of people.

This article presents a summary of my **Master Thesis**, dealing with the question of how to cope with this rising informality in a more participatory approach that includes residents and values their experience in the planning process. The Thesis is written in the field of Urban Planning at Stockholm University in Spring 2015, yet will be finalized in October the same year. Purpose of the field research was the South African Alliance of 'Shack/ Slum Dwellers International' (SDI SA) and their four local partner organisations: Informal Settlements Network (ISN), Community Organisation Resource Centre (COURC), the Federation of the Urban and Rural Poor (FEDUP) and the uTshani Fund.

Among other projects, these organisations engage into what has been called '**re-blocking**', a form of participatory informal settlement upgrading where the residents can not only stay in their communities but also have the chance to design their surrounding built environment. Re-blocking has been practiced for five years now in Cape Town as a local implementation of the National Housing Policy UISP. The City of Cape Town is not only supporting these projects but officially acknowledge them as future solution of how to deal with the increasing number of these settlements (City of Cape Town 2013).

Nonetheless the practice of re-blocking remains challenging as many actors and ideas come together and have to find mutual solutions, mainly following the wishes and needs of the residents instead of municipal top-down planning. Therefore, this article refers to the planning approach of **collaborative planning** which has been developed since the 1980s in order to shift away from the failed grand top-down ideas of planning (Healey 1997: 32) towards a more participatory and democratic solution. The article challenges the often criticised practicability of collaborative planning and the question whether it is actually 'doable'. Considering the major increase of population and cities in the so called Global South, it raises hereby not only the question to what extent collaborative planning is practically doable in the Global South. Yet mainly whether it is legitimate as it is based on occidental ideas and theories which are not the same as locally diverse cultures. The Research questions are:

1. *To what extent can 're-blocking', as a participatory practice of urban poor community in insitu informal settlement upgrading processes, be evaluated as successful collaborative planning?*
2. *To what extent can the practice of re-blocking contribute towards more inclusive cities and a better implementation of the collaborative housing policies in South Africa?*

2. Methods and Collection of Data

The data for the Thesis was gathered by myself as a single researcher in almost eight weeks field study in Cape Town, South Africa, from March to April 2015. My research focusses on the work of the SDI Alliance South Africa and especially the role work of the local partner NGO CORC (Community Organisation Resource Centre) and the ISN (Informal Settlement Network) and FEDUP (Federation of the Urban Poor) in Cape Town. I recorded 15 semi-structured interviews and beyond that many more semi-formal interviews were taken but not recorded. The interviews generally focused on the challenges that have come up during the projects, the quality of communication between the different partners and what could be improved in their work relation. Also I asked explicitly about important learning outcomes and how the interviewees see the future of the projects and partners.

The interviewees have been:

- Local community leaders and Community steering committee – members of the ISN or FEDUP; the ISN president;
- Architects, Planners, Policy Experts and Managers of CORC;
- Project Manger of the City of Cape Town;
- Department of Housing; Project Partner Habitat for Humanity – Policy Researcher

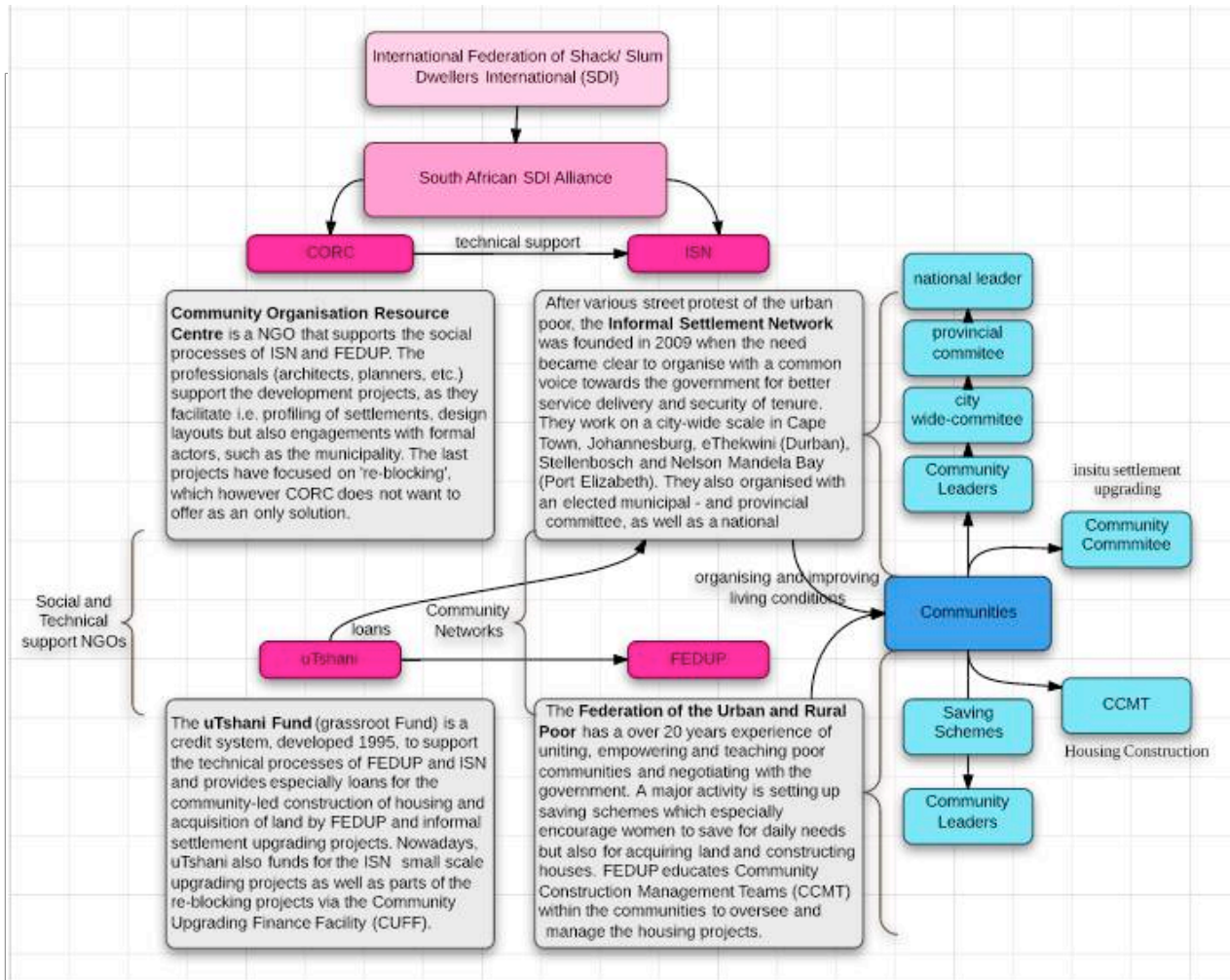


Illustration 1: Internal Structure of SDI SA and Relation towards communities.

Source: Antje Heyer

3. Urbanisation and Collaborative Planning

Since re-blocking is a participatory practice in which communities, several NGOs, grass-root organisations and representatives from the City of Cape Town discuss and plan together, it can be declared as practice of collaborative planning. This article raises the question how collaborative planning can work in the Global South with the example of re-blocking in Cape Town. Hereby it aims to analyse which learning outcomes can be drawn from the case example for the practice of collaborative planning and more participatory planning approaches in general. In a first step, the idea, aims and challenges of collaborative planning will be briefly elaborated in the following.

In the 1980s the approach of collaborative planning has become popular and ever since remained challenging the grand ideas of Modernist planning. In the field of collaborative planning one of the main authors is undisputedly Patsy Healey with her book 'Collaborative Planning – Shaping Places in Fragmented Societies' (1997, 2006). In contrast to the top-down Master Plans of the 20th century there are no specific plans, rules or policies how to operate collaborative planning as the approach in itself aims to be flexible and adjustable to

every new situation of planning and its different actors. The approach is based on the theory of social constructivism and as a result it argues that if actors, ideas and problems can never be the same, there can neither be a generalized model applying to every situation. Nonetheless guidelines have been developed out of good practice and experience. Healey argues that if different stakeholders and ideas come together, collaborative planning shall motivate them to discuss and challenge their ideas, ideologies and habits. Therefore, an open communication and transparency as well as honesty are important criteria for successful collaboration.

3.1 Good Practice of Collaborative Planning and its Critic

Consequently the role of planners has shifted from the dominating Master planners towards mediators between the different actors. Forester (1993) summarizes the position of planners in collaborative planning as a 'critical friend'. Healey goes beyond this and speaks of planners as 'knowledge mediator and broker' (1997: 309). Brand & Gaffikin agree on the mediating point and position planners as intermediary facilitators, as 'someone who creates the platforms where an interactive and non-hostile discourse among equals can take place' (2007: 291).

However, collaborative planning has also been criticised as utopia and not practical since power relations, hidden agendas and corruption would always intervene and prevent an open discussion. In fact the researchers Brand & Gaffikin (2007) who had analysed collaborative planning efforts in Northern Ireland found that transparency and a truly open discussion were not happening: poor population groups remained marginalised and rich and influential groups remained seeking direct ways of connections towards the government even though they pretended to be interested and agreeing to the discussion results. Healey (2006) and Innes (2004) are aware of these power relations and that a consensus that will satisfy all parties equally may not be found, yet they argue even though an idealised process of communication and without power struggles, it utopian, there should nonetheless be the opportunity to communicate in a space which acknowledges diversity and free speech.

3.2 Legitimate Collaborative Planning in the Global South?

When it comes to collaborative planning in the Global South, Watson (2002) criticizes that the idea of collaboration a participatory citizens is based on the idea of a functional and democratic society. According to this, collaborative planning approaches are based on the faith that a civil society is capable to be come organised and act democratically, which is mobilised and mainly represented in NGOs and GROs. However, due to socially and economically fragmentation in many Sub-Saharan countries, societies would lack a sufficient amount of these supporting organisations. Moreover, many of the existing NGOs and GROs would have a limited scope as they would often not collaborate with the government, since they would see it as part of the problems and competition for funding rather than as a developing partner. Therefore, NGOs and GROs would be mainly depending on foreign funding which limits their scope on to the funding concept and lifespan of their donors (Watson 2002, Sanyal 1991).

Other authors criticise the implementation of collaborative planning in the Global South on a normative base, as the approach would still impose ideas based on Western Thinkers on other cultures, such as Habermas' situation of free speech. Huxley & Yichtafel (1998: 336) strongly criticize that '[...] planning is still portrayed as an unproblematic global activity, adhering to similar logic of communicative rationality wherever it is found.' Similarly, Watson argues that current planning theory indeed tries to be more cultural sensitive and aware of

differences but still treats world views and value-systems superficially which would lead to a 'conflict of rationalities' (2003: 396). 'This conflict between the rationalities of governing and administration, and rationalities of survival (of those who are poor and marginalised), offers one way of understanding why, so often, sophisticated and 'best practice' planning and policy interventions have unintended outcomes [...]' (Watson 2002: 2272). Especially as planning work touches the lives and livelihoods of households and communities (2003: 396), this clash becomes especially evident when considering that the livelihoods of an increasing part of the population in the Global South are shaped by what is declared as informality i.e. housing, transport, supply of basic services and waste management. Informal settlements are shaped by the nature of this social and economic fabric in contrast to the saturate frameworks that regulate the formalized city (van Horen 2000: 392).

Therefore, the following section gives a brief overview about the reasons of rise of informality in South Africa and failed policies that tried to tackle the situation yet failed with its unintended outcomes, as Watson puts it. This overview is important in order to understand the challenges and expectation that planning in South Africa bears nowadays and have a direct impact on re-blocking projects.

4. History and Present of Urban Planning in South Africa – from RDP to UISP

With the end of the Apartheid regime, the South African government started to tackle the dramatic housing situation that has been developed through the oppressive regime. Due to eviction and the demolishing of entire neighbourhoods, millions of non-white South Africans have lost their homes. Many were relocated to the Townships which are remote satellite districts with standardised housing yet lacking social infrastructure and job opportunities. As the Township areas were undeserved and lacking sufficient space, people started to move back towards the city centres. However, even though non-whites were prohibited by the 'Prevention of Illegal Squatting Act No 52' to own property within the cities people were forced to squat illegally. Hence, large areas of so called informal settlements have been growing since the Apartheid until now. In Cape Town of 1980 around 120.000 black residents were officially enumerated and around 90.000 illegal squatters were estimated (Myers 2011: 88). Despite efforts of the democratic ANC government the number of settlements has been growing from 300 in 1994 to 2400 settlements in 2010 (CORC Annual Report 2013/14).

4.1 The Reconstruction and Development Programme (RDP)

In 1994 the ANC government of Nelson Mandela government started the Reconstruction and Development Programme (RDP) following the idea that adequate housing is a human right and the delivery thereof was a responsibility of government itself (Ley 2009: 18). Thus, housing should be given for free to the poor income groups of under 3500 Rand per month. Since this honourable and very ambitious approach was launched, around 2.8Mio houses have been built, yet the number of informal settlements keeps on growing. The reasons for this have mainly been migration from the rural to urban areas in South Africa itself and the foreign immigration from surrounding, economically and socially less stable countries. However, the construction of the so called RDP houses has been problematic as well, since these often lack quality and show up cracks and other damages, which are results of struggles with the subsidy allocation but also of corruption among profit oriented developers (Socio-Economic Rights Institute of South Africa 2011: 62). In 2010 the Minister of Human Settlements announced in the department's budget speech that 10% of its budget, or R1.3 billion would had to be used to rectify badly built RDP houses (Prinsloo 2010). Moreover, many families tend to sell or rent out the RDP house they have received, as a source of

income or due to the fact that the remote location of the RDP settlements does not provide sufficient labour opportunities or connection to the city centre. Also, the standardised 40m size houses do not meet the needs of many families which forces them to extend their houses with informal shacks (Robins 2002: 521)

4.2 The Upgrading of Informal Settlements Programme (UISP)

Due to these issues, it became clear that the RDP approach would not be able to fill the increasing housing backlog and the top-down approach failed to meet the actual needs of people. Therefore, a different solution had to be found and in 2004 the *Breaking New Ground* (BNG) programme was launched as a more participatory approach which intended to include communities. Moreover, it aims for an *insitu* approach which means that residents, the so called communities, will not be relocated and their homes demolished but the upgrading will happen at place, as more time and cost efficient alternative. However, it took five years until the National Policy on Housing was revised in 2009 and for the first time contained a guideline of how to implement participatory upgrading was written, the so called *Upgrading of Informal Settlements Programme* (UISP).

The UISP is part of the *National Upgrading Support Programme* (NUSP) provided by the Cities Alliance and also the World Bank Institute (Cities Alliance Webpage). NUSP then not only developed two practical tools which is on the one hand the Urban Settlement Development Grant (USDG) and the Upgrading of Informal Settlements Programme (UISP). Also it announced 16 pilot project, including the N2 project in Cape Town, which should view and study best practice and should help to develop a detailed upgrading strategy for the whole country (Tissington 2011: 92).

Those pilot projects are however declared as failed (Centre of Housing Rights and Eviction, 2009). As for N2 Gateway project, for instance, half of the residents were still re-located in order to make space for high quality apartment houses, which the former resident can not afford. Those re-located people have remained in remote settlements with less job opportunities and social support. Often projects fail due to political unwillingness to support local communities or even if municipalities want to work communities, they have not tools or mediums how to actually communicate with them. This is because communities are often very large and often not a *Gemeinschaft* but disrupted through (forced) migration, poverty and criminality. Municipalities have no social workers or similar helpers who are educated to work in the settlements, and the residents themselves are often suspicious towards the government, due to South African History and even after Apartheid instances of corruption and failure.

Nonetheless, the UISP document itself has been evaluated as a sophisticated and well organised programme as it clearly requires the participation of informal settlement communities and favours *insitu* upgrading. Several interviewees stated that they believe if partners would truly follow the programme, a successful upgrading could be possible. The UISP is divided into the following four upgrading phases, which a municipality and its partners have to follow.

4.2.1 Upgrading of Informal Settlements Programme (UISP) structure

The UISP defines that upgrading projects have to be divided in four phases which are supposed to follow after each other. Whereas Phase 1-3 'focusses on community participation, supply of basic services and security for all residents', Phase 4 is the Housing consolidation which follows once several settlements have successfully run through the three previous phases (UISP: 27). The funding for these projects will be allocated by the provincial

Minister of Human Settlement through the USDG on an annual basis. Municipalities may receive progress payments as advance. The upgrading projects are generally

Within Phase 1-3, the Programme allocates funding for community capacitation. This is defined as, for instance: 'Socio-economic surveying of households; Facilitating community participation; Conflict resolution, where applicable' (UISP: 31). Even the acquisition of training material and equipment could be required (Ibid: 33). The UISP hence clearly states that 3% of the funding is allocated to community capacitation which refers specifically to the work ISN and CORC focus on. Moreover, 'the programme provides for project management fees up to an amount not exceeding 8% of the project cost.

Phase 1: Application – Municipalities apply for funding at the provincial government through a business plan which should contain the pre-feasibility of the project as well as details about the Housing Consolidation and the participation of the communities through the Integrated Development Plan (IDP).

Phase 2: Project Initiation – The municipalities should receive funding for the acquisition of land, undertaking a socio-economic and demographic profile of the settlement, a geotechnical survey of the allocated land in regards of the environmental impacts and the provision of interim basic services such as water and sanitation. According to the UISP these activities are generally to be undertaken within a time period of 8-12 months.

Phase 3: Project Implementation – The municipality should now submit a final business plan which has to be approved by the executive council so that advanced follow up fundings can be paid for: project management capacity, relocation assistance (if necessarily), land rehabilitation, permanent service infrastructure and the construction of social amenities, economic and community facilities.

Phase 4: Housing Consolidation – Once the three previous phases are complemented, houses can be constructed, ownership registration (where appropriate) and any outstanding social amenities will be constructed in order to achieve a formalised living area with solid housing. (UISP: 42f.).

Through Phase 1-3 the municipality is responsible for the surveying of suitable land and infrastructure services but not for top-structures which also means that funding will only be allocated for services. Therefore, top-structures, such as shacks in this case, have to be provided by the supporting NGOs and communities. It is important to notice that shacks can only be constructed once the ground structures, such as water pipes and electricity are provided by the municipality. Therefore, all project partners and communities are depending on the delivery and time plan of the municipality. This has to follow the three UISP Phases with its pre-given time frames; for instance Phase 2: Project Initiation, is set for 8-12 month. A major fault line of the UISP though is that it does not define how municipalities can communicate with communities and how these can participate in the planning which still remains a major challenges. The following chapter illustrates how the South African SDI Alliance has developed a way to not only mediate between municipality and communities but also mobilise the latter to engage themselves.

5. Implementation of the UISP: Re-blocking in Cape Town

5.1 What is re-blocking?

Despite this spiral of evictions, the City of Cape Town has in 2010 signed for 22 pilot projects in *insitu* informal settlement upgrading in the greater Cape Town area. This form of upgrading focusses on supplying basic services, such as water, sanitation and electricity in settlements

without re-locating the communities but letting them stay during and after the upgrading process.

In cooperation with the South African Alliance of Slum/Shack Dwellers International (SDI SA), the partners involved are specifically the Informal Settlements Network (ISN), and the NGO *Community Organisation Resource Centre* (CORC) which have further developed the concept of *re-blocking* as a tool for the inclusion of communities into the planning and implementation of the upgrading process. Re-blocking, which can be used interchangeably with the term, 'blocking out' has two foci. It is first of all a 'mobilisation tool' for communities to become organised, engaged and educated about their living situation and their opportunities to change. Second, it is the implementation of a design in which the shacks of an informal settlement can be arranged in such a way that there is space for basic services such as water and sanitation. Hence, re-blocking is not only focussing on the exact needs of communities but also on the participation of them into the process.

It means that the old structures of the settlements will be turned down and replaced by standardised high quality material shacks.¹ The new shacks will be almost the same size as the original ones as in order to sustain equity among the households. This means that a family who had around 20m² before, will get a replacement of 20m². A couple which had maybe 8m² will receive 10m² since this is the minimum size of the standardized replacements. The replacing shacks will however not build up at the exact spot again but in a way that there is more



space in the settlement for roads of at least 3m. This shall function as a fire blockade as well as access for (emergency) cars. Also, in best case there will be space for (more) toilets/ taps and special needs of the community, such as open space for children to play, a creche, a community hall, a so called 'jungle gym' or spots for trading.

So far, the SDI partner organisations have successfully completed three re-blocking projects: KuKu Town, Mshini Wam and most recently Flamingo Height. In seven other projects, the process could not be finished, due to diverse reasons, such as community internal problems or the topography of the settlement made insitu upgrading impossible. Hence, the community must be relocated and could not be re-blocked.

5.2 The process: How does re-blocking work?

First step: Identifying needs and mobilisation

This section describes a kind of idealised process of re-blocking in order to explain the different steps. There are several ways how a community gets into the process of re-

¹ These are generally provided by the NGO iKhayalami. Further information: <http://www.ikhayalami.org/>, last access: 27-05-15.

blocking. For instance, there have been 22 settlements been selected by the City of Cape Town as pilot projects, others were approached by the ISN themselves due the precarious living condition in the community. Sometimes communities themselves contact the ISN or FEDUP as they want to improve their situation. Also, FEDUP has mobilised several saving groups of women saving money together, which then become active and want to invest in their built environment. In most of the communities already exist a leadership structure, which might be the oldest or richest person, or a person who had been living in the settlement for the longest.

Once a community is interested in upgrading, some of their members including the leadership go on an exchange to other communities, such as Mshini Wam or Flamingo Height which have already upgraded their settlement, in order to see what opportunities they have and inform the rest of their community about it. Visualisation has clearly been pointed out as a necessary tool to inform and convince communities. Clearly it lies to some extent in the human nature to see something before one believes it.

After the exchange, ISN and CORC would explain the process of enumeration and profiling to the community and look for volunteers participating in the process. Within the enumeration all structures, including family shacks, shops and other buildings, for instance a church, will be numbered, measured and the number of household members will be noted down. Information about the social structure of the community will be noted as well, this includes the number of (un-) employed people, the age structure, persons with special needs, etc. Volunteers from the community, will be advised by the CORC enumeration team to interview the residents with the help of an eight pages questionnaire. This process can take up to three months, depending on the number of shacks in the settlements and the number of volunteers measuring and interviewing. In the meantime the community gets also involved into what is called profiling. Despite its maybe misleading name, profiling it is in fact an open discussion in which the entire community can bring forward its needs and ideas – for instance the prevention of fire or flooding, sanitation and water or maybe a Creche or space for children to play. It is important to whereas enumeration focuses on the single households, profiling shall bring the community into an open communication about its status.

Second step: Designing

In the next step the technical team of CORC, which includes architects, planners and often interns, meets up with the community in order to discuss their needs and start planning the project in a design workshop. By now the community should not only have a leadership but also formed a volunteering community committee which will represent the interests of the entire community towards CORC. Also they will be constantly engaged into the designing process so that they can teach the remaining community about the process, challenges, tasks and next steps. Nonetheless it is recommended that as many members of the community as possible join the design workshop in order to insure that all voices will be heard and considered in the layout. This is especially important in big settlements of up to 400 community members.

For the design workshops, the technical team of CORC brings a large (A1 or A4) map or helicopter- view picture of the settlement to the meeting. This shall help the community to visualise their surrounding and mark on the picture toilets and taps, problem areas, such as spots of flooding, fire, or places of crime. It brings awareness to the community of which services already exist in their settlements and what their needs are. Also, the community marks the doors of the single structures and the structures' functions. This is practiced in order to get an overview on the map which shacks are living spaces and how many families

live in one structure, as well as which structures have other functions.

In a next step the community should identify social structures among the residents – which means families who are friends with each other and like to live next to each other and families or household who rather do not. In a best case the new shacks will be placed with a small open space in between so that people can meet up, and also can watch each others doors and belongings, such as drying laundry. Therefore, it is important to have representatives from each section, corner or other sub-division of the settlement in order place neighbours who will have this kind of cohesion.



Figure 3: Design Workshop in the community
K2 Section
Source: CORC 2015

To the design workshop the technical team will bring carton board which can be cut out to sample the shacks and place and move them on the map in order to display the possible new design. After the workshop the technical team will work on a proper layout and hand a draft to the community so that they can discuss it and can work on further ideas for the next design workshop. Once the community has decided on a final draft this will be presented to the municipality, which will survey the land in terms of possibilities for drainage and infrastructure. The municipality will give final input and decide on how many toilet boxes and taps can be set up, depending on

the space the layout provides as well as on their own financial capacities. In case of Flamingo Height, the municipality was able to provide *one and one ratio (1:1) service* which means there has been enough space for a standardised toilet box in front of every structure and most of the households also received their own tap.

Third Step: Funding and Implementation

In practice however, it can take up to even one and a half years from the point when the municipality receives the layout by the community and when it finally starts implementing. This because the municipality has to follow certain steps directed by the UISP and time frames directed by the *Municipal Finance Management Act (MFMA)*.

First the municipality will survey with its engineering team whether the community layout is ready to implement or changes have to be made. After that the municipality can start planning the budget and apply for funding via the UISP and the USDG (Urban Settlements Development Grant). This process as well can take up to several months and once funding has been allocated, the municipality has to make a public tender invite, which is obligatory for projects with a budget of R200,000 or more. A public tender invite is a transparent decision-making process in which possible contractors apply and compete for upgrading the project. The MFMA regulates that the time period of this tendering process can take up six months.

The municipality receives funding for upgrading projects by the USDG, which however is restricted on infrastructure provision, yet it does not fund top-structures, such as shacks or houses. This is because of the three Phase regulations of the UISP which only allows the municipality to invest into top-structures once the service upgrading of Phase 1-3 is completed. Funding for top-structures, has to be provided by CORC. Nonetheless, the major project costs are covered by the municipality. In a rough counting for a shack that cost 6000 Rand, the municipality invest 22,000 Rand for infrastructure and services. For the shack itself

however, 20% of the costs are contributed by the community members themselves (for instance R1200 in the case of a R6000 shack) which is a large contribution considering their precarious financial situation. However, experience has shown that once community members have created a sense of ownership for the project and specifically for their own shack, they are motivated to maintain it, work on the process and are less likely to quit the project. This becomes especially clear when remembering the case of RDP which many beneficiaries sell or not maintain well. Beyond that, the concept of contributing is supposed to unite communities, encourage them to become active and organised and by this show not only the government but also possible other funders that their community is worth to invest in. This has for example been the case for Flamingo Height, where Habitat for Humanity funded roof panels and windows for the shacks.

Communities do not need to have saved their entire contribution before the construction starts yet they should have collected a noticeable amount in order to demonstrate their will and engagement. This has been the case in Flamingo Heights where 95% of the adults have been unemployed. This has made the saving especially difficult for the community yet members became creative and started with selling single cigarettes or collecting waste as a source of income. Some of them are still paying back their loans today, even though the project was completed in 2013.

The above described process can be seen as somewhat optimal course, yet it fact already in seven re-blocking projects communities have been lost in the process and quit. There can be various reasons for this. Some challenges lie in the UISP structures and beyond the reach of the SDI Alliance, whereas some others are created by the difficult social interaction among the communities. In the following, three projects will be presented in order to given an overview of re-blocking in practice and the challenges that come with it. A

5.3 Challenges in the process

Several challenges lie in the communication among communities themselves. As described above, these are often socially fragmented and struggle to define common needs and interests. Therefore, the SDI SA partners emphasize that tasks of mapping and enumeration are less tools to collect data but most importantly tools to bring the community members into a conversation and build trust among them. This is the main important base so that communities can develop their own design in order to create a sense of ownership and belonging; which in contrast has often been failed to create through the RDP housing. However, the former project manager of the City of Cape Town, who had been in charge of the three completed projects, Flamingo, Mshini Wam and Kuku Town, states in the interview that he had to learn to from the NGOs how to share responsibility and let communities solve their problems internal. This working style was new to him but he emphasises that any project manager could do this job as long as he keeps an 'open and honest communication' with all stakeholders. Also he emphasized that fixed contact persons are truly important in order to supply a quick exchange and trust among each other.

Moreover, when communities decide and design themselves, the role of the urban planners shifts away from the traditional realm towards a more mediating role between the different actors. One architect of the NGO CORC stated that the biggest mistake one could do in the project was to neglect or leave behind the community in the process but focus on a good design that serves the personal ideas and standards as an architect or planner but forgetting about the main principle: the community must run the process and this is more important than the solution itself. Therefore CORC runs with the help of ISN as 'a people centred process more than anything else.' And the main task of the planners in this case was to help

a community to find out what their members want and reach these goals, instead of imposing a solution. The new role of planners also puts them into the position of negotiating and mediating between the communities and the municipality. The former project manager of the City of Cape Town, argues that he would not let single community members talk to contractors or let them make decisions. He had the experience that individuals tried to undermine the common made decisions and take advantage for themselves. For instance a person asked a contractor for a toilet inside of their structure instead of placing it outside of it, without getting permission from the other stakeholders.

Beyond the community layout which also CORC/ISN agree on, the municipalities have have the last decision on whether this layout can be implemented. This is simply because municipalities are according to the UISP responsible for the infrastructure and the feasibility of the layout. Therefore, municipalities make open calls for engineers and other contractors to survey the land and calculate required water and sewage systems etc. However, so far the municipality of Cape Town has only started to analyse the community layout on its feasibility when it was complete finished and the community had invested several month of work in it. Hence, the community members expected that the City of Cape Town would take action soon and start constructing. However, as the City invest public money, it is obliged to look for contractors in an open call as it is appointed in the UISP Phase 2. In fact this process is estimated for 8-12 month which is in fact a long waiting time for communities who then might have to adjust their layout again if it does not meet the engineers requests. Obviously this causes frustration and may lead members to quit the process. On the other hand the former project manager also stated his experience that communities constantly changed their design which would have delayed the process. Therefore he emphasized that an open but mostly earlier dialogue between all partners would improve and speed up the results.

6. Learning outcomes

6.1 Space for improvement in Cape Town / UISP

So far Cape Town has been the only city/ municipality engaging into re-blocking, which stands in contrast to the city still being involved in shack eviction through the Anti-Land Invasion Unit. For the next years several re-blocking projects are planned and the city has taken learnings of the completed ones. This is the importance of community ground work and the fact that communities should solve their internal issues self and that the city can only give guidance. Yet the major learning outcome is that the city should join layout designing process as soon as possible in order to save time. So far it had been the case that a community finishes a design and is ready to implement yet this is the point when the city starts, checking that layout, calculating costs, and looks for contractors which could take up one and a half years while the communities are waiting and losing interest. In order to change this, the City of Cape Town has started capacitate more human resources to interact with communities earlier and guide them in their process. An other major benefit would be that communities will become more motivated and easier convinced to engage into up-grading once the municipality shows presence. As stated by the ISN, communities tend to rather believe what an outsider says than what they hear from inside the community and their leadership. Thus, it could make a major difference whether members hear from each other verbally that officials will engage or whether officials themselves visit the settlements and explain their plan, requirements and engage in the design.

However, it has to be emphasized that the City project management has to follow these time frames according to the UISP. The first three UISP phases (1) Application; (2) Project Initiation and (3) Project implementation require a specific time frame. Yet, these phases

basically embrace the steps SDI SA follows with re-blocking as well. Phase 1 and 2 actually require community participation and undertaking a socio-economic profile of the settlement, which is exactly the work that SDI SA does, however without being payed as a public contractor. This is because when municipalities open a call for a public contractor small NGOs have difficulties to compete with the consulting firms that normally get commissioned with community facilitations tasks. However, Phase 1-3 of the UISP follow similar steps as the process SDI SA and the communities go through: Identifying needs and mobilisation, Designing and Implementing. Hence re-blocking is a successful application of the UISP which not only has lead to the upgrading of the living conditions but also to their mobilisation and engagement. Moreover, the practical implementation of the UISP through re-blocking also shows its fault lines, as it clearly requires community participation yet it does not specify how municipalities shall manage this. Therefore NGOs and GROS play an important role, as mediators and facilitators which should however be more (financially) acknowledged in the process. An update of the UISP stating that these kind of organisations can apply for funding costs and may be preferred if they are suitable, would help NGOs and GROs to continue their work, as many are depending on donor organisations and their agendas (see also Watson 2002, Sanyal 1991).

6.2 What can be learned from re-blocking in Cape Town as a process of Collaborative Planning?

The UISP itself is a well thought through programme which could lead to a major progress in South Africa's treatment of informal settlements. Even though the *national* government is uniting with community Grassroot Organisations and SDI SA, many projects struggle or fail on the unwillingness of *local* governmental officials to expect the programme and let communities participate. However, even if they wanted to, most municipalities do not know how to communicate and work with communities. Considering the history and the political situation of South Africa this is understandable yet not immutable. The UISP started with 22 pilot projects which were supposed to show best practice and learning outcomes of how to implement the UISP. None of these have succeeded in the sense that insitu upgrading was taking place and that communities participated. Thus, it might be time to discuss its disadvantages revise the UISP. It is clear that the national government and Department of Housing can not not determine how municipalities engage with its citizens as somewhat flexibility towards the local circumstances is wanted. This state of mind is also displayed in the approach of collaborative planning, which refuses to set up rules but gives guidelines of open communication and discussion. However, many municipalities miss this openness and lack a board for exchange, towards their citizens but also among each other.

So what could be learned from this specific case of re-blocking is the importance of communication but also to set a medium where exchange of ideas can happen. All stakeholders of a multilayer project must have clear rules where and how to approach each other in order to avoid clientelism. Moreover, they must come together as soon as possible in order to avoid waiting time, misunderstandings and frustration but build on high trust from the beginning. Legal frameworks should be the main guideline but give space for flexibility in order to adapt to local situations. Also they should be adjustable in case project reveal fault lines in the framework or simply that issues on the ground should be solved differently. The case of South Africa shows the importance of communication between the local and national governmental level since their (political) mindsets may differ from each other. Therefore, a clear medium and rules of communication as well as fixed contact persons are important.

Moreover, Basil van Horen, who had been the project manager of an early upgrading project in Durban in South Africa, formulated out of his experience the following criteria for good collaborative planning in an informal environment. He set up the following criteria that bear a general value for planning (van Horen 2000: 395):

- planning must happen literally on the ground, which means that residents must participate on all levels of the process in order to keep up with social and physical change
- planning should evolve out of the process, rather being set from the beginning – a masterplan will set limits right from the beginning will not cope with these changes
- 'While planning needs to be grounded in an understanding of micro settlement-level dynamics, it must be linked to an understanding of the macro political and economic forces that provide the context for settlement growth' (van Horen 2000: 393).
- cooperative autonomy: indicates that the local decision making structure should be linked with the institution of power in order to ensure that different planning approaches are accepted, though 'the relationship between project decision-making structures and government should allow local autonomy for project decision-making.

7. Conclusion

Re-blocking as a form of informal settlement upgrading is not only valuable in South Africa. Considering the growth of the informal sector in housing, transportation, economy, etc., it is an example of how to approach informality not as a threat but as the normal way of living for millions of people every day which therefore must be taken seriously. Beyond the aspects of informality, re-blocking has shown that collaborative planning is able to succeed, even in fragmented societies such as the South African. The challenging process bears learning outcomes that have value for planning in general, especially when considering that top-down approaches such as the modernist planning of the 1960s, have led on the long term to socio-economic stress and fragmentation. Collaborative planning aims flexibility towards local ideas and yet on the other side it requires clear guidelines of how to communicate and through which media. Roles and positions must be set for all actors in order to maintain an overview about the process and decisions. Therefore, collaborative planning displays a planning approach that is based on exchanges and learning that becomes more and more important in an *glocalising* world in which cities strive for global competition and connection, yet citizens ask for more participation and influence on their neighbourhoods and regions. The case example reveals on the one hand the struggles of the implementation of national programmes on the local ground. On the other hand it shows how these struggles and best practice of local projects can contribute to the better understanding of (national) frameworks and suggest improvements.

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Re-inventing planning in Nigeria: the case of the Land Use Policy of the new Port Harcourt City

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Since the immediate post-civil war era in the late 1960s, master plans have been prepared for Port Harcourt and other major cities in Nigeria to guide their development. However, urban planning dates back to the colonial government with the Nigerian Town Planning Ordinance in 1948. The earliest tool of urban planning centred on development control involving the preparation of development schemes. In the 1960, master planning was introduced. So far, three master plans have been prepared for Port Harcourt. In spite of changes in terms of the institutional framework and statutes, plan implementation remains disappointing. The basic problem remains moving planning from the macro level of the master plan to the micro level where actual land use decisions are taken by individuals and government officials and agencies. What processes exist presently have failed to effectively manage development in the city. The same challenges that have often been cited continue to be highlighted by researchers and planners. Clearly those who make land use decisions in the city have failed to introduce any innovative and proactive measures. Thus, the city continues to lack a properly defined urban structure with well- regulated land use systems. Following the creation of the Greater Port Harcourt City Development Authority by law in 2009, the authority sought to implement the new master plan and implement it. It is clear that the effort has not been as successful as expected. To promote the implementation process, the City Authority engaged a group of indigenous development professionals to prepare a development control manual, revise the Rivers State Physical Development Law of 2003 and an urban land use policy. This is the first of its kind in Nigeria. The focus of this paper is the implementation of this land use policy. The objectives of this policy are to ensure that an efficient land administration and management system is put in place that will provide access to land for all citizens and promote a sustainable use of all land within the Greater Port Harcourt City Authority. The critical question is the extent to which the Authority is actually applying these new tools and the challenges it faces in undertaking such innovative steps.

Key words: Urban Land Use Policy, Plan Implementation.

1.0 Introduction

The new Port Harcourt City (GPHC) was conceived in 2009 by the Rivers State government to serve a number of purpose including the following:

- (i) To modernise the city as the administrative capital of the government and restore its lost glory as a garden city;
- (ii) To improve the quality of life of the people, giving improved standards of service delivery;
- (iii) To use an improved urban environment as a basis for attracting investment; and
- (iv) To create a modern business hub that will accelerate the economic growth and development in the state.

To achieve these objectives, government enacted the Greater Port Harcourt City Development Law of 2009. This law established the Greater Port Harcourt City Development Authority (GPHCDA) led by an Administrator and a Board. Arcus GIBB, a South African firm was contracted to produce the master plan for the new city. The plan when completed covered an area of 190, 000 hectares with a geographic boundary claiming the Port Harcourt Municipality and substantial parts of seven other local government areas including, Obio/Akpor, Eleme, Okrika, Ogu/Bolo, Oyigbo, Ikwerre and Etche. The city has a projected population of two million. To demonstrate its commitment to the project, the government pledged the sum of fifty billion naira.

The immediate problem that confronted the Authority was that of land. To regulate land use required control of development in a way that was effective and efficient. This led to the establishment of a Development Control Department within the authority which immediately embarked on establishing the framework through Development Control Regulations. This was accompanied by regulations on Declaration of Planning Areas and Preparation of Development Schemes.

Several meetings took place with stakeholders including local governments, the private sector and local communities. Public consultations were also held. The GPHCDA realised that land was a contentious issue and needed to be addressed comprehensively without which it would be impossible to implement the new city master plan.

The land question has always been problematic for governments in Nigeria, both national and regional (states). Urban land especially remains a contentious issue and efforts to address it have so far failed. The basic issues remain access to land, ownership and control of its use. As Gyuse (2007) explained, "if we have a land administration process that is understood by the people in terms of their culture and access, they will use it". Some of the features of such a policy he explained will include, equity, accountability transparency and legitimacy. From the antecedence of colonial land administration the public acquisition of land has been treated with great suspicion by land owning communities and families. The result is usually conflict.

To ensure a smooth take off and effective implementation of the Greater Port Harcourt City Master Plan, the GPHCDA engaged a multidisciplinary team of indigenous development professionals to propose a land use policy with the following terms of reference:

- i. Examine the relevant existing legal and administrative framework for land use and ownership in Rivers State and selected states in Nigeria;
- ii. Establish modalities and guidelines for dealing with land within the GPHC area required for future development by the Authority;
- iii. Develop a framework for compensation for land acquired for the development of the New City and for private property affected by the said development;
- iv. Identify strategies for the use of land as a tool for rapid industrial/commercial development in GPHC;
- v. Develop criteria for the allocation of land in GPHC and recommend the most appropriate instrument and conditions for land tenure in the City;
- vi. Identify best practices for dealing with native settlements and populations abutting the New City;
- vii. Develop strategies for declaration of Planning Areas and preparation of Planning Schemes for emerging settlements in the Greater Port Harcourt City;

- viii. Review existing practices and structures in selected cities in Nigeria and beyond to gain insights into alternative approaches to tackling land use challenges; and
- ix. Generally to recommend or undertake any other activity that will advance the effective and sustainable land administration in the Greater Port Harcourt City. (Draft Land Use Policy, 2012).

In making its recommendations, the team took the following into consideration:

- i. Changes in land use within the GPHC territory since the end of the civil war in 1970 and rapid growth of population through massive in-migration and natural increase have increased the demand for land and competition for plots among both corporate bodies and individuals, especially in the periphery of the Old City and other settlements; a land policy document will help to regularise access to land;
- ii. Although government, through the Land Use Act of 1978, has erected a land tenure system comprising statutory and customary rights of occupancy, thereby ostensibly extinguishing old land practices, in some cases desperate land seekers flout or side-track the provisions of that law, thereby creating, with the help of erstwhile land owners and the connivance of unscrupulous authorities, a parallel land market within the area encompassed by the New City, necessitating a potent land policy that should regularise land practices;
- iii. Land availability to major corporate and individual investors is a veritable vehicle to engineer desired development to parts of a growing city; therefore a land policy for GPHC would provide the modalities for achieving this objective;
- iv. Land is extremely important in the livelihoods of the indigent, rustic populations that make up the bulk of the GPHC territory; considering that the development of the city will necessarily occur in phases, a land policy document is paramount to stipulate how land will continue to be held and used in those areas that are not likely to come into immediate use by GPHCDA;
- v. There is serious demand for land within and around the component built-up areas of GPHC, including the villages; there needs to be a clear land policy which specifies how the inevitable natural growth of the villages is to be accommodated, and how those areas are to be integrated into the GPHC modern urban fabric; and
- vi. Land-based livelihoods, increasing awareness of the value of land for other development purposes and demand by prospective developers are triggering conflicts between expropriated rural landowners and government; GPHCDA needs to elaborate a land policy that not only ensures availability of land needed for development but also specifies pragmatic measures to cushion the effects of public land acquisition on the land-dependent indigent population (Draft Land Use Policy, 2012).

1.1 Objectives of the Study

The study has a two-fold objective. First is to highlight the need for an urban land use policy for the GPHCDA area, and to examine the extent to which the policy is being applied. In addition the paper describes the challenges in implementing the land use policy.

2.0 The imperatives of the Land Use Policy

There are fundamental reasons for the land use policy. First, the GPHC is an amalgam of the old Port Harcourt Municipality and the new growth areas on the periphery comprising

essentially of indigenous settlements. The geographic area covered by the proposed city is settled by communities whose primary livelihood sources are agriculture based. Thus land is a basic resource (Obinna, Owei & Okwakpam, 2010). Secondly, in spite of the extent of consultations, the critical issues of land administration, access to land, conflicts over land rights, proliferation of informal urban settlements and protection of public open spaces remained (Cookey-Gam, 2013).

The land use policy drew on the Land Use Act of 1978, the law establishing the GPHCDA, the Development Control Regulations. It also drew on the land administrative processes in Lagos, Abuja and Owerri all Nigerian cities that had tried to develop capital cities in innovative ways. The final document consisted of twenty – three chapters each highlighting a core issue followed by an appropriate policy response. Some of these include the following:

- i. Strict adherence to the land use zones proposed in the master plan
- ii. To use land more intensively in the face of rapidly dwindling land resources in the State.
- iii. Prevent speculative development of land
- iv. Prohibit land sales within the GPHCDA area.
- v. Acquire land for the implementation of the master plan at prevailing market values
- vi. Establish a Land Use and Allocation Committee with representatives of local communities
- vii. Apply affirmative action in the allocation of land such that women are properly catered for.
- viii. Adopt a land dispute resolution mechanism that surmounts procedural barriers.
- ix. Maintain a buffer zone of not less than one kilometre radius around each native settlement to accommodate its natural expansion and apply control measures to regulate development within these zones.
- x. Adopt urban renewal strategies in the older parts of the GPHCDA area.
(Adopted from the Draft Land Use Policy).

3.0 Implementation Experiences

Ogedengbe (2004:91) has suggested that a good urban land policy is required for Nigeria arguing that, “cities in Nigeria are confronted with a plethora of land related problems emanating from the use, allocation, distribution and ownership of land.” Land policy consists of government actions designed to bring about desired change in the interest of all citizens. The failure of the Land Use Act of 1978 is that it addressed only the question of title and acquisition. It was not a land policy.

The proposed land use policy for Port Harcourt was therefore an innovative instrument to facilitate plan implementation. More than three years after it was completed, the policy is yet to be put into full use because like other regulations prepared for the GPHCDA, it is yet to receive full legal backing. Thus it remains a draft and is applied only in-house when decisions on plan applications are to be made. The failure of the State government to fast forward this and other related regulations is a clear demonstration of the lack of importance attached to plan implementation. Land problems have made sustainable physical planning impossible (Owei, Obinna & Ede). Without regulations and keeping within the law, plan implementation will be carried out as an ad-hoc activity. This is the situation that the

Authority finds itself today. In the meantime, development continues largely unregulated. Ogedengbe (2004:92) asserts that, "the prevalent forms of land tenure in any area have profound effect on the physical urban patterns and their flexibility in adapting to the pressures of rapid growth."

Just six years into its existence, the Greater Port Harcourt City Development Authority is suffering from underfunding. To deliver quality urban infrastructure and services of world class quality as proposed by the Master Plan requires a lot of money. It is obvious that the public sector cannot finance the plan alone. It requires the private sector to partner with it. However, such partnerships will be dependent on the security of such investment and that includes security of tenure. A principle reason for the failure of the private sector to commit itself to long term investment in urban infrastructure is the uncertainty around government policy implementation. This land use policy is no exception. With every change of government comes the uncertainty about the continuation of the project. This makes for an unstable policy environment which is a snare for investors especially multinationals. Embedded in the policy are specific criteria to be adopted in the allocation of land. This is of fundamental importance and one which both investors, communities and other stakeholders ought to know.

Another problem area is the lack of executive capacity and political interference. The failure of the Rivers State legislature to conclude considerations of these laws derive from the excesses of political interference. It was totally beyond the control of the Authority. It was a legislature fighting for its survival to the detriment of the business of governance.

Finally, administrative boundary issues still remain, in spite of the efforts by the Authority to resolve them. All these problems point to the need for a quick adoption of the policy and other related regulations by the Rivers State House of Assembly.

4.0 Conclusions and Recommendations

Many studies on urban development problems in Nigeria have highlighted land issues. The difficulties experienced in implementing the many urban master plans have also been linked to these issues. In the case of the Rivers State, the GPHCDA realized these problems and did the needful in coming up with an appropriate policy framework that is a solution. The implementation experience has so far been disappointing. With the known failure of the Land Use Act of 1978 to provide any kind of policy framework for plan implementation, the study recommends the urgent adoption of the land use policy. This will provide an enabling environment for the effective implementation of the new city plan. It will also promote sustainable land use management. The overall expectation is that the objectives for which the GPHC was planned would be realised.

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Planning as the Technology of Politics – To be used or misused The case of Albania

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1. Albania and the demise of Communism: effects on the territory

Albania as a meta-geographical concept triggers a very complex thinking that flutters from its locational geography, history, memories and culture's [trans]formation, to the dynamic phenomena, behaviors and processes that were and are being "cooked" there. Albania, as a concept, is implicit also in the urban realm.

In the last 25 years planners are striving to understand the origins and patterns of space and land use transformations, including people's reasons for building spontaneously, and inconsiderately towards natural resources, while often breaking the law. But, could it be that in this spontaneous turmoil of territorial transformations, usually induced by people and typically labeled as negative, there is also something positive, that institutions and planners can use as a local ingredient for guiding sustainable development?

As a whole, this spontaneity, yet so different from the ruling Cartesian order of the western world as well as from the spiritual "order" of the eastern cultures has become a unique food for thought for designers (architects and planners). The latter are striving to read and understand the phenomenon, and learn about this manipulative environment, full of experiences that are still undisclosed from a scientific and social point of view.

Having been subjected to a dictatorship, Albanian cities and people have been oppressed. This has shut opportunities for the know-how and has *imprisoned* the spirit of creativity in [city][space]making. Nevertheless, the regime could not lead to the destruction of the need, sensation, emotions and energy and that is why when oppression *had vanished*, the feeling of freedom was so glorious that people had to make use of it. Thus, collective oppression led to collective folly and now we need collective intelligence and creativity to make livable cities and space.

The effects of the demise of communism on the territory and the urban fabric have been enormous. One of the very first reforms undertaken by the government was that of land privatization, which resulted in the fragmentation of land into around 2 000 000 properties¹. This fragmentation was, among others, very negative to the agricultural productivity – currently the average size of the agricultural farm is 2 ha, which is very low for the efficiency of the sector².

This reform, together with the "freedom of movement" from the more remote settlements' locations to central ones, as well as the lack of institutional readiness to manage it, gave rise to fast urbanization and growth of cities, surrounded by informal land development. Internal migration and urbanization patterns were of a cascade effect: people from secondary centers moved towards Tirana and fewer cities in the coast, and rural residents had a choice to reallocate either in Tirana's suburbs or in the secondary cities. As a result, the urban area of the main cities grew by 30-300%, and in few cases, entirely new settlements were established on agricultural land. The latter is the case of Kamza, with 22 km² urbanized in only 15 years³. According to ALUIZNI⁴, a total of 270,000 informal residential buildings was self-declared by the "owners" during the period between 2005-2013, but the figure is higher, when we include the informal construction of 2014-2015. While people of the informal areas were investing all their fortune on housing, no government investments on public infrastructures were made for at least the first 10 years after 1990.

These urban growth phenomenon (densification and expansion) shifted the population balance from rural to urban. According to the 2011 census data, the urban population of

Albania represents 58.2% of the total and matches the prediction of the United Nations Report (2010) for an urban/rural balance of 5:4. The same report predicts that this balance will change further towards 7:2 in 2050⁵. This implies a further challenge on territorial development for Albania in the future.

Apart from informal developments in the cities peripheries, formal housing development has intensively taken place in the urban cores as well. However, investment on public infrastructure has been modest despite the need and private housing investment. For instance, the latter, during 2000-2008 represents 83% of the total investment, while infrastructures stand only for 17%. There are several reasons for this, including the lack of knowledge and human capacities. However, a key factor is the lack of a property tax for urban land, while the tax on buildings was/is so extremely low that its value does not even provide an incentive for local governments to collect it. The following table summarizes the fiscal indicators (generated at local level for Albania) for the period of 2008 to 2011.

Revenues and Expenditures in Euro⁶/capita	2008	2009	2010	2011
REVENUES				
Total revenues/capita	53,53	78,05	75,34	67,89
Current revenues ⁷ /capita	17,44	19,09	18,16	17,87
Own revenues ⁸ /capita	39,95	43,11	43,87	39,04
Small business tax/capita	4,34	4,30	4,12	4,37
Immovable Property tax⁹/capita	3,11	2,85	3,10	3,24
Cleaning tariff/capita	1,66	2,47	2,13	2,09
Unconditional grant/capita	18,82	19,54	32,30	29,68
EXPENDITURES				
Total expenditures/capita	42,79	52,10	49,54	42,17
Capital expenditures/capita	15,36	22,55	18,28	14,32

Table 1: Local governments' fiscal indicators¹⁰

As shown on table 1, the revenues generated through the immovable property tax, could cover only 13%-23% of the capital expenditures per capita, at the local level. If Albania were to apply a value-based property tax (on buildings and land, for instance 0.5% of the land market value), then the major municipalities would be able to collect a revenue of at least 5 times higher than the current value.

The lack of a property tax (on urban land and value based) has had a negative impact on the total amount of the local revenues, and has also contributed to shaping a land development mentality. Landowners believe that they own the development rights and no government can take, or condition those rights through taxation. Having said so, they have no opportunity costs to face and thus are not inclined to provide their land for area-based development in cooperation with other landowners. In fact, land development has been plot-based for the last 20 years in Albania, showing for no individual social responsibility on the property. This phenomenon, together with the lack of public policies for land development and housing and poor investments in public infrastructures/services (as compared to the need) have created incredibly high environmental, social and economic costs in the cities and the territories, which next generations will have to face.

However, next to these social-economic and territorial transformations there have also been political, institutional and administrative ones, all of which are embedded into a societal Albanian model. The latter remains to be explained from an anthropological perspective, but this is not the purpose of this paper. What this paper intends to explore though, is the planning policy (institutional and instrumental) model adopted by Albanians in this quarter of a century to guide or follow the territorial developments. It will do so, by looking at the evolutionary steps undertaken in spatial planning in Albania, and at the ability and

opportunity of local governments and other stakeholders to implement national planning laws and regulations.

2. An evolving [Albanian] legal and institutional framework for territory planning and development

2.1 An odyssey of territorial planning in Albania

Spatial or territorial planning may not be considered as of “ancient” foundations in Albania. Practically, it only dates back to the late 1950s, but a real planning discourse, which is also embedded in legal and institutional frameworks starts only after 1990s. These dates are linked strongly to the state formation and political history of Albania. Prior to Second World War, anything similar to urban planning as a discipline did not even exist, while after the 1950s, the communist dictatorship imposed a mechanism of central economic planning (every 5 years), which resulted (among others) into several territorial transformations, mainly of urban and industrial nature. For this historical period, one should differentiate between the economic planning and *urbanism*. Both were heavily centralized, but the second was merely an effect of the latter. Thus, the government, based on its economic development priorities, was taking decisions on the whereabouts of the allocation, or reallocation of artificial land uses (*i.e.* cities, villages, industrial areas, etc.).

Following the government’s decision, architects and engineers made use of the urbanism regulations for designating the positioning of the (centrally predefined) buildings and infrastructures on the territory. The experts’ educational backgrounds and school of thinking were imported largely from the Soviet Union (due to historical and political links between the governments), all resulting into either standardized eastern/soviet style of architecture and urban design, or extremely economic solutions of (concrete) prefabricated residential blocks.

From the 1950s to 1990, Albanian territory planning was happening (*de facto*), but it was never recognized as such. Nor was it undertaken intentionally, because of the heavy centralization of the economy by the state, which also owned all of the land and other immovable properties.

In these socio-political circumstances, the property and market conflicts between the government and the society were nonexistent and therefore there was no need for any [comprehensive] planning approach to address them. Instead, urban plans (instruments) for cities and villages were of a physical nature, “extremely rigid... with the intention to define the government’s distribution of power over territory, in support to the centralized sectorial policies” (PLGP 2012).

But, planning systems are inherently linked to political, administrative, institutional and legal frameworks. As a result, as soon as the latter were radically changed in Albania in the early 1990s, a reconceptualization of the territory planning emerged. The very first law on urban planning (no. 7693) was passed by the Parliament in 1993, following the privatization reform of land and residential units. Then a revised law entered into force in 1998, remaining in force for 10 years and subject to annual revision trying to adapt to the contextual changes, mainly to the quickly spreading land development informality.

Both laws considered planning as “a set of rules for location of buildings on land”, thus inheriting the principles of urbanism regulations of the communist regime. This fact is crucial to understanding why neither law succeeded to provide a legal and institutional basis for guiding territorial resources’ use and land development, while in force. Thus, either law 1) did not recognize, neither addressed the core role of private property in spatial planning; 2) or consider that the law-breaking spontaneity of individuals for satisfying housing needs in cities suburbs had already become a reality. Overall, a “land development behavior” was carved, where 1) land owners (in absence also of land taxation and other regulatory, or taking instruments) were soliciting 30-50% of the development profit; 2) and the informal construction process shifted from merely a necessity to a persisting mentality. From an urban

fabric perspective, as already described in chapter 1, land development was dispersed and plot-based, resulting into either an expansion of construction on agriculture land, or dense residential construction in the urban cores and lack of related public infrastructures.

These urban planning laws also defined similar institutional frameworks and instruments, as both were based on the governance decentralization reform initiated in 1992. The latter was mainly political and partially administrative till 2000, when a new law on local government functioning and organization was approved (to include functional and fiscal decentralization). Local governments were responsible on delivering building permits, based either on urban regulatory plans (masterplans), or partial (area) plans. Both planning instruments were subject to approval by the National Territory Adjustment Committee. This shows for a rather centralized or at least shared nature of urban planning as a governance function. Content-wise, the plans did lack the strategic thinking (and component), in addition were of a regulatory or design nature and did not even bear a resemblance to structural or development plans, due to the lack of infrastructures and capital investment programming. In this respect, these plans were merely poor blueprints, good enough for complying with legal requirements, but lacking any guidance to spatial and urban development.

In 2007-2009, the Government embarked on a critical process of reforming the planning system in Albania. It remains questionable whether the government's initiative was aimed at a full-fledged reform, or simply at a profound revision of the planning law as an electoral promise and because international donors supported it. The government worked on participatory policy analysis and proposals and then proceeded with the law. The principles of the law were set so as to give raise to a new planning approach in Albania, which 1) would attack all negative phenomena portrayed in urban developments so far, 2) would reposition planning and the respective legislation from a follower to a leader of the development, 3) introduce the sustainability and comprehensiveness notions in spatial planning; 4) and define pathways for converging with EU spatial planning practices and principles (set as of 1999, through the ESPD¹¹ and latter on in the EU Territorial Agenda).

The law, drafted with foreign technical assistance, failed to gain acceptance by developers, community, landowners, politics and public servants. It was mainly so, because it introduced a rather "revolutionary approach to development and its control", which once again found institutions (public and private) unprepared to swallow it, let alone digest it. The creativity ingredients tossed in the law, allowing for strategic territorial planning, PPP¹² opportunities and for incorporation of financial instruments in land development, including also the obligation for area based development, escalated the skepticism and a rejection mood of both developers and local planning officials. Most interestingly, an enormous internal conflict upsurged gradually among the national and local institutional actors belonging to the same political force. The latter, backed also by different groups of businesses, were the key ones to push for legal changes from 2009 to 2013. Thus, the law and its regulations were regularly contested and modified severely till 2013, with very little implementation to test their quality and contextual significance. They were abolished after parliamentary elections (2013).

The Government approved a new territorial planning (107/2014) and development law in July 2014. Initially it intended to do minor corrections to the law no. 10119, but then the open process geared towards sizeable changes, more in form than substance. Subsequently, the government drafted bylaws, making them shorter and simpler to understand and implement, but delayed their approval with 10-12 months. Though never officially stated, the reason for the delay was political and related to the local elections that took place during this transitory period. These local elections were certainly exceptional as during 2014-2015 Albania initiated a territorial (consolidation) and administrative reform, with new (larger) municipalities being constituted right after elections.

In fact, since 2013 the overall institutional approach versus territorial planning has been and is moving through restless transformation paths, with no visible trajectories and expected end results from the public at large. The respective actions are either ad hoc (responding to

emergency situations), or impacted by narrow interests of “invisible” political and business stakeholders. In either case, one could notice the government’s overarching objective of undertaking isolated but catalytic and “echo-like” urban development actions, prior to more strategic and comprehensive thinking and planning. This is a political and rational choice that allows for quick results within the mandate, though it does not pave any way for a visionary chain of sustainable transformation projects.

The government has taken over the responsibility of “implanting” the quick-result interventions on the territory, regardless of the administrative jurisdictions, while placing (temporarily) limits to local governments in executing their territory planning and development function. There have been at least two moratoriums on this regard. The first one was aiming at protecting historical and natural sites. The second expanded to include all planning processes and residential buildings, allowing local governments to submit construction permits for a limited list of constructions, under the condition that central government would first check for the legal compliance of the requests. The second moratorium coincided with the delay of the bylaws and with the pre-electoral period. In this way, the central government disallowed the local ones to: 1) draft plans as their territories would increase significantly after local elections, due to the territorial reform; 2) run satisfying interests they had committed to since the last elections but not achieved; 3) and use the construction permits as a tool for increasing number of voters.

This approach of the central Government reflects a centralization-strengthening tendency for territorial planning. The latter has never been fully decentralized, but it looks like currently more local power is shifting up to the central level. It is grounded on the concern that if a massive construction permitting took place (especially in suburban/rural municipalities) prior to local elections, then all current national planning efforts (defined also in the law) and the expected performance of the new local government after the reform would be negatively effected.

As it stands, since 6 years ago, institutionally speaking, territory planning remains in a stand-by position, with national government using the revised legal framework to achieve its own objectives. The lack of legislation stability and the moratoriums have slowed down tremendously the land development processes. This has a positive and a negative outcome: it was already necessary to calm down the frenzy of formal and informal construction; but this modus operandi established pipeline opportunities to the national government alone and to those having stronger links with politics.

2.2 Hitting the road towards a planning discourse

Countries with a developed urban/spatial institutional planning history have also developed planning discourses founded by a multitude of stakeholders, which, as Fürst defines, with “the values, attitudes, mindsets and routines shared by them” (Fürst, 2009) give rise to planning cultures and outcomes. The planning discourse of Albania is young, immature and controversial, stimulated by different schools of thinking and a variety of utility enhancing and business interests. In the beginning of the 1990s, when informal developments bounced all over agricultural and pristine natural land, the architects and *urbanists* (the experts involved in urbanism at the time) were either unable to recognize the phenomenon, or so frightened by the unknown that would rather refuse to deal with it. However, there were also groups of young and energetic professionals, who had the opportunity to access western education and, benefiting from international aid for Albania, engaged in community participatory planning and neighborhood upgrading projects. They were aiming at tackling the quick and wide spreading dispersed informal development trend, while also working with the residents towards their integration in the existing urban society.

These professional groups represented two conflicting schools of thought, the previous being more rigid, concerned with basic regulations and to a lower degree also with some urban

design aspects; and the latter being more dynamic, concerned with livability and city making, considering the complete array of the related social-economic and environmental issues. Currently, impacted also by EU metanarratives such as ESDP and the EU Territorial Agenda (Reimer et al. 2014), the professional planning discourse is induced to include concepts as “territorial cohesion, environmental protection, accessibility, polycentricity” (Dühr et al., 2007), comprehensive planning, etc. accepting the multi-dimensional nature of planning. However, this is still in an incubation stage and often contrasted by small-scale urban design interventions. The latter are considered (mainly by the architects) as key catalytic projects, good enough to boost sustainable and quality urban developments. Though very effective at short-term, this approach lacks an overarching vision which is essential for the disturbed territorial development context of Albania.

The government on the other hand, in the early 1990s remained unresponsive towards the (informal) developments not simply due to the lack of knowledge. Allowing people to find individual solutions to housing was relieving for the government and would contribute to the increase of the aggregate economic values and utility of the society (Toto, 2014 and Kareiva et al. 2011).

Initially, the government did not understand the power of planning, neither its technique, to achieve the purpose for increased aggregate utility. Latter (after 2000s), it realized that a “plan – no plan” situation would create the necessary haziness for certain groups to benefit more than others.

The law of the 2009 was very ambitious in purpose and instruments, but not contextualized enough as to gain broad acceptance. The initial legislative effort was not set on the ambition to initiate a full-fledged reform, but it resulted into one. Fearful of the impact, the government itself (consciously or not) contributed to the failure of the law. In 2014, the new government placed territorial development very high in the political agenda, but its approach (legal and instrumental) was composed of fragmented interventions, rather than designed as a long-term visionary program. It also reopened the debate on the [re]centralization-decentralization balance for territorial planning and is yet keeping on hold the power (horizontal and vertical) distribution among planning authorities.

The society took advantage of the professional incompatibility and the government’s *laissez faire* approach, to develop its own individual utility enhancing solutions for investing in housing and real estate, showing for “a particular willingness to accept market economy and rather neoliberal tendencies” (Reimer et al. 2014) in land development. The developers’ society was strengthened gradually, starting with small housing investments and moving towards diversified portfolios, to include economic facilities and infrastructures’ projects. In lack of appropriate land development regulations, most of it was plot based – regarded as more efficient and competitive process-wise for developers, due to avoided negotiation costs.

The landowners, on the other hand, were benefiting tremendously because in the absence of opportunity costs (no regulations imposing area based development and urban land taxation), they were advantageous in negotiation power, setting thus the market land price and defining their share of the development (usually 30-50% of the development value). Public at large had mixed benefits and reactions. All those buying houses were in a detrimental position, having to pay high housing prices to internalize the benefit-loss game between developers and landowners. Most people, became frustrated by city densification, lack of public infrastructure and services and the “ghettoization” of the suburbs by informal developments. Other groups squeezed opportunities from this chaotic urban environment for their entrepreneurial businesses, such as engagement with tourism services in the coast, speculation with land prices in the city edges, etc.

Overall, there are two features of the newly born land development industry and planning discourse in Albania: 1) the institutional and legal framework efforts have never thrived so far to guide the development. On the contrary, their tendency for continuous readjustment based on social-economic and territorial outcomes of land development remains strong and reveals

the “follower” feature of the planning institutions; 2) the territorial development context is composed of many skew paths that make it very difficult to draw an approach – one would mainly speak of dominant behaviors, where the most peculiar one is that of the individual “organic” decision-making and development, irrespective of the institutional and legal framework.

3. The response of local governments – from the blueprint towards the integrated approach

The law (no. 8652/2000) on local government organization and functioning, defined urban planning as an own local government function, within limits set by the urban planning legislation. This prerogative implied that urban planning could in fact be also shared between local and national government. As a matter of fact, all planning regulations since 1993 have been set nationally, and municipalities were obliged to draft urban plans in line with these regulations. The national government had the final responsibility for approving the plans. As analyzed earlier, till 2009, all plans were of a regulatory nature, designed only for the urban area, and with no guidelines on the agriculture and natural land. The sectorial legislation was dealing with the latter. Because the planning legislation allowed local governments to submit building permits also based only on partial/detailed area planning, they often did not have an incentive to draft *masterplans* (for all of their urban territory). By rule, almost all local governments had an urban plan (*masterplan*) in power till 2009, but for most of them (including Tirana) the plan was more than 20 or 30 years old.

The law no. 10119/2009 defined a new rule: local governments could submit building permits only based on a general territorial plan (for their entire administrative territory, including agriculture and natural land). There are two novelties in this statement: 1) plans are not to cover only urban areas any longer, but the entire local government territory, and as such should also be comprehensive in nature, and cut across sectors and territory. The territorial plan for one municipality should embrace: strategic territorial vision and objectives, [infra]structure and land use proposals, zoning and land development regulations, and also capital investment programming and strategic environmental assessment. This also provided opportunities for local governments to embrace the “making room paradigm” (Angel *et al.* 2011) as opposed to the rigid urban area limit/line defined by the previous legislation. 2) a (general) territorial plan is mandatory for submitting building permits, which provides an incentive and an obligation for local governments to draw territorial plans. As a result, 30 municipalities (out of 373 local governments) had their general territorial plans approved by the beginning of 2014. Afterwards the government introduced the planning moratorium and no more municipalities engaged in territorial planning.

However, the local elections of June 2015 are over and new (and larger) municipalities are constituted. 373 local governments are now reduced into 61, and in some cases the previous territory constitutes only 4% of the new administrative territory of a municipality. By law (107/2014) they all should have general territorial plans in place, to be able to submit building permits. Drafting a territorial plan that is comprehensive as described above, in the context of the Albanian municipalities – poor to moderate human and financial capacities; new, bigger and more complex territories; no consolidated if not existing at all GIS territorial databases; – is a challenging effort. As such, it requires at least 1.5-2 years of time, assuming that significant portions of the work will be outsourced to professional planning studios. In the meantime, the central government would also like to bring the moratoriums to an end, so as to provide space for land development to take place. This is an economic necessity as well as a political promise.

It is clear that there exists a time mismatch between the process of drafting comprehensive territorial plans and the submission of building permits – with the latter starting as of the first 2-3 months after the local elections. This is not by mistake; it is just an institutional and legal reflection of the urban development patterns in Albania. Thus, on the one side there is a

planning legislation, which sets rules and obligations to steer towards sustainable spatial planning and development (with a clear hierarchy of instruments, a comprehensive approach, strategic visions and concrete actions, power division between authorities), and on the other there is an immediate need for (economic and land) development that cannot wait for all of the legal steps to be accomplished. The government and all other stakeholders find themselves continuously in a matrix of conflicting emergent and/or not strategically important priorities, and are constantly looking for innovative solutions, to address this equation while also complying with the legal requirements.

Recently, a decision was made for local governments to carry out their planning function through both, a fast track and another more strategic and long-term one. The fast track, based on conditional and transitory bylaws, would allow local governments to move forward with building permits in the absence of a complete territorial plan, but based on the territorial strategy (the first component of the plan). In the strategic track, local officials would keep working with finalizing all legally required steps and components of the territory plan. Parallel to both tracks, local planners can engage in identifying and designing/implementing creative projects that not only tackle key territorial problems, but are also of a long-term benefit and have a replication value.

However, while legally and institutionally there are great efforts being made to come up with innovative and well-contextualized instruments, the stakeholders' reaction is not always positive:

- The experience of designing city development strategies dates to the early 1990s in Albania, but local and national government regard this as a crucial necessity only now, after 20 years.
- It is already since 2009 that comprehensive territory planning is dominating the legal and institutional debates, but developers, municipalities and line Ministries show significant resistance to using it in concrete terms. There are very few local cases of successful accomplishment of the comprehensive instrument and experience needs yet to be built. Because of certain skepticism towards it, the time that it requires to be achieved, and the lack of knowledge, some groups of architects and government officials tend to promote and go back to the partial area plans and urban design projects.
- The comprehensive planning approach requires that bottom-up processes go hand in hand with the citizen participation enabled by local governments. For both types of citizen engagement in planning processes, there are already experiences and best practices in Albania. However, such processes have often been induced and supported by local organizations and international aid, and have yet to make significant way to becoming a genuine phenomenon, leading to fully transparent planning exercises.
- The municipalities have increased in size and complexity of territory types. This makes comprehensive planning a must, but at the same time more difficult to implement it. As a result, while local governments accept the comprehensive approach in principle, they also show some rejection behavior towards it. Often municipalities have a pragmatic preference to engage gradually into sectorial plans, rather than get involved into one comprehensive, both strategic and project-oriented process, though they are aware the previous approach will not solve their territorial problems.
- Finally, the planning legislation is not well linked to sectorial legislation (some further effort is needed in this regard). As a result, even in the best case, where municipalities would fully embrace the comprehensive approach, there would still be need to solve legal bottlenecks and institutional overlaps between municipalities and ministries.

4. Planning as the technology of politics – bridging dilemmas towards innovative solutions

The societal understanding about planning remains in constant evolution and so far has not managed to break the cliché that “planning is too technical for the public at large to understand it and influence it for real”. Nevertheless, spatial/urban planning is in continuous reinvention of itself, aiming at adapting to societal transformations. This constitutes both, a threat and an opportunity in planning actions and narratives. The threat stands in the fact that as long as people and professionals will not grasp the real nature of planning, they will continue to misuse it, and this will not result in the desired outcome of planning – livable city making, sustainable and resilient territories. It is also an opportunity because waving between professions and scientific opinions, trying to comprehend all dimensions of planning, allows for the way towards innovation. The latter is exceptionally needed in societies where the relationship between people and space is distressed.

Different authors and studies have described the weak aspects of planning, such as time consuming, probability theory in uncertain contexts, very expensive, rigidity, risk for misuse on behalf of narrow interests, risk of becoming an isolated exercise that increases even more the gap between planners and other stakeholders (UN ECE, 2008), etc. These limitations, or disadvantages remain valid and planners struggle to either mitigate, or remove them completely. Nevertheless, looking at the variety of experiences in managing and planning territories, one can understand that the limitations of planning (as it is currently conceived) are there to stay; instead we should think of how to reinvent planning and bring about a fundamental change of the *rules of the game*. Realizing that planning and its instruments are inherently linked to politics would be crucial in a reinvention attempt. This has two implications: 1) the reinvention is not a one-day or one-person creation/deed, but a process, whose success depends on human critical mass and advanced societal knowledge; 2) prior to jumping to the technicalities of the planning instruments, we should elaborate and agree upon the philosophical axis behind the planning purpose and the related instrument/s. Again at this point, it is important to boost the (educated) human critical mass that shares the philosophical thinking, values and principles, thus giving a real meaning to the “stakeholders’ participation” notion and yielding easier, democratic and uncontested decision-making.

Breaking circles to nourish more planning innovation, could require addressing the following:

1) Accept the time consuming nature of planning, as well as its costs, but turn these aspects into background dimensions. Thus, stakeholders should not necessarily wait for planning exercises and instruments to be finalized, prior to taking decisions and implementing them. Planning, as a process is a continuum maintained and energized by stakeholders, and feeds their decisions on space transformation and resources use, at any given time. Costs on the other hand, should not be related to plans preparation alone, but to the whole process of thinking, participation, decision-making and implementation. This is important in efficiency terms, as it helps to economize wisely whenever possible, and also makes sure that planning exercises do not become an aim per se, but are transitory mediums to realization of needs.

2) Make planning penetrate through the thinking of the society, throughout all its layers, while maintaining the scientific dimension and comprehensiveness of its actions. This again implies that more and better knowledge and education is needed for the society;

3) Preserve resources and territories for both sustainability and resilience, by making less use of the rigid regulations and employ more rational societal behavior. Ethically, this requires a social jump, so as to match the individual rationality with the common or societal one;

4) Turn people into real actors in planning. When people vote, they often do not think that political territorial planning stands behind electoral promises. When invited to processes for

drafting planning instruments (defined by law), they either find it too technical, or are convinced that their opinions would not be considered – so why bother?

These issues constitute conditionality for a new planning paradigm. Some lessons learned from the Albania's case could contribute to this paradigm:

- **Make planning be flexible for real:** Planning should be more about continuous (scientific) territorial evidence analysis and scenario building (ESPON, 2014) and less about “set in stone” proposals. Albania is moving away from the latter, but professionals and governments have a hard time engaging in related scientific work, due to lack of funds, knowledge, and also understanding of its value. Planning should be more about strategic programs and quick actions/projects based on strategic thinking, rather than endless structures’ plans that lose relevance while being designed as the context has changed. This provides a possibility for stakeholders to readapt quickly to the context, have the opportunity to modify projects, or the sequence of priorities, and reduce the gap between the extremely technical exercise and the need for urgent results;
- **Tail off regulations:** In different societies (with diverse evolutionary stages of planning), this statement is based on different reasoning. In the case of Albania, regulations are in fact needed, as there is much territorial chaos to deal with. The question is where to draw the line. Experience shows that in case of extreme chaos, moving towards the other extreme, that of imposing strict regulations does not help, on the contrary it creates adverse effects. This is so because of the peoples’ politics and requires a change in style, thus **move beyond regulations and towards livability standards**. Standards end up with rules to be implemented by stakeholders, but these would be **context and place and case based**, aiming at achieving the standard and not being set in law as an aim per se. Standards, by nature, even if sectorial, bear comprehensive results (a sector should not harm another) and also allow for quick actions to take place, thus implementing the plans. This would not be considered deregulation, but contextualization of rules and ethics of space/territory **based on values, rather than technicalities**, and designed case by case. The values need to be well set though, next to livability standards.
- **Make participation a natural routine:** This might even require a change in terminology, because participation is often misused and mistaken for an invitation. Planners, designers and architects promote (at least theoretically) “working with the people”, “involving the user”, “inclusive planning and design”, etc. This facilitates the understanding of the complexity of the entirety and steers harmony in city-making. It leads to the notion that community is a peer and not a beneficiary of the planning work and process. Practically speaking, this requires continuous involvement, both bottom-up and top-down, even when this “sounds” not so efficient and useful and people are skeptical (as it is in Albania). It has to happen so that people get educated on this “working together proactively”, instead of assigning themselves the role of the passive recipient of the “so technical planning instruments”.
- **Accept that planning is a technology of politics:** Politics is made by people for people and it implies stirring, harmonizing, and clashing interests in a multilayers environment, over resources and property in all of its philosophical significance. Accepting planning as the technology of politics, it entails mainstreaming territorial accountability in territorial multilayers governance; educating and engaging politicians in territorial development discourses; and involving communities in planning discourse and dialogues. If planning remains considered only as too technical and scientific, people will keep placing it at the “geeks’ corner”, with no proper attention on its unique power to increase welfare and cities livability. If otherwise, then there is a chance that the politics of planning is transformed to reduce the gap between the power balance and the desired outcome of planning.
- **Break hierarchies, but strengthen links in a unique net:** Albania has an interesting experience in developing planning hierarchies legally and then diverging in

implementation. This is because stakeholders accept theoretically the hierarchy of legal and planning instruments, but different government levels have different incentives or obligations in drafting their instruments. Local governments need plans as a basis to deliver building permits, while national governments need plans for strategic orientation of their capital investment. As a result, with information on territory really scarce, and high planning costs, municipalities run to identify opportunities for carrying out their planning instruments, while national government remains more selective towards other priorities. This is an example, of a theoretically good, but practically dysfunctional planning hierarchy system. On the other hand, it also shows that it is possible to break hierarchies and still keep the network of the instruments (at different levels) strong and healthy. The key ingredient for this is continuous coordination. Thus, rather than build a rigid hierarchy system of planning instruments, it is advisable to design a multilayers network of instruments, which functions based on a coordination and communication protocol. Shifting from levels into layers of governance, helps further in this direction.

- **Boost dialogue and cooperation:** Finally, dialogue and cooperation are the only way to solve overlaps and conflicts in a planning process, especially where the latter is a shared government's function. However, this requires for developed and knowledgeable societies, with converging philosophies and values, in a context of preserved cultural diversity. This implies that planning innovations will surge within developed societal and social models and *vice versa* will impact their creation.

According to Socrates, people are social and thus political beings (“animals”) that do function in community, with a set of ethical rules (Alexander and Peñalver, 2012) that nowadays has critically expanded to include all space and territory. This is in fact **one** complex net, and dealing with or within it, requires new mentalities, greater knowledge, higher mental development and intelligence, creativity and stronger senses of community. All these are needed in a world where so far, individualistic personalities and materialistic needs tend to have stronger impacts than community personalities and spiritual needs. The latter does not deny the former, and *vice-versa*, but balance between them is missing and needed. **Planning is all about this.**

Planners, social scientists, designers, economists, and so on, are increasingly trying to shift their thinking into **integrative and comprehensive approaches of high context suitability**, rather than focusing exclusively on one of the reactive, proactive, rational, participatory, incremental, (Randolph, 2004) etc. planning approaches. In a sense, efforts are put to envisage the symbiosis that already exists between the city, people and nature, but that it is so fragile and in risk of disruption, or elusion, or fading. All in all, we are in constant search for the [bio][antro]pocentric values balance (Kareiva *et al.* 2011).

Endnotes

¹ These data are published in the journals of the early `1990s and calculated based on the legal provisions for land privatization.

² INSTAT (Institute of Statistics) 2014 and Ministry of Agriculture.

³ These data were produced by Co-PLAN, Institute for Habitat Development, through making use of ESRI imagery and orthophotos of 1990/1, 1999/2000/2001, 2005/2007, 2014.

⁴ Agency for Legalization, Urbanization and Integration of Informal Settlements, www.aluizni.gov.al.

⁵ According United Nations, Department of Economic and Social Affairs, Population Division (2010)

⁶ Exchange rate: 1 Euro = 140 Lekë

⁷ Local taxes and tariffs

⁸ Current revenues and the unconditional grant

⁹ This is composed of: tax on property transfer + tax on impact on infrastructure + buildings tax + tax on agricultural land. Land and buildings taxes are area based.

¹⁰ Own calculations based on the Ministry of Finance data

¹¹ European Spatial Development Perspective

¹² Public Private Partnerships

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- Law no. 7693, date 16/04/1993, "On urban planning".
- Law no. 8405, date 17/09/1998, "On urban planning", as amended.
- Law no. 8652, date 31/7/2000, "On the organization and functioning of local governments", as amended.
- Law no. 10110, date 04/04.2009, "On territory planning", as amended.
- Law no. 107/2014, date 31/07/2014, "On territory planning and development", as amended.

Integrated Sustainable Waste Management - A Tool for Stimulating the Waste Economy in Port Harcourt, Nigeria

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Abstract

The assimilation of the Integrated Sustainable Waste Management (ISWM) theory in the Urban Waste management process is an expanding body of planning knowledge that attempts to provide explanations and approaches for effective waste recovery, reduction and management in many cities. Recent studies have shown that the applications of the ISWM approach in developing countries encounters myriad challenges despite the fact that these regions are in dire need of stimulating the waste sector as a form of industry diversification due to the vast potentials it offers emerging urban economies. The study explored the potentials in embracing ISWM and the benefits in terms of an increasing collaboration between municipal governments, community stakeholders, the private sector and planners, as well as research institutions (Universities) who can provide the platform for its adoption in Nigeria. Although there is extensive literature on ISWM process in climate change mitigation strategies, the potentials it bears for resource recovery and energy production in the context of the Nigerian economy, are underexplored. The study examined the key factors militating against the adoption of ISWM in policy initiatives in Port Harcourt. It evaluated the extent to which ISWM can serve as a meaningful planning policy tool for solid waste management and environmental protection and concludes that ISWM can be used as a tool to trigger job creation, source raw materials for industry and generate energy to support the current unsustainable energy generation sector. It can also be used as a tool to mitigate against climate change impacts resulting from municipal waste in Nigeria. The paper further assessed cases where the ISWM approach has been successfully established as a policy tool for guiding the management of solid waste in medium income countries, with the view of imbibing practices that would be achievable, considering the available technology and financing options; furthermore, global partnership schemes were assessed to determine likely collaborations that should be established to enable its successful integration into policy structures and the economy of Port Harcourt.

1. Introduction

The need to develop policies that will serve as workable tools to regulate waste generation and disposal, and stimulate the waste economy in Nigeria is an inevitable tool if the nation is to rise above *'the traditional view of production: take, make, dispose; a practice we now know is no longer sustainable in view of the growing global population and dwindling resources to support this life style'* (Ellen Macarthur Foundation, 2013). It is therefore necessary that the right steps are taken in order to develop a system that aims to get the highest utility and value from all resources utilised in the production process. Although waste has been variously described as avoidable materials resulting from domestic, industrial or economic activities for which there is no economic demand, and as such must be disposed (Scidrar 1996 cited in Ajie & Dienne, 2014). It has also been defined as something which has no current or perceived market value and no longer useful (WHO, 1992; Gourlay, 1992). Recent developments in the waste management field have revealed a sharp contrast to these conceptions on waste. FullCycle (2009) is of the view that waste is a concept only common to humans, as there appears to be no such thing as waste in nature, since the waste products created by a process or organism quickly becomes the raw products used by other processes and organisms. Recent studies by

(Eco Eye Series 12- Episode 10 : Circular Economy, 2014) observes that a tonne of mobile phones generates thirty times more rare metals than a tonne of rock mined for rare metals, thus supporting the assertion that waste offers more benefits for the economy than problems if carefully managed, as there are countless potentials for energy generation, resource sourcing, fertiliser production, and product manufacture. Although these views do not completely eliminate the fact that some waste generated in many urban regions are no longer fit for use in other processes (some clinical waste or hazardous waste) and should be completely discarded and disposed of, it advocates for a change in our perception towards the waste we generate. The adoption of the Integrated Sustainable waste management (ISWM) approach in the development of policies and management of waste in Port Harcourt has the potential to change the waste landscape as well as trigger the waste economy (circular economy). As the city strives to stay viable in the face of dwindling resources triggered by the falling oil prices upon which it derives over 70 percent of its revenue (Niger Delta Citizens and Budget Platform, 2009; 2011; NEITI, 2013). The table below highlights the dependence of the state on oil revenue which has plummeted in recent months.

Table 1: Annual Distribution of Total Revenue

	FAAC		IGR		OTHERS		LOAN		TOTAL	
	N' million	%	N' million	%	N' million	%	N' million	%	N' million	%
2007	208,648	18.2%	29,403	13.2%	-		770	0.7%	238,821	15.8%
2008	308,925	26.9%	34,190	15.3%	17,060	67.2%	937	0.8%	361,111	23.9%
2009	199,994	17.4%	40,254	18.1%	-		1,088	1.0%	241,336	16.0%
2010	175,994	15.3%	58,726	26.3%	6,801	26.8%	30,772	27.0%	272,294	18.0%
2011	254,712	22.2%	60,424	27.1%	1,532	6.0%	80,354	70.5%	397,023	26.3%
	<u>1,148,273</u>		<u>222,997</u>		<u>25,393</u>		<u>113,922</u>		<u>1,510,584</u>	
	76.0%		14.8%		1.7%		7.5%			

Annual Distribution of Total Revenue for Rivers State: NEITI, 2013

2. Literature review

In order to thoroughly comprehend the link between waste management and an economy (the waste economy) it would be vital to grasp the concept from the view of this paper. The word waste economy here refers to the circular economy. The circular economy concept is a response to the aspiration for sustainable growth in the context of the growing pressure of production and consumption on the world's resources and environment. Until now, the economy has mainly operated on a 'take-make-dispose' model – a linear model where every product is bound to reach its 'end of life'. A transition to a circular economy shifts the focus to reusing, repairing, refurbishing and recycling existing materials and products since what used to be regarded as 'waste' can be turned into a resource (European Commission, 2014). The circular economy is an economy that is restorative by design, and which aims to keep products, components and materials at their highest utility and value, at all times (Ellen MacArthur Foundation, 2013). It therefore represents an opportunity for nations to develop a system that makes better use of resources, designs out waste, provides added value to businesses, and proceeds along a secure route to facilitating society wide prosperity and environmental sustainability for future generations (Ellen MacArthur Foundation, 2015), as it affords the city the avenues to create jobs via investments in all streams out the waste output, expands the investment scope for the private sector, and opens opportunities for a

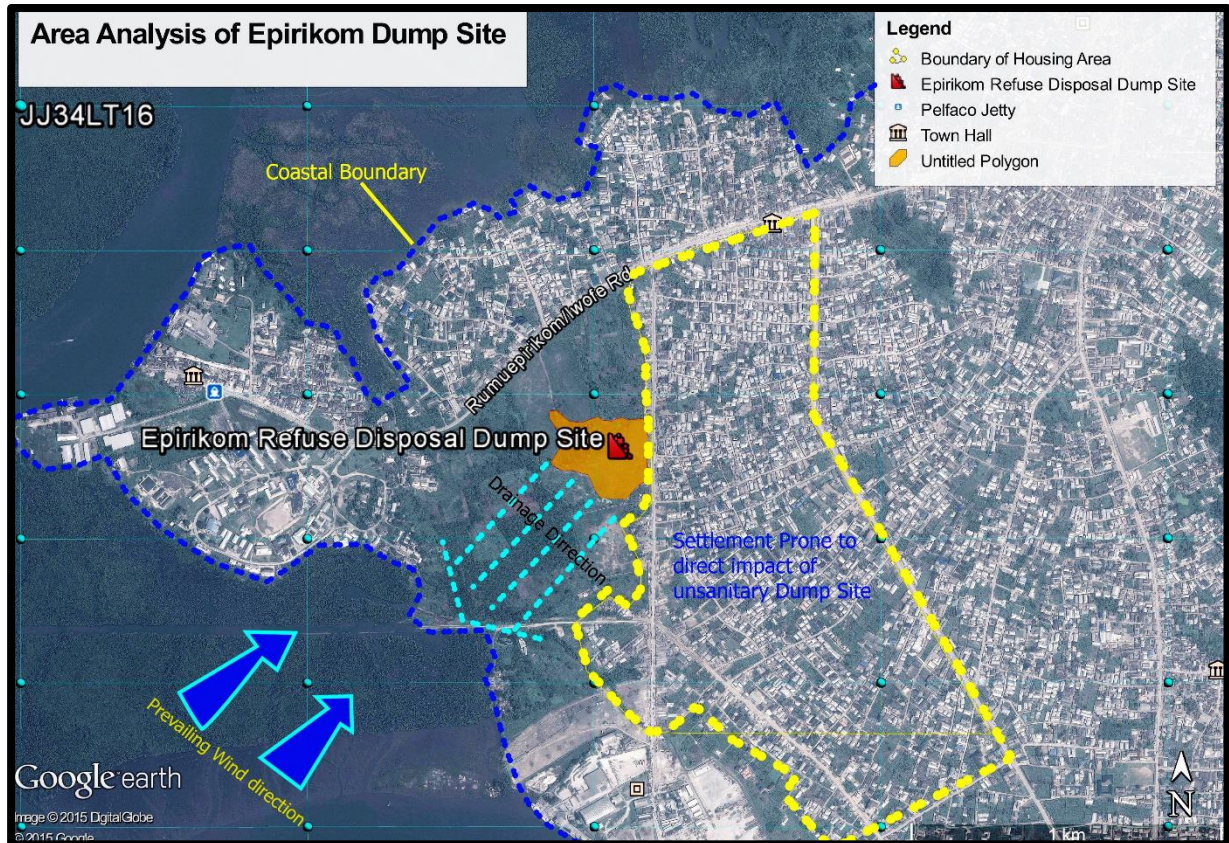
continuous supply of recovered and recycled material, without compromising our need to protect our environment which is severely under threat from our actions.

An integrated approach to solid waste management can deliver both environmental and economic sustainability. It combines waste streams, waste collection, treatment, and disposal methods, with the objective of achieving environmental benefits, economic optimisation, and societal acceptability. (McDougall, *et al.*, 2001). To strengthen this view, Tchobanoglous, *et al* (1993), pointed out that waste management can only be seen as an integrated process when its operations involve the selection and application of a variety of techniques, technologies and management approaches established to realise set goals and targets, thus reinforcing the need to apply the waste hierarchy to all waste management activities, which will facilitate the applications of multiple technologies and approaches, such as recycling, digestion, incineration, and finally landfilling when the former options have been effectively utilised to reduce the final output to the barest minimum. Bagchi (2004) also supports the assertions made by Tchobanoglous, he however lays emphasis on the fact that the integration of waste management must involve actions at both local and global scales, as all levels of society must work together to reduce waste volumes and toxicity before final disposal. The applications of the integrated waste management approach in the Management of waste in Port Harcourt will therefore stimulate the conditions that will facilitate the establishment of the waste economy (circular economy) like other cities of the world who have made ardent strides in reinventing their economies to be more sustainable in order to support their growing needs.

Port Harcourt which is the capital of Rivers State, ranked as the second largest economy in Nigeria, preceded only by Lagos state, with over 5.1 million inhabitants, despite its small land size accounts for 50% of Nigeria's crude oil exports and 95% of the country's natural gas exports (Africa Growth Initiative, 2014). Its growth has not been without problems as it is currently faced with the dilemma of effectively managing waste generated within its local councils (municipalities). According to the (Kadafa, *et al.*, 2012), Port Harcourt generates 117, 825 tons of waste on a monthly basis, and about 0.60 kg/capita/day, which is higher than the national average of 0.54kg/capita/day, however, there is no established and properly disseminated policy guiding the management of waste within the city as the existing policies; Rivers state clean Air and Health Edict of 1990, Rivers State Environmental Protection Agency (RSEPA) edict No. 2 of 1994, the Environmental Sanitation Law . No.6 of 1984 and its amendments, and other state and national laws related to the environment are limited in their set up to deal with waste streams as stipulated by the integrated waste management approach, since they are not in tandem with current waste policies guiding waste management today. This has therefore exacerbated the difficulty for existing institutions to clearly define their operations and effectively manage waste in view of prevailing standards globally accepted.

Waste management in Port Harcourt is still at the rudimentary level like so many other cities in the developing world, thus, the city is faced with the dilemma of eradicating mounting heaps of solid waste from its environment as it is being overtaken by the unsightly views of overflowing dumps, unattended heaps of solid wastes emanating from domestic or commercial sources (Agwu, 2012). Results of studies carried out by (Tamunobereton-ari, *et al.*, 2012) revealed that about 75% of the storage facilities for waste in the city are substandard and insanitary; and there is an absence of colour coded containers for different waste types, therefore resulting in a situation where all types of waste are lumped together, making sorting and treatment of waste extremely difficult. The results also revealed the fact that collection of solid waste at open space transfer stations account for about 70%, thereby exposing the soil at these locations and surrounding surface and ground water retainers to contamination by leachate and runoff during precipitation. These conditions highlight the

need for the coordinated management of waste outputs hinged on the integrated sustainable waste management principles and strategies. A map and a table showing the existing landfill sites in the city are depicted below to highlight the lack of adherence to internationally accepted guidelines for the siting of landfills in the city, a mark of an absence of a well-established policy to guide all institutions and activities related to waste management in the city.



Source: Google earth, 2015.

Table 2: Covered GPS of Coordinates of some selected Solid Waste collection points

SN	Site Type	DOP	DATUM-MINA MIDBELT				DATUM-WGS-84				Location
			N	E	Lat	Long	N	E	Lat	Long	
1	CP	9.5	99367	493957	4 53 49. 04	6 54 27. 89	541706. 92	267896. 51	4 53 51 35	6 54 25. 85	Along uniport/ choba road by sammies plaza, uniport
2	CP	7.9	92182	504886	4 49 55. 95	7 0 23.08	53451. 16	278821. 58	4 49 58. 29	7 0 20. 45	under bridge, rumuola air force junction Aba road
3	CP	8.1	92553	506120	4 50 8. 12	7 13.10	534883. 15	280167. 24	4 50 16. 71	7 1 4. 06	First bank junction Aba road
4	CP	9.1	92745	506231	4 50. 14. 38	7 1 6. 69	535075. 15	280167. 24	4 50 17. 13	7 1 32. 58	Market junction Aba road
5	CP	7.2	93458	508656	4 50 37. 63	7 2 25. 33	535782. 42	282920. 87	4 50 39. 96	7 2 22. 70	First artillery of Aba road
6	CP	8.1	93348	508884	4 50 34. 20	7 2 32. 74	5356 76. 38	282820. 92	4 50 36. 53	7 2 30. 11	Shell gate back of Aba road

Cp= collection point

Source: (Ajie & Dienye, 2014)

3. Methodology

The methodology involved the critical analysis of literature relating to waste management within Nigeria and globally with the view of determining research gaps with regard to its application within developing nations, giving particular emphasis to studies carried out in and around Port Harcourt. The data collection and possible gaps in the data collection process is reviewed in order to identify key data that aided projections into possible scenarios relating to waste management in Port Harcourt. Maps were created from data derived from previous researches to guide the spatial analysis of the relationship between existing dump sites and living communities, since no sanitary landfill currently exists in the city. It also evaluated components of existing waste management policies in order to determine existing breaches and make comparisons with policies in developed regions in order to determine policy flaws and identify avenues for improvement. Finally, case studies from other developing nations were assessed to determine how they have been able to build towards establishing the waste economy within their regions.

4. Potentials for Embracing the ISWM Approach

The potentials for embracing the ISWM approach and benefits in terms of increasing collaboration between municipal governments, community stakeholders, private sector, planners, and research institutions are explored. The development of the integrated waste management approach within the city of Port Harcourt as a means of first tackling the waste issue and then developing the waste economy cannot be realised without complete collaboration from all stakeholders within the city. In order to completely reinvent the prevailing system to one that will be more sustainable and offer opportunities for job creation, realising the zero waste economy and developing models that can be utilised within all urban communities linked to the city; the local government councils (municipal governments); local community leaders (such as community development councils and other local leaders; youth and women); town planners, who should be setting the pace for waste regulation within the city as practiced in regions where the ISWM approach is succeeding; private investors, whose investments will sustain the system and make it competitive as an industry; and research institutions such as universities and colleges, who will help to facilitate the policy adoption and diffusion within the city and its environs, *and the transformation of those ideas into innovative products* (European Union Regional Policy, 2011), must build a common front. This is due to the fact that regions where the circular economy is gaining momentum, such as the EU countries have thoroughly integrated the process for collaboration and partnership in the development of policies and the management of waste (see the European Innovation Partnership on Raw Materials, The Strategic Implementation Plan of the European Innovation Partnership on Raw Materials, and the Government Review of Waste Policy in England 2011).

Some African nations have already made ardent steps through policies and practices to build towards the circular economy. South Africa is one of those nations, and its management of waste is based on the principles of the White Paper on Integrated Pollution and Waste Management (IP&WM) and the National Waste Management Strategy (NWMS) published by the Department of Environmental Affairs and Tourism in 1999 and 2000 respectively and the subsequent enhancement of the new National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008). South Africa now supports the waste hierarchy in its approach to waste management, by promoting cleaner production, waste minimisation, reuse, recycling and

waste treatment with disposal seen as a last resort in the management of waste (Lincoln, 2011). Lincoln (2011) further highlighted the progress made in this regard by assessing developments in Johannesburg, Cape Town and eThekweni (Durban) where pilot projects have been initiated to increase the amount of waste that is recycled. He also observed that some municipalities are already looking at capturing methane gas from landfill sites, with one landfill gas-to-electricity project already completed at eThekweni (the first in SA) with plans already in progress to open a second one.

5. ISWM as a Meaningful Planning Tool for Solid Waste Management

The integrated waste management tool provides the framework for the preparation of waste management policies and plans by linking with planning. It achieves this by setting the basis to guide the selection of Best Practice Environmental Options for waste management in urban regions. Here, specific combinations of waste management options are chosen to aid collection, transport, treatment and the eventual disposal of waste, which encompasses waste recycling and recovery, taking into cognisance the available technology and revenue support for the process. City planners working within the Port Harcourt region must push for a fully integrated approach to waste management as practiced in successful regions through well-structured policy proposals to the city government. Unlike the case in Port Harcourt where waste management is still detached from landuse planning and urban management, The National Planning Policy Framework (2012) and the Planning Practice guidance in the UK clearly define the scope of planning engagement in the waste management process, as it lays out clear targets and outlines approaches that will aid its accomplishment within urban regions through the making of local plans, defines the set up and responsibility for waste planning authorities, and the conditions for waste development planning applications, a situation clearly absent in the working document guiding planning in Nigeria; the Urban and Regional Planning law decree 88 of 1992. *To facilitate this step-change, the planning process must provide greater certainty, minimise investment risk and deliver decisions more quickly. The private sector will only be able to raise capital for new facilities if it can demonstrate to financial institutions that the prospective development is commercially viable. An appropriate economic and regulatory framework must be put in place urgently, if there is to be a realistic prospect of developing a waste management infrastructure fit for the Twenty First Century on the basis of partnership* (Environmental Services Association, 2004). Planners must therefore craft a well-structured policy and campaign for its quick adoption by the state assembly in order to lay a formidable foundation for the Waste economy in Port Harcourt. (See England's National Planning Policy for Waste, Government Review of Waste Policy in England 2011, and the Waste Framework Directive [2008/98/EC])

6. Factors Militating against the Adoption of ISWM in Policy Initiatives.

Developing the ISWM and integrating it into existing policies to guide society and build an industry requires certain ingredients which must be institutionalized to facilitate its adoption. A look at the Port Harcourt case will reveal the absence of key initiatives and landmarks upon which to stimulate its adoption. The lack of reliable data upon which to plan for effective management is a major challenge facing the city management, since this information is necessary for planning, designing and establishing appropriate and more sustainable collection, transportation and final disposal strategies for the waste (Babatunde, et al., 2013). The municipal and state governments do not have a true picture of waste generation, composition, and disposal, hence the lack of proper coordination on how to tackle the issue. Although several studies have been carried out on waste within the city, they either focus on comparing generation between local councils within the city (municipalities) such as the

study carried out by (Babatunde, et al., 2013), assess the distribution of the disposal sites and their unplanned siting (Ajie & Dienye, 2014), focus on the environmental effects or the consequences of poor waste management (Ayotamuno & Gobo, 2004; Tamunobereton-ari, *et al.*, 2012) or have tried to get a picture of the level of waste generated and its composition, with limited data on the entire city such as the paper by (Ogbonna, et al., 2007), whose study involved the administration of questionnaires to 76 different households with a total population of 393 persons giving an average size of 7 persons per household, when sections of Port Harcourt Old township alone have more than 1449 houses (Field study by author, July 2014; see table 3).

S/N	STREET NAME	ODD NUMBERS	EVEN NUMBERS	TOTAL
1	AGGREY ROAD	87	44	131
2	BENDE STREET	77	123	200
3	BISHOP FUBARA STREET	4	1	5
4	BISHOP JOHNSON STREET	35	45	80
5	BONNY STREET	132	135	267
6	CAPTAIN AMANGALA STREET	16	14	30
7	CHIEF IBIFURO IYALLA STREET (WAS MOOREHOUSE)	30	40	70
8	CHURCHILL ROAD	19	30	49
9	CREEK ROAD			80
10	ELIOT HENRY STREET			4
11	ENUGU STREET	12	17	29
12	KING JAJA STREET	26	20	46
13	NDOKI STREET	13	12	25
14	NEW MARKET ROAD			7
15	NIGER STREET	131	77	208
16	TOURIST BEACH ROAD	11	11	22
17	VICTORIA STREET	118	78	196
GRAND TOTAL				1449

Source: Field data by authors on Housing counts, (2014)

The study is not even representative of a section of a city hence its conclusions cannot be directly applied to all regions within the city. With few papers presenting comprehensive facts that can support planning decisions, this paper therefore emphasises the need for a more comprehensive data collection activity embarked upon by the government, since individuals do not have sufficient funds to embark on massive data collection upon which to build adequate planning for waste management.

The dearth of well-structured waste policies and a comprehensive Waste Management Framework that cover all aspects of waste management is another limiting factor to attaining the ISWM in the city. A critical review of all the laws related to waste management in the state will reveal the lack of consideration for the waste management hierarchy, waste separation or any form of resource recovery, which are elementary components of any waste management policy targeted at realizing the waste economy (circular economy) today.

The only law that gives some reference to these principles is the Draft copy of the Rivers State Environmental Management Bill, although it is shallow in its specifications as it does not state clearly the actions that must be taken at source generation or storage, which are

key considerations for proper management as steps must be taken to avoid contamination of waste at source if they must be put into vital use. No component of the law mentions the need for homes to be equipped with different colour-coded bins to handle different waste streams; moreover, the law is also silent on the development of multiple waste disposal methods; incineration, use of bio digesters, or the establishment of sanitary landfills within the state. It is also void of any periodic targets for waste reduction, source separation and recycling.

A third challenge fronting the system in Port Harcourt is the lack of key private sector investment, consequent on the fact that there are no enabling laws to guarantee private investors security for their investments. *It is expedient to note that laws influence the private sector significantly in its assessment of investment opportunities before funds are diverted from other secure sectors into emerging ones. Reputable private companies want to have "a level playing field," in which they can compete equitably, fairly and with minimal risk. For example, before private companies will invest in building, owning, and operating a sanitary landfill for public use, they will want environmentally sound, safe disposal practices to be required by law and enforced by penalty. Before spending money on the development of bid documents in response to government procurements, companies will want assurance that government will follow procurement regulations governing fair competition (Cointreau-Levine, 1995).* Therefore, to encourage the private sector and increase the benefits of their investments; enhanced efficiency, lowered cost, and stimulating further investments which expands the resource base for the industry, there should be complete deregulation of the waste sector, with minimal government intervention except in the case of regulating activities. These actions should integrate all components of the waste system (collection services, recycling, disposal site operations, fleet maintenance and energy generation) into these new policies.

Other limitations include; the lack of collaboration between government agencies with regard to waste management, a situation witnessed in the lack of connection between policies set up by the various agencies associated with waste management (Most of the policies act in isolation). The lack of participation by research institutions in the waste management system is another key issue. This is clearly marked by an absence of the desire to model the acceptable conditions with regard to waste management. Observations have shown that no research institution in the city separates waste within their campuses as most public facilities within them are only supplied with single bins for all types of waste. It is appalling to note that even the living quarters within these hallowed campuses do not practice any form of waste separation. Despite the levels of research and publications associated with these institutions, none of them have taken steps to set up waste recycling facilities to serve as demonstration centres for students studying courses related to waste management, hence we can conclude that there is either a complete lack of interest in implementing the proclaimed tenets of waste management advocated by these institutions or a lack of funds to pursue such schemes.

7. Conclusion

The high level of unemployment within the City of Port Harcourt provides a strong basis for the need to create additional employment opportunities. The Waste economy is currently being developed albeit in its crude form where scavenging from existing open refuse dumps for valuable items is on the increase. Therefore, it is an avenue for possible job creation and a potential source of raw material, energy generation, it can also limit climate change impacts resulting from unsustainable disposal practices, stimulating global partnership with international donors who will appreciate the good progress and maybe the possibility of attracting projects under the Clean Development Mechanism (CDM) for climate change impact reduction; 81% of these projects have been implemented in Asia with Africa receiving

about 3% (UNEP, 2012), since there are no projects to sponsor or the lack of trust in our ability to sustain the projects, hence the drive to focus on Asia where the results have been sustainable and consistent.

The Clean Development Mechanisms which is an offshoot of the Kyoto protocol is one of the processes by which developed countries attempt to mitigate the climate change impact of their greenhouse gas emissions and meet targets for reducing emissions. Through the CDM, developed countries strive to “offset” their emissions, by paying to support developing country projects that are supposed to either reduce GHG emissions, or absorb carbon dioxide (CO₂). It was established in 2004 and has since registered over 1000 projects which have generated investments, reduced greenhouse gas emissions and contributed to sustainable development in many regions (Austrian JI/CDM Programme, 2014).

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How to leverage economic growth from spatial projects?



Urban Optimization of Transit Oriented Development in Baghdad City

Peer reviewed paper

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Abstract

Meeting the demands of the post modern metropolis requires innovative urban planning approaches to promote a livable and resilient urban fabric. Transit oriented development (TOD) is one such approach with a promise to add value to all public and private stakeholders. The concept maximizes transit usage, create a sense of place and community, and provide a vibrant mix of land uses catering to existing and future residents. In general, TOD aims at creating walkable, sustainable communities for residents of all ages and incomes, as well as providing more transportation, employment, and housing choices.

In its theoretical background, the paper attempts to outline the benefits and principles of TOD, as well as highlighting a number of case studies of cities implemented the concept successfully. An overview of the cumulative results achieved by these cities to enhance the quality of life, and the local economy is presented.

The research work also tackles the applicability of TOD to the proposed future vision of the city of Baghdad. The city with its six and half million inhabitants, and a forecasted population of eleven million by 2030, has a number of shortcomings in providing a livable and efficient urban landscape. Transit, sprawl, excessive use of private cars, inappropriate land use mix and densities, and lack of well designed urban spaces around transit hubs are among the pressing issues. Research hypothesis stress the need to explore TOD as an urgent planning alternative to address such quandaries. The paper presents an overview of the pending "Baghdad Urban Development Plan 2030", and submits a multi parameter evaluation of the vision outlined in the plan with regard to transit and circulation problems, and solutions. Preliminary outcome of the evaluation process indicates an evident deficiency in optimizing future urban movement proposals through the limited or nonexistent utilization of TOD.

Key words: TOD, urban design, socio-economic growth, urban planning, comprehensive development.

1. Introduction:

Transit oriented development is one of the innovative concepts of urban planning. It has been applied in many cities around the world, especially in North America, Europe and South East Asia during the last few decades. The concept aims at minimizing the use of the privet car thru the development of pedestrian friendly zones, thus mitigating the severity of traffic congestion, and emission of pollutants. A healthy environment can be created as a result, and consequently achieve the best return from public transport, provide a climate promoting economic activities and employment opportunities. All that can be easily accessed, thereby adding value to surrounding areas and urban fabric of such centers. Transit-Oriented Development (TOD) projects depend on good urban design to coordinate transportation types, mix land uses, and create an appealing public space, all in a limited area. In its most basic terms, TOD is a strategy to integrate public transportation investments and land-use practices in order to create walkable, diverse neighborhoods in both central and suburban settings. (Jacobson, 2008, P51)

American Architect Peter Calthorpe codified the concept of Transit-Oriented Development (TOD) in the late 1980's. Sacramento County (State of California) hired Calthorpe in 1989 to propose a "Pedestrian/Transit Oriented Development" along the County rail stations, and it was then the first official use of the TOD term came about. Consequently TOD became a fixture of modern planning when he published "The New American Metropolis" in 1993 (Carlton, n.d. P17). The TOD concept was an extension to Calthorpe's earlier work on the design of sustainable communities and neighborhoods which he referred to originally as "pedestrian pockets".

2. TOD Definition:

TOD focuses on compact growth within an easy walk of transit stations, thus bringing potential riders closer to transit facilities, as well as promoting increased ridership by making riding transit that much easier. TOD can be defined as "Moderate to higher density compact mixed-use development, located within an easy five to ten minute (approximately 400m to 800m) walk of a major transit stop. TOD involves high quality urban development with a mix of residential, employment and shopping opportunities, designed in a pedestrian oriented manner without excluding the automobile. TOD can be a new construction, or redevelopment of one or more buildings whose design and orientation facilitate the use of convenient and sustainable modes of transportation, including public transit and Active Transportation. (Joshi, 2011, P6)

The State of Florida statuettes regards TOD as those designated areas which shall be compact, moderate to high density developments, of mixed-use character, interconnected with other land uses, bicycle and pedestrian friendly, and designed to support frequent transit service operating through, collectively, or separately, rail, fixed guide way, streetcar, or bus systems on dedicated facilities or available roadway connections." While many developers and governments consider TOD in terms of fixed-rail service, that is not always the case. (Shinkle, 2012, P3)

Peter Calthorpe conveys the basic themes of TOD to be "a mixed-use community within an average 2,000-foot walking distance of a transit stop and core commercial area. TODs mix residential, retail, office, open space, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car" (Carlton, n.d. PP21-22).

All definitions seem to share a common vision and emphasize the idea that a successful TOD will reinforce the community's economic prospects, and transit system. Reinforcement emanates from a multitude of factors, most notably the creation of mixed use activities that are within close proximity to satisfy nearly all needs, easily accessible, thus promotes activity around the clock.

3. Benefits of TOD implementation:

Experience from cities in North America has demonstrated that implementing TOD can have significant benefits to individuals, communities and regions. Coordinated investment in transportation and land use projects promotes many aspects of Complete Communities and improves the quality of life for citizens. Recently, interest in TOD has broadened beyond the possibility of financial return. Increasing evidence now exists that transit-oriented development can yield many more benefits than merely increased land value. The last decade saw subtle but promising shifts in the landscape of transit and development, with the convergence of a number of trends: growing transit ridership, increased investment in transit (even in traditionally auto-dominated cities like Los Angeles and Dallas), frustration with congestion and sprawl, the smart growth and new urbanism movements, and a generally greater recognition of the advantages of linking development and transit. (Belzer et al, 2002,P6)

Implementation of TOD can offer and support a variety of lifestyle choices; providing opportunities for people of all ages, and enhance abilities to live, work, shop, learn and play in close proximity to one another; reducing the need for travel and creating shorter journeys; providing easier and safer access to jobs, schools and services; supporting more efficient

use of the land and existing infrastructure; and maintaining the environmental benefits of compact development. The extent to which this progress is made depends largely on the type and quality of transit service available as well as the primary characteristics of the TOD. (Joshi, 2011, P10)

Affordable housing often has a prominent place in TODs—households with low or moderate incomes are attracted to transit access and are likely to own fewer cars and occupy more space efficient dwellings, meaning that they can take full advantage of the transit orientation. (Jacobson, 2008, P54).

The motivation to use public mass transit has increased significantly as a result of increased mobility choices. By creating “activity nodes” linked by transit, TOD provides much needed mobility options. A 2003 study of TODs across California found that residents were up to five times more likely to commute via transit compared to non-TOD areas. In the San Francisco Bay Area, Cervero (1994) found that, on average, residents living near stations were five times as likely to commute by rail transit as the average worker living in the same city, and in some cases as much as seven times as likely”. Decreasing the use of private vehicles is a byproduct of increasing land use mix and transit utilization. Frank and Pivo have indicated that employment density and land-use mix were both significantly related to percent single occupant vehicles (SOV) use, percent transit use, and percent walking. (Frank and Pivo 1994, P51). Another study of 103 TODs across twelve regions in America found that on average, residents were 2 – 2.5 times more likely to commute on transit compared to the average resident of the region (Renne, 2009, P118). Utilization of public transit will contribute toward increased health benefits. TOD promotes a healthy lifestyle by making it convenient to walk and by providing the infrastructure that supports walking and biking. (Joshi, 2011, P8). Reduced air pollution and energy consumption rates are achieved by providing safe and easy pedestrian and cyclist access to transit.

Increased Land value is a noticeable economic advantage to TOD, which tends to encourage higher densities, and ultimately foster higher growth rates and economic incentives. Significant Increase in land values can be observed in areas close to transit hubs compared to areas away from transit stations. Urban land use is greatly enhanced due to the compact, sustainable urban form. TOD often uses infill, Greenfield and Brownfield sites to redevelop and intensify existing urban areas. A byproduct of this process is enhanced local economic development. TOD is increasingly used as a tool to help revitalize neighborhood main streets and mature neighborhoods, along with more efficient sustainable infrastructure. Depending on local circumstances, TOD can help reduce new infrastructure costs significantly.

4. TOD Principles:

Almost all principles guiding the design and implementation of TOD zones directly influence land use, circulation, urban form and overall performance of a place. It is not enough for development to be near transit; it needs to be shaped by transit so as to be a TOD. It is more than an individual parcel or development project. TOD includes the entire area surrounding transit, between 400 to 800 meters from the transit stop (Joshi, 2011, P16). The Area of Influence of a TOD is comprised of three distinct but overlapping zones. The "Core Zone" is the immediate area surrounding public transit facilities that can extend up to 200 m. The core is surrounded by a “Central Zone” extending to nearly 400 m, and encircled by an outer “Edge Zone” up to 800 m, thereby constituting the TOD Area of Influence. Figure (1) illustrates the concept.

Each TOD may look different and have a different function, but each successful TOD will have applied some or all the core principles in a manner unique to the nature and urban fabric of the place. Design features of efficient TOD projects may include some or all of the following principles:

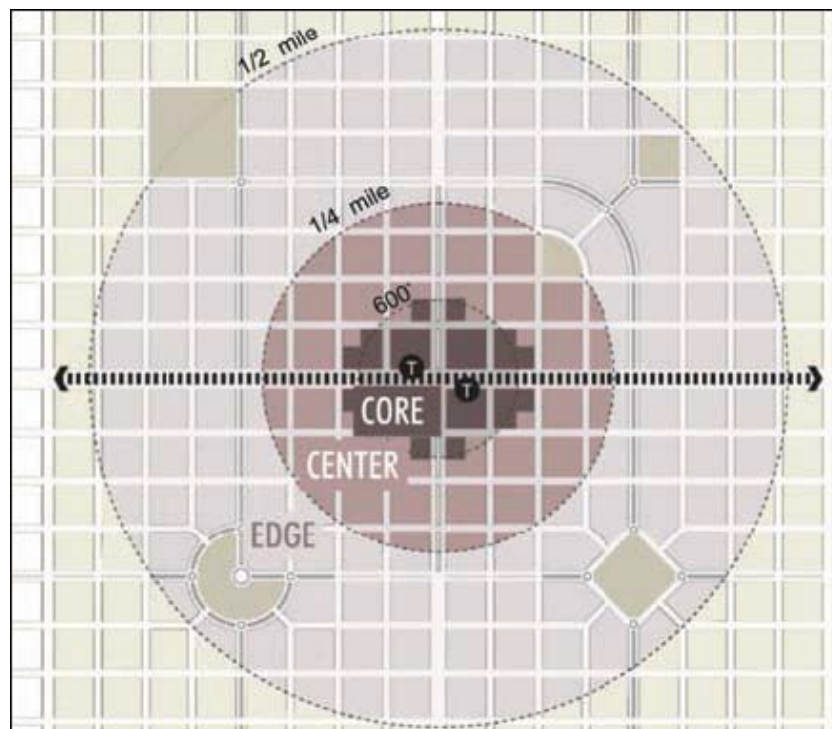


Figure (1) TOD Zone of Influence

Source: Transit-Oriented Development, New Haven Hartford Springfield Rail Program, (www.nhhsrail.com)

A: Medium to High Density Development Greater than the Community Average Density matters in TOD: Generally, cities which have higher population and development densities have proved the wealthiest, most dynamic, innovative, diverse and ecologically sustainable. (Roberts, 2007, P721). The density-dynamism duality, however, is not universal, and should be deliberated on case by case basis. Density is all about scale, with the goal being to create a compact walkable district. Density within TODs raise the bar and achieve a higher net average resulting in greater ridership, both within the TOD district and within a 5 minute walk of transit. (Joshi, 2011, P17).

B: Walkability: In considering walkability, the street pattern in the surrounding area determines not only whether residents and workers can access rail and bus transit, but also whether they can access the shopping, jobs, and services that might be located in their immediate neighborhood. (Thorne, 2011. P21)

C: A Mix of Uses: Creative mix of uses within close proximity is vital to attract riders and community in general. TOD is often referred to as “place-making” or the creation of “transit villages”—livable places where people reside, work, shop, obtain services, go to school, use the library, and have fun. The full menu of activities need not be found at every station. But a lively mix of uses strengthens the link between transit and development. (Metropolitan Atlanta, 2010, P10)

D: Future Demand for TOD and Vibrant Communities: New development is a fundamental way to improve the vibrancy of station areas and corridors, but the potential to attract private investment is clearly predicated on both neighborhood market conditions and regional market demand for more compact housing types. (Thorne, 2011, P21)

E: Compact, High Quality Pedestrian Oriented Environment: Vibrant communities, with or without transit, are convenient and comfortable places for pedestrians. Subtle factors, focused on a pleasant environment for the pedestrian, encourage people to walk. Streets can be “calmed” by reducing traffic speeds to make them inviting for walking. (Joshi, 2011, P21)

F: An Active Defined Centre: Transit is particularly successful in communities and neighborhoods that have defined centers, creating an 18-hour place by offering multiple attractions and reasons for pedestrians to frequent the area throughout the day and evening. Having a dense mix of uses near transit is important to creating a centre, but it must also

have a sense of place and community so that people choose to gather there. (Joshi, 2011, P23)

G: Safe, Reliable Transportation: Residents in communities with reduced auto-dependence own fewer cars and use them less. This yields multiple benefits, including: More stable transportation costs, Higher household disposable incomes, A reduced need to expand freeways, Healthier residents as a result of more physical activity, A more stable and sustainable source of transit ridership. (Thorne, 2011. P25)

H: Innovative Parking Strategies: Parking to reflect the impact of transit is one of the most challenging aspects of any TOD. By creating a more managed parking supply and moving parking from surface parking lots to on-street parking and parking structures, residents, shoppers and employees are encouraged to use transit to get to the TOD and walk within the TOD. Parking in a TOD should consider four fundamental components: size, location, design and management. (Joshi, 2011, P25)

I: Economic Prosperity: Expansive, integrated transit networks and transit-supportive development provide more diverse economic opportunities than individual transit lines, and can therefore support upward mobility. Recent trends indicate that workers increasingly prefer to live near where they work and enjoy a higher quality of life that is free from the strains of traffic and congestion, making jobs and housing near transit an increasingly popular choice. (Thorne, 2011. PP21-22)

J: Public Leadership: Public leadership is essential for the success of transforming an area into TOD. The leadership is need in the planning and implementation phase of the process. The leadership role should continue throughout the life span of process in order to meet challenges presented by numerous stakeholders. Public-private partnerships are especially useful for leveraging private investment in transit-oriented development; they are more flexible than joint development arrangements. (Reconnecting America, 2013, P13)

K: Aesthetic Zoning: Physical form and beauty of a city are defined by the sum of its public spaces, Emphasizing form over use to create human-scale places most U.S. cities regulate conventional codes, focus on the development through architectural and urban “form” of the conventional or Euclidean built environment, and regulate key zoning, the primary purpose of aspects such as building heights and which is to segregate incompatible land uses and accommodate the movement and storage of vehicles. (Reconnecting America, 2013, P11)

L: Community Effort: Following the lead of community-based organizations community development land around the station, building or corporations can use rehabilitating 1,000 housing units and a transit-oriented development to new “green” station building that houses bring about comprehensive and lasting revitalization in neighborhoods and increase affordability because families that use transit spend less money on transportation. (Reconnecting America, 2013, P5)

4.1 Location determinants of TOD hubs

The process of Selecting transit hubs to be developed as TOD zones hinges on the existing as well as proposed urban development schemes. The potential of a successful selection depends to a great extent on the indigenous characteristics of the transit station’s immediate and surrounding area.

Getting the most out of transit-oriented development, conceptual station area plans should be developed to determine what public infrastructure is needed around transit stations or along the desired mix of uses. There is some variation in what these plans contain, but they all lay out the basics, including zoning, design standards, parking requirements and information about transit access, bike and pedestrian. (Reconnecting America, 2013, P3)

A Station Area Plan can provide the vision and guidance for building a walkable community. It should be created early in the planning process and set a clear vision, with guidelines, roles and responsibilities for implementation. The elements of the Station Area Plan should include: Community vision. Land use, including mix and intensity, Transportation, including circulation and parking, urban parks and open spaces, urban design, including guidelines, By-law amendments to support the Station Area Plan, and implementation strategy, including roles and responsibilities for implementation.

When determining the most appropriate location for a new walkable community that supports transit, the size of the TOD as well as the specific location need to be considered. The following list is intended to provide questions for thought when considering the placement of new walkable communities within 400 to 800 meters of the transit station: (Joshi, 2011, P33) - What is the function of the station in relation to the other stations on the transit line (i.e., is it a Central Business District, end-of-line station, etc.)? - How does that function support the increased density and a walkable community? - What land uses, beyond the proposed station area, exist to support the higher density mix of uses? - Does a higher density mix of uses complement or compete with other land uses within walking distance? - Are there key opportunities for redevelopment around the proposed station? - What is the market for increased development in the area? - Does the existing street network support a walkable community? - Are there major physical barriers that hinder access to and within the area, including to and from the proposed transit station?

4.2 Nature of Projects within TOD

When reviewing a potential project within a TOD, it should be assessed against the TOD Station Area Plan to ensure consistency. The following tool is intended to guide communities in reviewing proposed projects, and as a basis for constructive dialogue.

Within an easy walk of a major transit stop [e.g., 400 to 800 meters], key sites must be designated for transit friendly uses and densities (walkable, mixed-use, not dominated by activities with significant automobile use). It is preferable that transit friendly land uses permitted outright and not requiring special approval. Another issue to be considered is whether higher densities are allowed near transit facilities as well as multiple compatible uses permitted near such facilities. It is highly recommended that first floor uses are "active" and pedestrian oriented with a mix of uses generating pedestrian traffic and concentrated within walking distance from transit. Auto oriented uses are permitted but somehow discouraged with access limitations. A final consideration is the zoning status of the proposed TOD. In case pre zoning is implemented, the path is paved for a go ahead. (Joshi, 2011, P34)

5. Successful TOD Projects:

One TOD may yield a high transit mode share but lacks social diversity. Another might be deficient in shopping and entertainment choices but provides affordable housing on reclaimed Brownfield. Moreover, a myriad of goals for TOD obfuscates success. A recent study found that planners in Perth felt TOD was important towards increasing transit ridership, spurring economic development, increasing housing choice, relieving traffic congestion, reducing sprawl, creating a diverse community, improving neighborhood quality, and increasing political support for transit. With so many goals for TOD, measuring success becomes a matter of perspective. (Renne, 2009, P117). Nonetheless, a number of case studies of urban centers which utilized TOD were investigated to draw lessons as well as to probe the validity of the concept.

Experience from numerous cities demonstrates that implementing TOD can result in significant benefits to individuals, communities and entire regions by improving the quality of life for people of all ages and abilities to live, work, shop, learn and play. (www.nhhsrail.com)

Fruitvale (California) exemplifies the pivotal role that transit can play in revitalizing an economically depressed area. Fruitvale was once one of the city of Oakland's poorest neighborhoods, following a familiar pattern of urban disinvestment and decline in the 1960s and 1970s. Fruitvale Transit Village, a \$100 million, 20-acre development project received praise as an example of how to integrate transit concerns with community and economic development (Jacobson, 2008, P68). The development is centered on the Fruitvale "Bay Area Rapid Transit" station with neighborhood retail, affordable housing, and places for community interaction on land that had previously been parking lots.

Rosslyn (Virginia) is another example of successful economic transformation made possible by the choice to build around transit. The original goal behind the Rosslyn Sector Plan was economic development, and transit became the basis of the plan not because of its potential to improve air quality or mitigate metropolitan sprawl, but for its economic possibilities. Capitalizing on the Metro system allowed for greater densities, and thus higher returns from commercial property taxes, than would have been possible if, for example, a quarter of buildable land been reserved for thoroughfares and parking. (Jacobson, 2008, P62)

The village of Arlington Heights, west of Chicago (Illinois), has seized upon TOD as an integral component of the city's award-winning strategy to revitalize its historic downtown. The village has created a virtually new town center that includes a new Metro station, a performing arts center, high-density housing, commercial uses, and public parking decks. In 1980, 350 residents lived in the downtown in 150 units. By 2000, the numbers jumped to 2,200 residents and 1,500 units. Since 1997, public investment of \$27 million has leveraged some \$225 million in private investment. (Transit-Oriented, www.nhhsrail.com)

Other cities in the United States such as Denver (Colorado) and Portland (Oregon) have provided further evidence that TOD is an excellent tool to revitalize their communities. Portland is a national model for providing diverse transportation options to local citizens. (Thorne, 2011, P 25). Transit has leveraged large-scale redevelopment in downtown Portland. The streetcar was built to connect two large parcels of vacant industrial land north and south of downtown. The city struck a deal with the owner of 40 acres parcel: the city would build the streetcar past his property if he would up-zone his property from 15 dwelling units per acre to 125 (Du/A). This was in the early '90s when there was no market for this kind of development, but today it is the city's densest neighborhood, and at build-out it will be home to 10,000 residents and 21,000 jobs. The streetcar now runs to the second vacant parcel, the South Waterfront, where an even more ambitious redevelopment effort is underway. (Center for Transit, P.14, 2007).

The innovative and successful implementation of mixed land use development in TOD projects is best illustrated in the city of Denver. Up to 2004, ten years after opening its 20-mile starter rail system, there was still really only one TOD "project" – a strange and wildly successful one -- out of the ground. The 10-acre Englewood City Center, in a suburb several stops out of downtown, was built to accommodate a good mix of usual TOD ingredients including 450 residential units, as well as a City Hall, library, museum, park, open space, and a street grid, plus a Wal-Mart department store and other big box retail, and it was parked at almost suburban ratios. As unlikely a combination as this was, somehow it worked, and it was nationally celebrated for having revived a lower-income community using the site of what had been a dead shopping mall. (Ohland, 2004, P12)

6. Baghdad Comprehensive City Development Plan 2030:

In response to the request of the Mayoralty of Baghdad, Khatib & Alami consulting firm / Mebex Consultants has prepared a technical proposal to guide urban development for the next fifteen years. The report is termed the "Baghdad Comprehensive City Development Plan 2030" referred to in rest of article as "BCCDP 2030". The proposal examines urban planning and design issues in the context of Baghdad. (Qateb & Alame,2014, P1)

Baghdad has many comparative advantages. Historically, the City was one of the leading cultural centers in the region, and has for centuries been the centre of Iraq's commercial and financial operations. It is rich in historical sites and natural resources. However, due to wars, sanctions, and rapid growth, the local authorities today are challenged to provide the much needed services to citizens and investors, as well as formulating and implementing effective sustained urban development strategies.

The City of Baghdad and surrounding areas have changed significantly since the 1970s. Demographic trends, scope and pace of urbanization, urban fabric and services, trends in commerce and industry are some of the aspects of community that have changed significantly since the implementation of Baghdad's previous master plan [PolSERVICE 1973]. The timeframe of the last plan expired in the year 2000.

It has become more essential than ever that BCCDP 2030 should present sustainable urban development strategies to guide urban growth, encourage reinvestment, regenerate and revitalize the City, ensure its prosperity, and enhance the many attractive and beneficial attributes of the community and its neighborhoods. (Qateb & Alame,2014, P1)

The purpose of these strategies is to relate changes in a positive way for the existing built fabric and for the future development throughout all neighborhoods in the city by creating an attractive and healthy city to see and live in. These will be closely coordinated with the economic analyses to ensure the financial success of the plan. (Qateb & Alame,2014, P26).

6.1 Evaluation of “BCCDP 2030” as it relates to TOD principles:

Each community needs to define their own goals for TOD. If multiple goals exist, they should be ranked. Some communities might encourage TOD primarily from a mobility perspective while others see it as a driver of economic development. Other communities might use TOD as a way to encourage location efficient affordable housing. Without specific prioritized goals for TOD, it becomes very difficult to define success. (Renne, 2009, P146).

The future vision of Public transportation in Baghdad is ambitious, and requires extensive and costly infrastructure. The BCCDP 2030 outlined a number of transit modes to cater for the growing demand of Transit. An underground subway system, elevated trains, and a rapid bus system are all proposed, and yet to be implemented in a manner to complement each other. The public transit stations will be served in certain locations by park and ride facilities. The proposed integrated transit network is outlined in Figure (2).

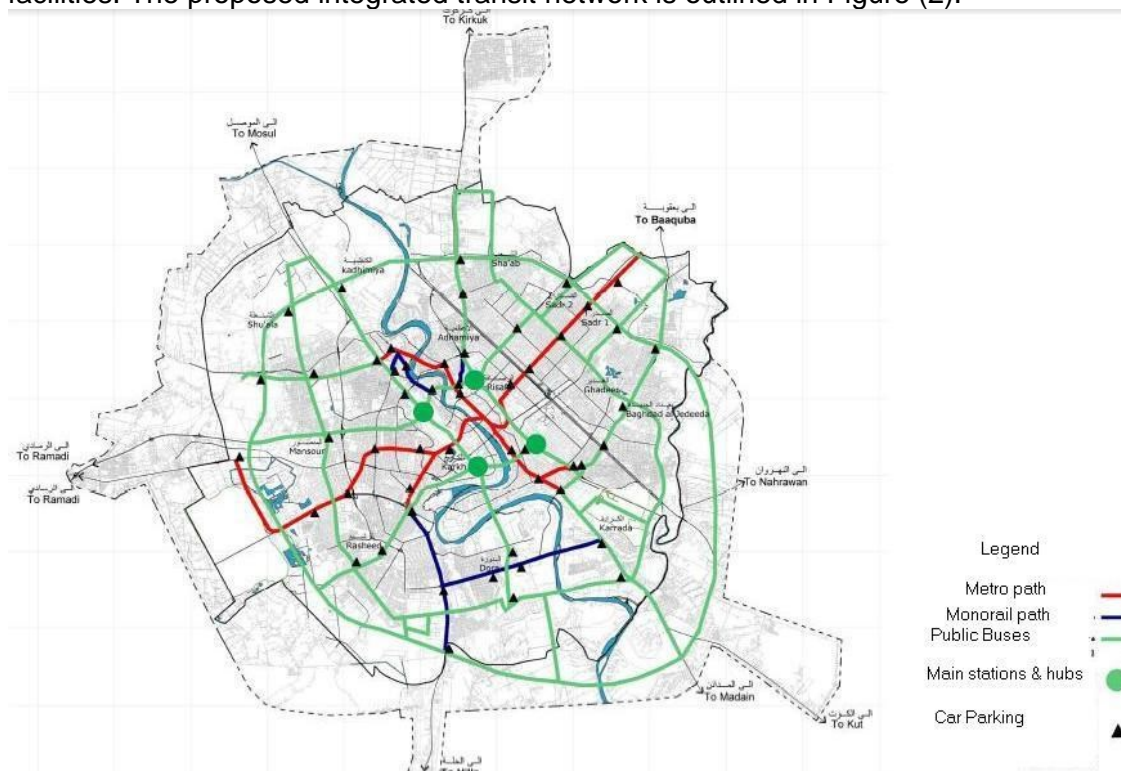


Figure (2) Baghdad transportation network and main stations and hubs

Source: Baghdad Comprehensive City Development Plan 2030, (Qateb & Alame, 2014)

The proposed plan did not submit TOD overtly as a strategic option to transform the urban structure over the life span of the plan. An analysis nonetheless is undertaken by authors of this article to evaluate the BCCDP 2030 policy Guidelines as it relates to TOD design principles. A three level scoring framework (Strong, Moderate, low) is used to measure the BCCDP 2030 guidelines conformity to TOD design principles. Overall scores indicates moderate to low applicability and compliance to those principles. The outcome of the analysis is somehow promising towards the adaptation of TOD as a valid strategy to reinvigorate the urban economy and fabric in Baghdad. Detailed discussion of analysis is presented in Table (1).

TOD Principle	Baghdad Comprehensive City Development Plan 2030 Guidelines	Level of conformi
Medium to High Density Development Greater than the Community Average	Livable committed to ensuring that citizens and residents have a healthful and dignified living standard; that provide systems for adequate housing, transportation, health care, education, and other services for households; to ensure the provision of sufficient services for all residents and visitors, and ensuring the efficient utilization of infrastructure and public services already in place.	Moderate
Walkability	The study of circulation focuses on the Major pedestrian ways, as an ease, efficiency, and facility of getting around once one is there. Moreover, the variety of modes of circulation, pedestrian, vehicular, and the synergy between them can be directly linked to the level of activity in the domains of commercial centers, as well as cultural, social and recreational activities.	Low
A Mix of Uses	Promote a balanced mix of land uses to ensure a harmonious and conforming built city. These policies will preserve property values, maintain the low tax burden, provide quality public services, preserve and enhance local resources, provide diverse, quality jobs, and ensure that housing and employment options are affordable, accessible, and sufficient for all residents.	Strong
Future Demand for TOD & Vibrant Communities	Baghdad shall be transformed into a metropolitan city with an integrated mixed land use to contain office and residential buildings, parking, retail and such other appropriate uses in a setting that facilitates pedestrian movement at street level among office/residential buildings, parking garages, transit stations and shopping areas.	Moderate
Compact, High Quality Pedestrian Oriented Environment	Distribution and alignment of existing and proposed routes; trip generation factors for present and potential major land uses along the route, as compared to present capacity; land use limitation; and the requirements for implementing new linkage corridors (i.e. Right of Way).	Low
An Active Defined Centre	It will analyze the suitability of the existing points of access to the city such as Baghdad International Airport, as well as the suitability and efficiency of access points on the national/local scale such as existing and planned city gateways on the existing road network, train station location, etc.	Low
Safe, Reliable Transportation	Managing the transportation network as an integrated system that provides alternative means of transportation to, from and throughout the City while minimizing the impacts related to through-traffic and that provide parking where necessary to support the needs of residents and local businesses. Develop a comprehensive transportation management strategy in close coordination with land use policies, and the stratification of transportation needs. Create an integrated and efficient transportation network to provide access for all residents and businesses.	Strong
Innovative Parking Strategies	Vehicular, pedestrian and transit options will be investigated along with the various alternatives studied. Parking shall be so planned and located so as to provide a linkage to the economic benefit of the City. Parking needs and desirable locations for major facilities.	Low
Economic Prosperity	Promote and maintain the economic sector related to commercial and industrial activities that contribute to Baghdad's quality-of-life and suit the city's social and physical environment. Stable growth in economic development sectors that focus on Baghdad's foreseen role on a national, regional and international stage.	Moderate
Public Leadership	Competitive business environment providing a supportive framework for productive firms, to promote buoyant, broad-based growth of employment, incomes and investment. The international competitiveness of Baghdad today is directly bound to the improvement of the quality of life of its inhabitants, "Well governed and managed" with strong capacity of local government to fulfill public responsibilities based on knowledge, skills, resources and procedures that draw on partnerships, and foster interaction between local government and residents in participatory planning and budgeting.	Low

<p>Aesthetic zoning</p>	<p>Strategies include organization, protective regulations and means to increase funding for open space, river banks, as well as a consideration of existing dead zones in the city. Baghdad should also protect and enhance the quality of its diverse cultural and historical resources and emphasize the important role they play in defining the City's character and quality-of- life. Various emblematic buildings that can contribute and encourage the social and cultural centrality of the metropolis as well as improve its external image and appeal will be explored.</p>	<p>Low</p>
<p>Community Effort</p>	<p>City housing policies should ensure that a full range of housing options exist for all Baghdad's residents regardless of income level, physical ability and age. These should satisfy both quantitative and qualitative necessities of the metropolis' population. Preservation and improvement of the existing housing stock, to maintain supplies of affordable units, and to upgrade living conditions and property values.</p>	<p>Moderate</p>

Table (1) Analysis of BCCDP 2030 guidelines conformity to TOD principles, (Authors based on Qateb & Alame, 2014)

6.2 Evaluation of Al-Alawee Hub as a TOD Zone

To further explore the possibility of transforming major transit hubs into a future TOD zone within the city of Baghdad, Al -Alawee hub is selected in order to investigate existing potential to meet location determinants and criteria for a successful TOD hub. Current function, multiple transit modes, and mixed land uses are elements in favor of this selection. As shown in Figure (3).



Figure (3) BCCDP 2030 Proposed public transit modes

Source: Baghdad Comprehensive City Development Plan 2030, (Qateb & Alame, 2014)

Al-Alawee hub is envisioned by the BCCDP 2030 to be a major urban and regional transportation node serving Baghdad city as well as major urban centers in mid and southern governorates of Iraq. Within the core zone (0 m - 200 m) of this hub, the largest train station labeled the "International Station" is situated providing rail lines to the north and south of Iraq. At some time in the past, the station ran rail service to Istanbul, Turkey. The Alawee core is also the current location for two regional intercity micro and mini bus stations serving southern urban centers. The National Museum, government administrative offices, a medical hospital, and a portion of the largest public park in Iraq (Al Zawra'a) can all be found

within the central zone (200 m -400 m) of the hub. The edge zone (400 m – 800 m) contains a multifamily housing complex, a large portion of Al Zawra'a Public Park, a portion of a large vacant land parcel which was once part of the old airport, and an old neighborhood consisting mostly of dilapidated housing units. An aerial view of Al Alawee TOD Zone of Influence can be seen in Figure (4).



Figure (4) Zone of Influence of Alawee TOD main hub in Al Karkh and reflection of TOD principles

Source: Authors based on Google map

Analysis of Al Alawee main hub characteristics as it relates to TOD pinpoint a number of indicators:

- Land use density in general is below the desired medium to high density development required for a TOD zone of influence.
- Pedestrian friendly circulation network is not in place. Numerous Vehicular junctions constitute an obstacle to promoting a walkable community.
- Proposed future land use mix within the hub's zone of influence provides for a multitude of functions and can be an asset to any TOD. Land use functions including commercial, residential, recreational, administrative, medical, central bus station, metro station, museums, and religious uses can all be found within the hub. Some functions are in need of efficient spatial design as well as more intense utilization.
- Introducing TOD principles and development approach can provide a framework to create livable and vibrant community within the hub. However, it was not taken into consideration. Proposed vision of this hub is below TOD standards.
- Compact urban structure and high quality Pedestrian network focus mainly on the relationship between main train station and main bus station, and neglect the pedestrian streets and allies in surrounding urban fabric.
- An active hub centre is not defined. The boundaries of the historic district adjacent to the hub are also not clearly defined in order to avoid areas of conflict between historic preservation and new development.
- Safe, Reliable Transportation systems may present a plan to solve many problems in the area through integrated transportation and urban development interaction.
- Innovative Parking Strategies should be developed to comply with the fundamental design criteria of non intrusive automobile usage.

- Economic activities within the zone of influence do not promote desired level of socio-economic improvement needed to revitalize this area.
- Public Leadership is crucial to achieve effective urban management so as to realize the full potential of TOD implementation. Current leadership structure should be developed to encourage public private partnerships.
- Aesthetic zoning of hub is underdeveloped and does not reflect sound principles of attractive spatial design and place making. Proper urban design schemes are needed to optimize the richness of the diverse cultural and historic opportunities present in the area.
- Community Effort focuses on competitive social interaction, and neglects the cooperative community characteristics which the traditional urban community was based upon.

Transforming Al Alawee hub into a functioning TOD area requires the formulation of defined Master Plan, which takes into consideration the drawbacks of the zone of influence. The development of a planning matrix focuses on issues of priority, and concentrates on pressing issues and planning objectives. It provides measures to achieve these objectives based on the unique characteristics of the area. Table (2).

TOD Objective	Program	Project	Action
Increased Land Use Density	Rezone Hub As A TOD Zone	High Rise Residential Blocks	Prepare Area Land Use Master Plan
Diverse Land Use Mix	-Special Zones For Housing, commercial, Educational, Cultural, And Health Facilities	-Use Land Portion Of Old Airport As High Rise Residential	Incorporate New Land Uses Into Area Master Plan
Defined TOD Core Zone	Placement Of Transit Stations And Commercial/Housing Uses In Core Zone	-High Rise Housing Buildings -Commercial Activities At Street Level	Rezone Core Area To Allow All Day/Night Activities
Aesthetic Spatial Design	-Develop Green Open Space System -Incorporate Place Making Design Principles	-Create Green Park At Center Of Core -Create Central Plaza Connecting Transit Stations -Introduce Public Art Features -Introduce Water Features -Introduce Green Shaded Walkways And Seating Areas	Allocation of leisure static public space land area
Innovative Parking Strategies	-Distribution of parking facilities throughout TOD Area -Introduce smart underground parking facilities	-Multi Story Car Parking Connected To Transit Stations -Develop underground parking below Public spaces	-Close Core Area To Private Cars -Utilize underground space beneath central plaza to incorporate smart parking facility
Integrated Transit Modes Within Zone Of Influence	Close Proximity Of Transit Stations Within Core Area	-Link Tod zone with street level tram system	-Redesign Circulation Network
Promote Walkability	-Establish Continuous Pedestrian Side Walk network	-redesign Side Walk to prevent cross circulation -Elevated And Underpass Walkways -Link Core To Al Zawra Park With Elevated Pedestrian Walkway	-Redesign Circulation Network In Favor Of Pedestrians -Incorporate Complete Street Design Principles

Table (2).Planning objectives Achievement Matrix (Al Alawee Hub), (Authors)

7. Conclusion

Metropolitan cities are in constant search of new approaches to optimize the urban form through efficient interaction between space and community. TOD presents an opportunity to optimize existing assets of the community, and reconfigure the urban landscape to create more livable cities. For transit facilities, they should be designed to be welcoming to the public and be well connected to surrounding community, especially for Baghdad city. Well planned and designed transit facilities can be instrumental in positively shaping a community's future. They can set the stage by being a catalyst for implementing the community's vision and creating economic value. Fitting transit into the community sometimes may require breaking the mold of generally accepted transit design.

TOD design perspective seeks to enhance transit system operation, passenger requirements, community fit and future development opportunities, and Baghdad development needed in multi levels. It assumes that it is possible to meet user requirements and maintain cost-effective service while capturing synergies with station areas that exhibit TOD potential, encouraging environmentally friendly practices, and creating lively community spaces to visit and not just travel through.

The analysis of one of the main transit hubs (Al Alawee) in Baghdad, it became evident that this area is suitable for development as a TOD despite the fact that future development plans neglected to incorporate this vital tool into the city's future vision. Indicators point out that certain intrinsic characteristics of the area are in line with TOD design principles, while others need to be developed further to optimize the urban form of the city.

8. Recommendation

Transit Oriented Development concept is a viable tool to promote smart growth especially for Baghdad city's future development. Creating integrated transit hubs will provide Baghdad with a much needed transformation of its current urban form. From an economic perspective, implementing TOD will broaden the tax revenue base, expand investment opportunities, create much needed jobs, and increase disposable income by means of savings to residents via efficient proximity and land uses diversity. These hubs will be a catalyst for bringing back life to central districts restores all day activity, controls and limits urban sprawl. Cities such as Baghdad may not, and should not continue to do business as usual. Explosive population forecasts indicate that the city's infrastructure and community assets are about to reach their carrying capacity. The future vision of Baghdad as articulated in the BCCDP 2030 has provided a conceptual framework to overcome some of the quandaries facing the city, but neglected to utilize TOD as an approach to attain smart growth. Cities do not prosper by good infrastructure alone, but rather by creating a livable, attractive, and resilient urban fabric. TOD can open a window toward reaching such an ambitious vision.

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What about Circular Economy?

Benefits, challenges and reasoning to implement Circular Economy within European context

Donatas Baltrušaitis

Abstract

Europe needs a strategy strong enough to decouple economic growth from natural resource use, because our future competitiveness depends on it. An action plan of initiatives can help, but will not lead to systemic change. The framework of discussion must be set for coherent actions, for the private sector to invest in the right direction and for the urban professionals to bring new insights how it affects quality of urban life. Systemic change is possible only if the circular economy concept is fully accepted in all policy areas and integrated in the economic governance process "As Europe is more dependent on imported resources than any other region in the world, moving towards a circular economy is an economic and ecological win-win scenario." (The Parliament, 2015).

This paper describes the theoretical basis of Circular Economy, its foundation and future trends and why it is relevant to most of the European cities, where complexity and conflict arises after certain crashes, instability or disappearance of local industry. The circular economy is not just an opportunity for business and research institutions, but it is a necessity for Europe. I also present empirical evidence of how post-industrial cities are already gaining speed in economic prosperity where Circular Economy is being introduced and implemented as a concept.

In the Section 1 I will relate to the today's general problem within linear economy while juxtaposing it to the concept of Circular Economy at the same time introducing it to a wider audience. Where does it come from and how its interest among European cities is only growing and why? Besides that, paper overviews the work progress led by European Commission in shaping how law acts can help to implement circular economy. Section 2 presents the theoretical basis of Circular Economy by defining its general ideas, approaches, step by step methods and strategies. It also gives insights of upcoming challenges and how to deal with them through research and design. Section 3 describes two case studies: one in Genk, Belgium and second in Dortmund, Germany. Both cities experienced the crash of industry while Circular Economy takes shape and is being developed through certain planned or unplanned ways. The section would end in discussing problems raised throughout paper and reflecting to ISOCARP workshop, which will take place in analysed city of Dortmund with relative workshop theme of "How to leverage economic growth from spatial projects". Finally in order to reach the broader audience and present the findings to the 51st ISOCARP congress, this paper will be translated through sets of visual communication methods into video format.

1. Introduction - problem statement

Three billion people are expected to join middle-class consumers before 2030. It will rise the natural resources extraction more than a half comparing to 55 billion tones in 2002 (Dobbs, R., 2011). Following this course, the Earth is aiming for rapid resources depletion with unpredictable effects.

The world of the XXIst century, with its limited pools of resources, sooner or later will face the problem of energy and goods supply. The mainstream, linear economy in Europe shapes the urban development and the social behavior. In this model the level of prosperity is measured by GDP index that focuses on the production aspect. It concerns no more "than whether market mechanism can distribute the last unit of resources in the most efficient way" (Pin, Huta, 2012). In addition it generates restricted involvement of citizens in public choices and few opportunities for personal growth.

Can circular economy be one of the answers to the mentioned problem solving? Some say that the premise of circular economy gets lost in translation and is misunderstood. There's a perception that it's an ongoing battle between environmentalists versus corporations. It goes that one side wants to see the environment preserved and protected, and the other prioritises profits. But in fact the circular economy connects both, delivering economic as well as environmental gains.

1.1 From Linear to Circular

One of the most important circular threats is the efficiency and competitiveness of current linear business models. A linear economy makes, uses and disposes materials. The circular economy looks at all the options across the chain to use as few resources as possible in the first place, keep resources in circulation for as long as possible, extract the maximum value from them while in use, then recover and regenerate products at the end of service life. This means designing products for longevity with repairability in mind so that materials can be easily dismantled and recycled, not to mention the alternative business models that encompass trade-ins, sharing models and service packages. Unfortunately, cheaper and less scarce material substitutes are often preferred. Circular models and systems have to compete with high 'linear' performance, but are often behind financial, organizational, institutional, technological and societal aspects (Pin, Huta, 2012).

In the contrary to the linear "take-make-dispose" system where materials and energy are widely wasted, stands circular economy. The system is a restorative and regenerative mechanism which treats technological and organic resources separately, resulting in a lack of remaining waste. Keeping resources in constant cycles of production, reuse, refurbishment from being polluted and optimize the use of resources and energy (Ellen McArthur Foundation, 2014). The concept is believed to revolutionize our daily life, but is still not widely applied in urban proposals.

The awareness and urgency of linear threats is still relatively low, in both society and business. The motivation and incentives for the trend towards collaborative consumption are estimated to be more economic than circular. That means, sharing a recyclable or non-recyclable car probably does not make an important difference to consumers. Main stream

market demand for 'circular performance' is still unarticulated and it is uncertain when a large take off will happen.

1.2 European Commission takes part in ambitious strategy

Are European Cities behind Circular Economy? In July 2014 the European Commission approved a series of proposals that mark the switchover to a circular economy. Only a few months later, the new Juncker Commission withdrew this circular economy package again, promising instead to develop a more ambitious plan in 2015. With the objectives of the circular economy package, Europe is opting for an entirely new economic model. In a circular economy, prevention, reuse and recycling are the standard and waste is a thing of the past.

The Commission is aiming to transform Europe into a more competitive resource-efficient economy, addressing a range of economic sectors, including waste. The proposal will be fully aligned with the priorities of the new Commission. The Commission is engaged in a thorough reflection on how the objective of circular economy can be reached in an efficient way that is fully compatible with the jobs and growth agenda (European Commission, 2014).

However Christiaan Norde (2015) argues that European Commission is mainly focusing on waste reduction/management and not on the whole changes that need to be done. In this sense the circular economy is still in its early stages. There are not a lot of examples yet where there are concrete policies or laws that really support complete new design methodologies. Seemingly there is still a long way to go.

2. Principles of Circular Economy

The principle of Circular Economy combines and builds upon several preceding concepts and therefore has a wide scope, but does not have an articulated definition reflecting its essence. Ellen MacArthur foundation (2014) describes the concept as "an industrial economy that is restorative by intention" aiming to "enable effective flows of materials, energy, labour and information so that natural and social capital can be rebuilt". The meaning of 'restorative' refers to the post-consumer or post-use material flows which are fed back into original economic activities and therefore must be able to restore the original material sources of these economic activities. **Figure 1**, referred to as the 'butterfly diagram', visualizes a Circular Economy. Several archetypes of closed material loops are visible.

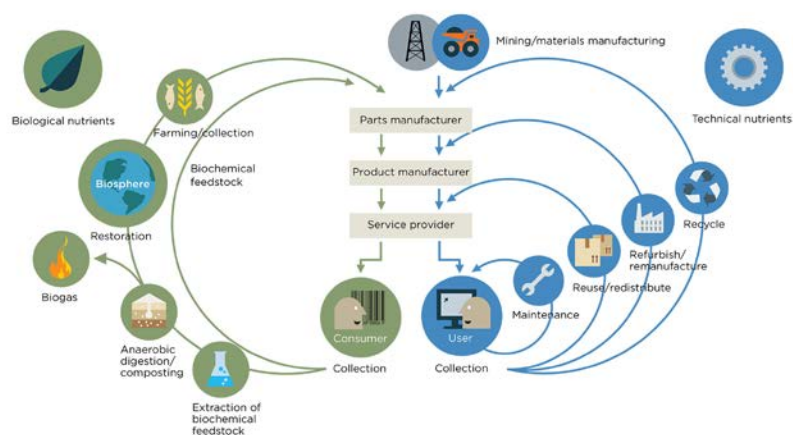


Figure 1: Schematic overview of circular economy activities. Material should cycle as long as possible through these activities (Ellen MacArthur foundation, 2014).

Ellen McArthur Foundation (2014) extends the concept of "Circular economy is as industrial system that attempts to create a flow of resources, both organic and technological, that supposedly works in closed loops of reuse." The system is restorative and regenerative by design and promotes the multicycle flow of resources. Though, the complex redesign of the current infrastructure and legal system through European Commission is needed.

Moving towards a more circular economy can promote competitiveness and innovation by stimulating new business models and technologies as well as facilitating social innovation. This will make the European economy more sustainable and competitive in the long run. We want to set the conditions for the creation of more jobs without using and wasting the amount of resources we do today. This will contribute to a stronger and fairer Europe and decrease pressures on the supply of raw materials and the environment (European Commission, 2014).

2.1 Challenges

The transition towards circular economy will create many jobs and environmental opportunities, it is heavy to achieve in urban proposals since many obstacles that need to be dealt with. (Pydo, 2014).

Global competition for resources is increasing. Supply concentration of resources, particularly critical raw materials outside the EU, makes our industry and society dependent on imports and vulnerable to high prices, market volatility, and the political situation in supplying countries. By maintaining the value of the materials and energy used in products in the value chain for the optimal duration and by minimising waste and resource use, the circular economy can promote competitiveness, innovation, a high level of protection for humans and the environment, and bring major economic benefits, thus contributing to growth and job creation (European Commission, 2014).

It can also provide consumers with more durable and innovative products that provide monetary savings and an increased quality of life. The circular economy requires action at all stages of the life cycle of products: from the extraction of raw materials, through material and product design, production, distribution and consumption of goods, repair, remanufacturing and re-use schemes, to waste management and recycling (Ellen MacArthur foundation, 2014). All these stages are linked. Promoting the circular economy also requires demand-side measures.

The development of innovative solutions and new markets also need to be supported as a key element of the circular economy. Important barriers to the circular economy arise from market failures, but also governance and regulatory failures, some of which can be linked to EU legislation (Norde, 2015).

2.2 How to design

The core point of economic circularity is design. The basic assumption of circular economy is that products needed to be designed in a way to flow in optimized cycles of use and disassembly. Through standardization and modularization, products could avoid being dumped in landfill, being moved between industries. The proper design of products accelerates chain of positive changes. Industries can gain profits from cross-chain collaboration. Eliminating waste and downsizing pollution will affect positively the environment, etc. (Ellen McArthur Foundation, 2014. Pydo, 2014).

For city planners and urban designers there is a challenge in a paradigm shift to design for ecological communities rather than for a generic society and to design eco-communities

themselves. Certain methods and strategies are needed to rethink urban proposals to work with circularity (Ferrao and Fernandez, 2013).

The Circular Economy Foundation proposes a gradual process with two major phases. The first phase, non-competitive niche in the linear economy model is a phase of testing and research for circular economy. It precedes the second phase - mainstreaming, whereas circularity becomes a common phenomena. The organization distinguishes 14 steps to facilitate that emergence (IMSA Amsterdam, 2013).

First of all, an index of performance (1), other than GDP is needed (European Commission, 2014). Industries, companies, investors and new development shall be granted or fined i.e. by the measure of environmental impact. After that, the experimentation, innovation and new approach toward design shall be introduced (2). Successful products or entrepreneurs who adopt the circular economy idea will be promoted in order to spread the concept (3). Along experimenting and testing, the education and training (4) should be initiated to enlarge the awareness within academies and different businesses. The latter will develop a long-term vision (5) of identifying risks and opportunities streaming from assessing resources characteristics.

The implementation shall be started in the micro level in single enterprises going up to the macro – regions. Further, exchanging waste (6) (material pooling) shows the opportunity to cooperate between industries rather than compete. Promotion of products made in circular cycles is the next step to achieve circular economy. (7) The companies which stays in linear economy could be introduced to a “roadmap” which helps them to go through transition. (8). Business can redesign wholly the chain of production and distribution. The transition shall be supported by ICT development and social change (European Commission, 2014). The fora or platforms to exchange experiences are needed (9). Switching to circular economy need attention of different groups of actors and shall be a part of policymaking (European Commission, 2014. Pydo, 2015).

The steps presented above deal with today's status quo. It seems to be adequate for urbanists to follow the experimentation, trainings and education steps, especially when thinking about roadmaps for economic sectors and designing infrastructural systems of material pooling and circular products. After niche steps are achieved, the governments needs to oversee the company performance according to the new standards (10), conduct a shift from labor to resources tax (11), change the current economic indicator (12), establish international independent systems for material flows (13) and adjust policies to the new realm (14) (European Commission, 2014).

2.3 Role of awareness

Where to start? Raising awareness - how people 'consume' products and services will have to change into how they 'use' products and services. Lack of awareness of the circular economy principles from the side of citizens is a barrier that can be tackled. The essential step is the organization of circular neighborhoods and cities, where products are locally grown as much as possible or have limited waste (Norde, 2015).

Through awareness and understanding the principles of Circular Economy, the communities can spin their own self-aware enterprises, which in the end creates jobs, social cohesion, interaction and etc. One of the strongest methods of making new insights and sharing already obtained and gathered knowledge on Circular Economy is to organize events and fairs such as 'Recycling Technik 2015', which will happen in Dortmund, Germany. The visitors come here to discuss issues and challenges from their day-to-day production and usage activities. I will elaborate on importance of such events in the following section.

Companies lack awareness of the circular economy solutions; confidentiality and trust issues blocks share of knowledge. The status quo that we live in, can lock the economy in linear model while powerful stakeholders would rather stay in current economic model.

The paradigm shift is to participate in education, trainings, workshops and understanding of urban flows within concept of Circular Economy. Designers and planners are responsible to understand the circular economy concept and promote it through their design regardless the scale of project.

3. The application of Circular Economy to cities

The ambitions of Circular Economy are familiar to Flanders. During the Belgian Presidency of the European Environment Council in 2010 the Flemish Minister for the Environment, Joke Schauvliege, gave sustainable materials management a prominent place on the agenda. The objectives defined by Flanders at that time have been taken over by Europe and were translated into the concrete legislative proposals of the circular economy package in 2014. From the beginning, Flanders has advocated the maximum integration of the Flemish vision and policy on sustainable materials management into the European legislation (OVAM, 2014).

3.1 Genk started the implementation of Circular Economy

The city of Genk is located in the province of Limburg which is one of the five provinces of Flanders (Belgium). Flanders, situated in the north-western part of Belgium, is one of the most densely populated regions in Europe (Eurostat). A working class town with a knowledge-based economy and it's green and industrial capital is what makes Gent today. Some of the former coal mines for instance, have been redesigned into modern innovation hubs housing many young and innovative enterprises and businesses while others are being redesigned into a science – business park focusing on cleantech and sustainability. The city's ambitions to become smart and climate friendly makes this city especially interesting to investigate what is needed to accelerate the transition to sustainability (Accelerating Transitions, 2015. OVAM, 2014).

Although one of the smaller Flemish cities in size, Genk was the third largest industrial city in Flanders and is surrounded by a vast amount of green capital – it is the greenest city of Flanders. It is a young and vibrant city colored by the diversity that went hand-in-hand with its rich mining history. Confronted with the challenges of economic downturn, the city is at the forefront of exploring new economic models based upon new notions such as a circular economy (Accelerating Transitions, 2015).

The aim of the Flemish Materials Programme is to take Flanders to the European top five when it comes to sustainable materials management by 2040. In 2012, partners from all corners of society made a commitment to close the materials cycle as much as possible. Meanwhile, the Flemish Materials Programme has grown into a recognised public-private coordination platform which is preparing Flanders for the transition to a sustainable use of raw materials and materials in a high-performance circular economy (OVAM, 2014).

Circular economy can provide Flanders with 27,000 new jobs In a circular economy we all use materials more efficiently. If Genk makes the jump to a circular economy, approximately 27,000 new jobs can be created in Flanders by 2020. This was calculated by SuMMa, the Sustainable Materials Management Support Centre. In addition, the circular economy creates an added value of 2.3 billion euros for Flanders. By reusing materials from consumer

goods again and again, and closing cycles, Genk is becoming much less dependent on foreign raw materials and price fluctuations in the international market (Ovam, 2014).

3.2 Genk aims for Multi-productive networks

Support the transition towards a circular economy by gradually developing the region into a multi-productive network. The focus is on territorial win-wins between urban, landscape and economic dynamics by stimulating mixed urban business locations, industrial symbiotic networks and energy landscapes (**Figure 2**). To get the process up and running, the action programme includes a prospective research setting-up a Living Lab for circular economy within the networks of the traditional economic players such as the manufacturing, construction sector, energy providers, the waste processing industry, etc. In addition, spatial strategies are explored to enhance the connectivity and coherence between production sites, innovation incubators and knowledge institutions within the region (OVAM, 2014, BUUR, 2015).

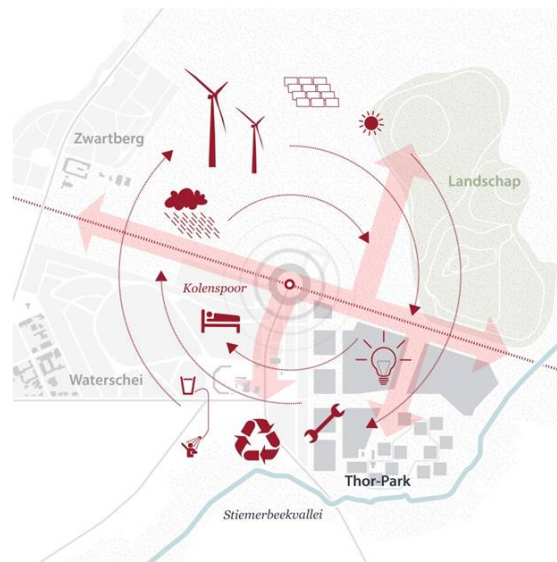


Figure 2: Schematic cohesive energy landscape (BUUR, 2015).

Large-scale energy supplier to Flanders, Re-mine, recognises the region's potential to take the lead in the development of a sustainable energy system once again. In this way, energy supply could once more be the driving force and foundation of a wider territorial development strategy. The mappings show that the basis for this energy transition can be found in the deep geothermal potential in central Limburg, or via (local or imported) biomass, for which the required logistical network is already in place.

The region has also more space available for developing wind or solar energy compared to other, highly urbanised, parts of Flanders. In addition, EnergyVille, the European research centre for energy technology and renewable energy that is being developed in Genk, serves as a catalyst. Today, undertakings for sustainable energy transition are already being initiated throughout the region. This mainly involves forms of solar and wind energy that are being developed for larger land areas as well as for individual homes. The focus right now is on a highly developed electricity grid while heat generally remains limited to the scale of the individual home. The experiments that are planned are gaining in diversity, but they lack cohesion: separate initiatives that seem to give way to a fragmented and less than optimal energy landscape. (OVAM, 2014)

By means of a systems analysis, the research by design is exploring various development strategies for achieving a more cohesive energy landscape. Possible territorial win-wins concerning renewable energy supplies are being investigated based on the region's assets and the envisioned territorial developments. The mapping of the potential energy landscape serves as a synthesis. It offers a concrete framework within which future initiatives can be crafted into stepping stones toward the development of a stronger and more visible energy landscape. Circular Economy is helping Genk to form structural foundation for the region, which would allow to urbanize in a targeted way and to transform industry into viable, efficient and sustainable manner.

3.3 Dortmund on the way for implementation

With almost 600,000 inhabitants, Dortmund is the biggest city in the Ruhr Region and one of the most dynamic cities in the new German economy. Dortmund has become an important technology location. It is formerly famous for its steel, beer and coal industry. Despite of declining population projections, contrary is happening: population figures have been slightly rising in the previous years which is due to net migration gains. Younger people (18 to 25-year old) in particular come to settle in Dortmund mainly because of its universities or other education-related activities (Clusnet, 2015).

Dortmund is now home to a number of medium-sized information technology companies, many linked to the local university of Dortmund program (**Figure 3**). The city works closely with research institutes, private universities, and companies to collaborate on the commercialization of science initiatives. For other sectors, insurance industry is represented with three important companies, and so is the finance sector with 45 banks and 5,500 employees. One of the city's major locational advantages are its excellent transport links: the Dortmund airport, the third-biggest Intercity nodal point in Germany, a highway ring around the city and the biggest European canal port make Dortmund easily accessible from every direction (Clusnet, 2015).

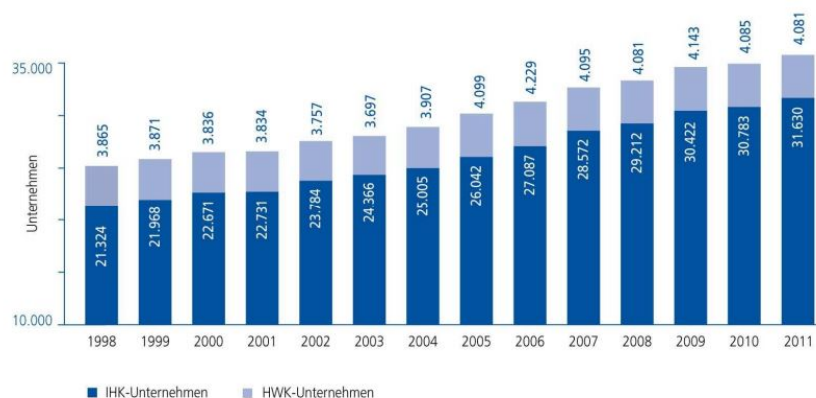


Figure 3: Increasing number of innovation-focused enterprises (Clusnet, 2015).

During the year 2000, the City of Dortmund and ThyssenKrupp AG founded the dortmund-project as a Public-Private-Partnership in order to transform Dortmund into a leading location for technology and business within Europe. The Dortmund-Project, which has become a unique network between the City, business and science, is characterized by the methodological approach of reacting quickly, investing, setting up self-sustaining systems and concentrating on specific themes and processes (Clusnet, 2015). The Dortmund-Project is pooling the strengths of city, economy and science in an unusual network, creating

the framework for locating new businesses and enterprises from technology-oriented sunrise industries.

3.4 Welcome to Recycling-Technik 2015

Recycling-Technik 2015 is Germany's largest business platform for recycling and bulk solids technologies. For the third time Recycling-Technik 2015 will be held in the Messe Westfalenhalle Dortmund on 4th and 5th November 2015. The exhibition facilitates the visitors finding of individual technical solutions and product innovations in the field of recycling technology. The exhibition will also benefit from the synergies continue through the show's co-location, the leading trade shows for powder and bulk solids technologies in Germany 2015. (Easyfairs, 2015).

Exhibition grew by 30 % compared to 2012. Over half of the visitors are interested in the exhibition of the show Recycling-Technik. The leading trade show specializing on Recycling Technology in Germany 2015: This will be the perfect platform for the presentation of innovative products and solutions. Recycling technology is the booming economic sector, when recycling is one of the core starting steps to achieve circular economy. Aiming towards guaranteeing long term production while simultaneously minimising the dependency on other continents for natural resources are the set goals for Germany (Easyfairs, 2015).

The focus of Recycling-Technik is to improve the efficiency of recycling. Products and technologies are demonstrated for the collection, sorting, processing, recycling and disposal of recyclable materials. Cross-section, measuring, control, regulation and control techniques as well as solutions to Occupational Safety and Waste-to-Energy are also subject such as trade in secondary materials and other services. The event grew naturally from the actual needs of the market and it's aims go hand in hand with circular economy.

3.5 Framework for potential implementation

Dortmund by historic industrial past and future economic trends is comparable to Genk. Thus it would be possible to apply Genk experience, practice and strategic approaches within Circular Economy to Dortmund. This would require research by design and throughout analysis on exploring various development strategies for achieving a more cohesive local economy. Dortmund needs to transform and target it's circular economic throughout different scales of the city and with clear coordination from local municipality (Clusnet, 2015).

It is most-likely that future-economic trends will have a positive business spin on achieving circularity within the local high-tech industry due to appearance of such innovative initiatives and platforms as Dortmund-Project or Recycling-Technik and increasing number of innovative companies to share knowledge within principles of circularity. However projects as such are mostly initiated within private sector as if to aim for efficient circularity and leveraging economy within all societal levels, local communities and municipal legislative authorities have to play as important role in the city life. Thus scalar research of existing stakeholders and involved parties is necessary to start forming multi-network society aiming for sustainable future.

Dortmund has to set targets of Circular Economy itself and make use of any legislation that could support it in these circular economy initiatives. The start could be in allowing and fostering interesting and already known examples of cost per use is the emergence of the Sharing Economy. Amsterdam or Seoul Sharing Cities might be good examples for introducing elements of the sharing economy, which fit into the circular economy concept as well.

4. Conclusions

Circular Economy can be achieved through design of systems, chains and products. Greater cooperation between industries, users and policy-makers; advanced eco-innovation, move from selling products to selling services and developing business models based on leasing, sharing and repairing is also an important factor (Ellen MacArthur foundation, 2014). The transition to a circular economy is a key opportunity for the European Union to achieve a multitude of industrial and environmental objectives and I hope that the commission is serious when it says it wants to come back with a more holistic package.

Existing theoretical contribution towards Circular Economy proposes that real-world economical transitions towards circularity call for a fundamental re-thinking of the role of planning professionals in working methodology. At least basic theoretical knowledge on economy and it's implications towards spatial and urban life is a must. Most urban projects have to be tested on multiple scales and dimensions of socio-ecological systems. The combination of these multiplicities is the key to a more circular and therefore sustainable projects.

The World Economic Forum and the Ellen MacArthur Foundation (2014) identified that a shift in reusing, remanufacturing and recycling products could lead to more than half a million jobs being created in the recycling industry across Europe. The empirical evidence of actual economic and social gains within implementation of Circular Economy calls for further meaningful contributions towards resilient and stronger economies. In the meanwhile ISOCARP 51st congress is the ideal place to share and discuss the professional knowledge.

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Understanding Cities' Dynamics and the Need for Recurrent Urban Structure Adjustment

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Abstract

A city is the environmental medium where humans live and it accommodates multiples of urban functions and activities and provides a comprehensive life of a community and thus, reflects its successes and failures. Currently many cities are facing severe changes and while most of the developed cities are experiencing negative demographic growth the majority of developing cities is currently characterized by rapid growth and they are under constant change: building and rebuilding, the succession and occupation by varied groups having different behaviours. Cities undergoing urban transformation may have different and often conflicting forces of interests and landuses, and disparities may exaggerate until the time comes when conflicts can only be resolved by urban interventions via undertaking one or several forms of urban reformation processes such as restructuring, renewal, etc. to accommodate the transformation needed. Apart from adaptation to demographic changes and political interventions drivers of urban restructuring include adjustment to technological, production and economic transformations which are radically reshaping the urban form and the city functional characters. Restructuring is also inevitable for traffic improvement and for containment of post-mega events hosting impacts while fulfilling sustainability requirements is a must in all restructuring activities.

The objective of this paper is to stress the different urban changes occurring in cities that necessitate urban structure adjustment and it therefore, presents a number of urban structure adjustment measures undertaken by different cities to accommodate the change effects, with special reference to major IGAD cities. The task of primary data collection was carried out by different means including household surveys conducted in Greater Khartoum. Householders of the affected population were interviewed. It is observed that the main features of change effects in the developing world are the massive development of heavily populated slums and unauthorised growth of informal settlements. Thus, the majority of developing cities are in need to readjust and strengthen their urban structures to cope with the emerging hyper urbanization. Also, sustaining cities' growth and attaining urban efficiency require reallocation of incompatible urban functions and extension of services otherwise their general landscape will deteriorate, their urban entities will be lost, and above all the quality of urban life will degrade. On the other hand many developed cities are decaying and therefore, subjected to inner cities' regeneration, gentrification and revitalization. These cities aim is to reduce housing oversupply, enhance urban environment and absorb the impacts of depopulation while others, particularly Eastern Europe cities, undertake urban renewal to serve globalization and to attract international investors. The growth and transformation of Chinese cities are driven by strong reform forces exerting domestically and globally.

The restructuring programmes highlighted in this paper have definitely made positive effects in environmental enhancement, social elevation and the activation of the urban economy

1.0 Introduction: City Urban Structure

Cities accommodate multiples of urban functions and activities and provide a comprehensive life for their nations. The city urban structure is a combination of built-up structures and the residents activities thus, reflecting the contents of their civilization, values, and culture. Cities have various spatial configurations dependent on the type of development model e.g. compact city, sprawled city, polycentric city, etc and the change in the urban structures that produces an expansion or shrinkage of the physical block results in a change in its spatial configuration. But these terms describe the main function of the city since the configuration comes to be the classification

widely used and it draws much of the debate among experts over the advantages of compact versus sprawl cities though sprawled growth is usually unplanned and without direction.

2.0 Methodology and Objectives

Cities in their quest for providing essential needs for urban life are constantly draining resources and material flows that may lead to environmental, economic and social imbalances and in doing so they are subjected to urban changes which can be associated with physical distortions that require continuous corrections. This paper therefore, develops to understand the changes in cities' urban structure and endeavours to point out the main drivers of such changes and discusses different measures taken to accommodate the change effects. In pursuing this course of action, this paper utilized both, primary and secondary data. The primary data collection methods were household interviews, field observations, focus group discussion and review of both published and unpublished materials. The primary information was gathered by the author and his associates through a number of field surveys conducted for different purposes in Greater Khartoum (a tricity metropolis; Khartoum, Omdurman and Khartoum North) and in other cities of the IGAD African Region (Addis Ababa, Nairobi, Kampala, Mogadishu, Asmara, Djibouti and now Juba) which has demographic properties as varied as its natural settings and contrasting climates. The task of data collection was carried out by different means which include:

1. Visits to IGAD capital cities to collect information on urbanization issues, and access their national institutions' database and reports on the respective country and also contacting the concerned UN agencies' local offices as well as non-governmental and voluntary organisations.
 2. Conduction of Households' surveys to avail information from Greater Khartoum, an example of a rapidly growing city. Household surveys were conducted to test the residents' opinions on the executed restructuring operations and primarily to find out the feelings of the residents whose settlements were subjected to relocation or upgrading
 3. Gathering the secondary data from government and relevant sources to ascertain information about declined areas and number of inflicted population and how authorities' evaluate the targeted areas and their development plans that meet urban design principles.
 4. Accessing internet sites of government and competent UN agencies and reputable INGOs.
- The objective of this paper is to throw light on different urban changes occurring in cities that necessitate urban structure adjustment which accommodate the urban transformations that evolves sustainable growth via urban fabric reconfiguration. Accommodation of such transformation may require surgical operations by applying the known restructuring processes.

3.0 Structural Adjustment Processes:

Cities develop, grow, expand and shrink as time goes by and their urban structures are subjected to changes depending on their urban potentials and geo-political influence. In IGAD and similar developing cities, urban changes come from their enlargement, which is due to migration from the countryside aggravated by the impact of climate change, desertification, adaptation to globalization and instability occurring from armed conflicts. On the other hand, profound structural changes due to decay are found in traditional industrial cities. Many long-established industries have suffered sharp decline while new industries like high tech manufacturing, cultural production, service provision, and tourism have emerged as dynamic nodes of growth. But in case disparities and incompatibilities exaggerate as a result of urban changes, cities undertake structural adjustment measures to correct such distortions. Different measures can be applied to achieve the mentioned aim and the smoother changes take place the more successful the process of urban adjustment. Such measures include:

3.1 Slums' clearance/upgrading

There are two processes which can be exercised to treat slums and deteriorated squatter settlements one is for the purpose of correcting the physical distortion or for enhancing the

physical environment via upgrading processes which address the backlog of urban neglect by planning. The other is clearance and it is applied when relocation is the only solution:

1. Clearance is applied in filthy slums of worse physical distortions and which are a focus of human relegation and are insusceptible to improvement or occupied by people who are not strongly attached to the land and their level of mobility is high. Other types of settlements which are subjected to clearance are those occupying areas which are unsuitable for residential use or those blocking the public rights of way of urban networking.

2. Planning is applied in settlements which are more liable to improvement than relocation because e.g. their inhabitants constitute a permanent population to the city with strong attachment to the land they occupy though land ownership and planning requirements are major factors in deciding whether the settlement is to be planned or not. Another factor which is equally important is the level of permanency of the buildings.

3.2 Replanning for Improvement of Old traditional settlements

Old traditional settlements in most developing cities are in need of replanning to facilitate the provision of public services and to ease traffic flows. They were developed when man and motor were not separated and when the lines of public utility services were easy to locate and install. They are overcrowded, congested and almost inaccessible by new modes of transportation.

3.3 Urban Renewal:

The concept of renewal started in England as a programme of land redevelopment in cramped urban poor areas with unsanitary conditions in industrial cities. It is then widened and in some cases, renewal may result in urban sprawl when cities introduce expressways needing new physical setting. Renewal is also used as a reform mechanism to enhance existing communities and these results in demolition of their neighborhoods. Other renewal programmes adopt renovation and investment policies such as rehabilitation of impoverished urban neighborhoods, conversion of wasteland into habitable areas.

3.4 Urban Gentrification

It is a process leading to upgrading of run down urban neighborhoods by affluent displacing the resident poor. The affluent people usually buy and renovate the decayed properties after relocating the poor households. This capitalist urban land markets creates class inequalities and injustices and it favours the evolution of urban environments that serve the needs of the affluent at the expense of community social needs. Gentrification thus, commonly occurs in areas where prior disinvestment in infrastructure creates opportunities for profitable redevelopment. The gentrification process is in fact much broader than merely residential rehabilitation because it is only one facet of a more profound economic, social, and spatial restructuring. In reality, residential gentrification is integrally linked to the redevelopment of urban waterfronts for recreational and other functions, the decline of remaining inner-city manufacturing facilities, the rise of hotel and convention complexes and central-city office developments, etc. In terms of urban form, European city' style follows gentrification while the American-style generally follows the sprawl model because the concentration of activities is on cities' outskirts, (edge city style).

3.5 Urban regeneration

Traditional urban regeneration is concerned primarily with inner city districts of developed cities. It is a process to improve economical, physical, social and environmental conditions of a city. It may target some parts of a city to diversify its urban functions in a manner to expand its economic base, e.g. redevelopment of deprived areas, upgrading of city parts affected by population decline. Cities such as London, New York and Tokyo are noticeably different since they are continuously developing concentrated command of activities in world economy.

3.6 Urban Restructuring:

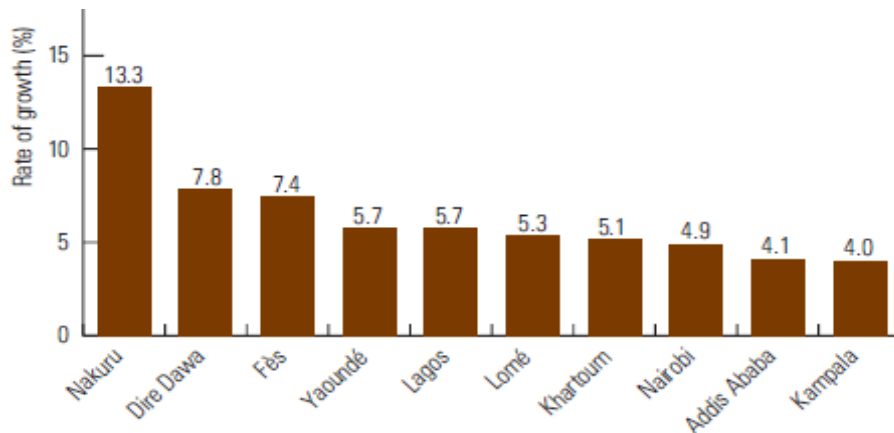
Urban restructuring is broader. It does not mean reconstruction of built or ruined structures or landscape beautification, or limited replanning processes. It means undertaking a complete urban reformation to accommodate the transformation needed to correct mistakes of the past, advance urban efficiency, build a sustainable city capacity, elevate the quality of urban life, etc. So, one can hardly distinguish between urban processes employed for urban correction particularly when applied at a large scale since they all attempt to reinvigorate a run-down urban area, and it is therefore not simple to apply such processes without understanding their (positive or negative) impact on the targeted area and more importantly on the people who live it.

4.0 Key Drivers of Urban Transformation

4.1 Demographic changes

It needs no mentioning that a clear divide exists between developed and developing cities with respect to population growth. Developing cities are experiencing extremely high population growth rate as exhibited in Figure 1 and most of them exhibit outward growth due to the bulging population. The urban structure is overwhelmed by masses of informal settlements and slums.

Figure 1: Average Annual Growth Rate of Selected Fast Growing Cities in Africa Between 1990 and 2006



Source: State of World's Cities 2010/2011

Their physical growth is irregular, diverse, disordered and increasingly space-intensive. In addition, governments often tend to relax basic urban development control regulations to attract investors seeking maximum profits. Typical examples are numerous but what seen in Asmara, is a very recent growth. The built-up area in Asmara has tripled in size between 1989 and 2009; it increased by 4,440 hectare causing a great sprawl encroaching on high potential agricultural lands and plantation cover, Tewolde²⁰. Khartoum is another example for consumption of farmland and loss of green space. Table 1 indicates that the average built-up area densities declined in Khartoum during the period extending from 1970 to 2010. The densities shrank from an average 213 Persons per hectare (p/ha) in 1970 to 42 p/ha in 2010.

Western cities are featuring low fertility rates and rapidly aging populations. The net international migration between 2005 and 2010 counterbalanced the excess of deaths over births in 11 developed countries, HABITAT²¹. Demographic decline trends in Europe and countries alike are unmistakable and resulting in urban shrinkage. Detroit was once a centre of production associated with high-quality living standards declined from fifth largest city in America in 1950 and undisputed World manufacturing capital, to a city with 713,000 residents by 2010, Clement⁶.

Table 1: Growth of the Physical Block and Population Density in Khartoum

Year	1955	1970	1980	1998	2002	2005	2006	2010
Population in million	0.250	0.640	1.170	4.372	5.139	5.761	6.010	7.000
Percentage of Sudan population	3.0	4.4	5.7	14.9	15.7	16.3	16.4	16.8
Total area in hectare(ha)	1680	3000	22840	80250	NA	NA	132300	165000
population density in person /ha	149	213	51	55	NA	NA	45	42

4.2 Changes in the urban economy and production

It is needless to say that drivers of urban transformation include technologic and economic changes. The Global North, with the Socialist World being disintegrated and becoming an appendage of the North is concentrating the wealth and power. The Global South or Third World is becoming increasingly differentiated with the rapid economic growth observed in East Asia, the relative stagnation of Latin America, and the economic marginalisation of Africa. Changes of economic systems production and management methods and evolution of new technologies are radically reshaping the urban form and functionality of the city and are freeing cities gradually from the central spatial necessities. This is why cities are undertaking different restructuring operations with different modes and magnitudes necessitating spatial redistribution.

4.2.1. Economic Revitalisation

- In Addis Ababa, apart from beautification of city centres, land demand for various development activities in the centre is high and supply is limited, developers target sites that are slum and underutilized in economic terms. One of the central areas targeted by relocation is Arat Kilo. New prestigious developmental projects such as Sheraton Hotel cropped up. The inflicted slum residents were resettled outside the urban area.
- Kampala, is one of the capital's most populous informal settlements, where thousands of small corrugated iron dwellings built close together and inhabitants lack any privacy. In the middle of downtown is Kisneyi slum and it is changing the physical face of the city, and thus, it was a prime target for forced eviction. Clearance of Kisneyi involved the removal of slum residents from city centre to sites that are miles outside the urban area.
- Nairobi relocated hawker's businesses from the CBD to Ngara market. The traders were found to have benefited from the relocation process. It was a win-win deal; the alternative market space is convenient for both hawkers and customers as reported by Mwangi¹⁷.
- Khartoum has been restructuring its CBD to promote its urban efficiency via creating more urban functions to raise its occupancy rate and to boost economic development. Restructuring operations included: (1) Clearance of some of the government occupied areas and replacing them important economic activities e.g. hotels and shopping areas. (2) Relocation of fruits, meat, wholesale and fish markets and their site is being developed as a huge office and commercial complex. (3) Expansion of open spaces at the inner part of the heart of Khartoum Centre: This is possible after the demolition of Khartoum locality. (4) Extension of transportation lines to make the Centre more accessible. (5) Clearance of the River front from: Transport Warehouses, dock yards and Mechanical Transport Workshops to pave the way for Qatari Real Estate Company to develop the area into a multi-economic, commercial and recreation activities

- Pittsburgh undertook an urban-renewal programme as early as May 1950 when a large part of downtown at the city heart was demolished, converted to parks, office buildings, and a sports arena and renamed the Golden Triangle, University of Pittsburgh²⁴
- Melbourne Docklands renewal project, a transformation of large waste land of disused docks into a new residential and commercial precinct
- Porto Maravilha, Rio de Janeiro large-scale urban waterfront revitalization project was executed to redevelop the port area to increase the city centre attractiveness in the global events by creating world-class amenities for the Olympic event, Rosemary¹⁸.

4.2.2 Integration into the Global Economy:

The free movement of capital across the globe is undermining national economic sovereignty and giving rise for macro-economic management to operate globally. Stateless transnational corporations networks are at present the prime economic movers of a globalised economy. Developing cities are increasingly adapting to World Economy. China, Eastern Europe, and Soviet Union have experienced political changes accompanied by market-oriented reforms.

China is rapidly shifting towards a more global macro-economic market. For this reason China represents a unique world by itself. Chinese cities have been transformed to post-socialist cities characterized by the triple transitions of decentralization, marketization, and globalization, Wei²⁵. Many Chinese cities have been under continuous restructuring since 1980. Tremendous structural and physical changes have been targeting vast rural-urban areas intermix. This has blurred the lines between urban and rural settlements, especially in densely populated coastal areas. Hangzhou is an example for changing of urban fabric style and shape of buildings. The high rise modernist towers have given way to office clusters, suburban shopping and convention centres, refurbished warehouses, and modern cluster housing. The argument of westernization of China's cities is based merely on the grounds that commercial centres are multiplying, gated communities are appearing, car use is increasing, and the cities are expanding.

4.2.3. The deindustrialization of the developed world.

Developed cities are witnessing deindustrialization which involves a decrease in the relative importance of industry and manufacturing in the economy. Decay and blight are the major impacts of the changes in developed cities as residents engage in more technological advancements. They have lost comparative advantage and competitiveness to rapidly industrializing countries in the developing world as the geography of industrial production is changing. The globalization of production has rendered older industrial cities obsolete and promoted sprawled-out newly industrializing cities in countries like Brazil, South Korea, and Taiwan. Deindustrialization and rise of the service economy have altered urban landscape in many cities, and are generally associated with redevelopment/ gentrification in central zones:

- The city of Detroit represents the deindustrialization crisis in the American context. Detroit-based auto manufacturers relocated their production facilities to other countries and has embarked on an ambitious urban restructuring plan to address perceived inefficiencies and reappropriate land-uses with varying intensities, Clement⁶
- Hong Kong in a short period of time experienced rapid economic restructuring and urban expansion as described by Monkkonen¹⁶. Urban Renewal Authority (URA) redevelopment projects involved demolition of urban districts and the consolidation of numerous city blocks to accommodate large-scale commercial developments.
- Poble Nou, a historic neighborhood of Barcelona saw in 1990 the renewal of its southern spaces after the manufacturing industry began to fade and the area fell into a state of abandonment and disrepair. Its decay became more evident after the Olympic Games which necessitated regeneration. Poble Nou's regeneration began late 20th century and in ten years of economic growth, its transformation has become a reality, Sanz¹⁹

4.2.4. Emergence of the Economic Service Sector.

Activities like finance management, cultural production, services' provision, and tourism have emerged as dynamic nodes of growth and many cities are on the way to change from being centres of manufacturing to centres of advanced services. Examples

- **Copenhagen:** Because any space reorganization due to urban restructuring may affect the heritages dominating Copenhagen for centuries, it was decided to undisturb the Old City and build Ørestad, a new city centre that provides the required services, work opportunities and the globalization infrastructure. Ørestad is built of high-quality architecture and consists of a great mix of cultural and educational institutions, office blocks and dense pockets of housing, as detailed in "City of Copenhagen Catalogue"³. Copenhagen is currently named the 2014 European Green Capital.*
- **Warsaw** established a new centre and allocated adequate lands for development of office building and work places and persuaded talented professionals and prominent experts to assist foreign investors in their activities. A new configuration of a pleasant townscape and a harmonized building form is created. This added more diversified cultural activities and attracted international investors who view it as a future city.

4.2.5 The organisation of work

Contrary to the era of the seventies the organisation of work is witnessing new marked changes particularly the emergence of new forms of labour management. It was characterized by mass production and consumption, centralization and rigidity, while the present era is characterized by flexibility, small batch production and variety of product types, flexible use of labour, decentralisation, and entrepreneurialism. The workforce structure has also changed as women entered the labour market in large numbers. There is even a shift of work back into the home. The concept of urban hierarchy is therefore being replaced with this notion of the urban network.

4.2.6 Technology

Technology is one of the most fundamental transformations underway at global level:

* The scientific revolution has brought about new technological paradigms focused on information usage and the informational society is replacing the industrial society as the basic framework of social organisation. The innovations in information and telecommunication technologies are now eroding the importance of the city centre as a location and reinforcing processes of decentralisation via creation of a polycentric city.

* New industries like high-tech manufacturing and other knowledge-based industries are growing fast and industrial cities have to shift to high-tech manufacturing, such as Silicon Valley in California and the corridor along the M4 motorway from London to Bristol

4.3 Political Interventions

Political interference in urbanization is clearly exemplified by the conflicting policies adopted by South African previous and present governments. The apartheid city was created to protect and enhance the interests of the white residents whereas the racial groups were channelled into clearly defined spatial zones within the city. Current policy is founded on intentions to correct the past mistakes, reintegrate South African cities, and to move toward more compact urban forms. Many other politically motivated incidents have created urban changes and dictate new patterns of urban form and contributed to prosperity or instability of cities:

- Dubai leadership is creating a service economy and adopting internationalization of service provision and investments in cooperation with international partners.
- Islamabad city was built during the 1960s to replace Karachi as Pakistan's capital.
- The new Abuja capital was created to be a symbol of Nigeria's aspirations
- Addis Ababa once a noticeable example for famine Addis Ababa is now garnering attention from foreign investors. But the result of political violence are tremendous:
- Khartoum town was destructed when it was captured by Mahdi and Omdurman declared as the new capital. Later demolition of Omdurman took place by the British Colonisation as a revenge to earlier destruction of Khartoum and Khartoum was reinstated as capital.
- Mogadishu has been a war-torn city

- Kampala was severely damaged in the Uganda-Tanzania War.
- The World is helpless to stop the destruction taking place in Syria, Libya and Yemen.

4.4 Urban Restructuring for Traffic Improvement and or for Efficient Use of Energy

Traffic management projects often result in restructuring and the consequential demolition schemes since traffic easement can be achieved through combinations of land-use replanning and transport modal share such as shifting to large-capacity public transit, metro, freight rail, etc

- Riyadh, Saudi Arabia metro is a rapid transit system under construction.
- Khartoum demolished many buildings to connect Khartoum core with the peripheries. Large physical blocks were removed to build bridges and to increase roads' capacities.

4.5 Meeting Urban Sustainability

The global urbanization trend has widen the gap between cities' inhabitants and nature and adoption of "Urban Sustainability" models necessitates undertaking restructuring operations: For **developing cities** to achieve sustainable growth they require executing massive urban restructuring programmes to regularize infomal settlements, re-plan old neighbourhoods, incorporate peripheral traditional settlements, reallocate incompatible urban functions in addition to establishment of new markets and other economic activities to strengthen city functionality.

1. There are numerous examples of restructuring programmes undertaken by developing cities assisted by UN/HABITAT and World Bank to replace inequity by solidarity and the divided city by the inclusive city and to secure the urban poor access to land, housing, and basic services, e.g.:

- Santo André municipality, São Paulo slum upgrading programme has improved the living conditions of 16,000 favela, UN-Habitat²³
- Dakar, slum upgrading have impacted more than one million inhabitants, World Bank²⁷.
- The Holistic Upgrading Programme in Medellin, Colombia which addressed the needs of 55,000 slum dwellers in the first phase: World Bank²⁷

2. Kenya slum upgrading project KENSUP, has the goal of improving the livelihood of 5.3 million slum dwellers in Kenya by 2020, starting with Nairobi's largest slum, Kibera. The programme was jointly funded by UN-HABITAT/World Bank, Cities Alliance and the Government of Kenya.

3. Greater Khartoum implemented three programmes for upgrading residential settlements:

* Treatment of slums and squatter settlements to correct physical distortions through relocation and planning processes and these targeted more than 150 settlements

* Replanning of 16 old residential neighbourhoods

* Planning of 35 villages and incorporated in the Urban Fabric. Table 2 gives the details

Table 2: Summary of the Number of plots targeted by treatment of squatter settlements, village organization, replanning of old neighbourhoods and IDPs settlements programmes

City	Number of plots treated (squatter program)	Number of plots legalized (village program)	Number of plots replanned (old neighborhoods program)	IDPs settled through (IDPs Program)	Population served based on 6.4 P/family
Khartoum	50250	32550	6500	15500	
Khartoum. North	50290	30250	5560		
Omdurman	181236	20400	14050	61000	
Total plots	281776	83200	26110	76500	
Grand total				467586	3.0 million

4. Addis Ababa implemented urban renewal plans and has given recently eviction orders to resident in some of the oldest neighborhoods as part of its Local Redevelopment Programme LRDP. The plan was to clear over 1,200 hectares of land included in the LRDP in 2013/14.

Many European cities have implemented varied restructuring projects to strengthen central urban areas and increase their functional diversity as part of complying with "Leipzig Charter on Sustainable European Cities" which was agreed by the European Ministers in Leipzig Meeting¹³. This is in addition to recent changes in the cities of Eastern Europe which adopted regeneration of eroded urban areas and the renewal of abandoned spaces. The examples:

1. EUKN⁹, the German web site provides a detailed information about restructuring operations conducted in many German cities. These include:

- Urban Regeneration of Haidhausen in Munich, 12 Aug 2010 to redevelop a quarter near the inner city to expand the CBD.
- Enlarging Urban district park on former housing areas in Leipzig. Vacant residential buildings were demolished; housing areas were converted into public green areas.
- Urban Regeneration of the city of Dessau-Roßlau, 31 Dec 2005 The city was addressing population decline, oversupply of housing and derelict sites in inner cities.
- Urban Regeneration of 'Linden-Nord' in Hannover, 19 Nov 2010. The buildings were upgraded, open spaces were availed and new landscape elements were introduced to remove the negative image of the area.

2. Ruhr district once one of the most polluted and environmentally devastated regions, has been reborn. With the "International Building Exhibition (IBA) at Emscher Park" initiated in 1989, the run-down industrial landmarks of the region have been transformed to serve new recreational uses, *LaBelle*¹². This is part of Greening Europe's industrial heartland project

3. Spanish cities of Barcelona, Bilbao, Madrid and Vitoria which have been explored by Sanz¹⁹ are subjected to urban regeneration strategies, e.g. Barcelona implemented successful restructuring programmes to improve the efficiency of its urban functions. The main focus of the programme is diluting the concentrated urban development to enhance the urban environment and to avail land for special uses. Madrid created a green corridor along the river providing an excellent system of parks and public spaces.

4. Large scale urban renewal projects have been executed in US cities, early in last century to create redevelopment programmes in the late 1930s and 1940s. The early projects were generally focused on slum clearance and on building of new affordable housing:

* Cabrini-Green Public Housing Projects in downtown Chicago was before demolition the most infamous housing environment in USA, Wikipedia²⁶. Decades of poverty and violence rendered Cabrini-Green near uninhabitable. They were demolished and gentrification processes have proceeded to replace the crime-ridden slums and hundreds of new residences were developed in place.

* Philadelphia has addressed its land vacancy problem aggressively. The city employed Pennsylvania Horticultural Society (PHS) to "clean and green" strategically selected vacant parcels in distressed communities to beautify neighbourhoods. As a result, vandalism, stress and inactivity all decreased in the beautified neighbourhoods, Centre for Community Progress²

4.6 Urban transformations from hosting Mega-Events

Sporting events such as the Olympic Games and the World Cup soccer tournaments are the classic examples of Mega-Events considered in this connection. They are a means to exhibit the newest building technologies, extend and modernise transport systems and provide new, or substantially refurbished, sports facilities to a world class standard. In addition, wider investment in tourism, transport and telecommunications infrastructure, hotel accommodation and environmental improvement will take place and will serve as catalysts for urban regeneration. It is crucial, therefore, that host-cities achieve progress through these urban transformations on

the greater goal of serving the long-term needs of their permanent inhabitants. According to Marchesi¹⁵, this was the main legacy left behind for Barcelona, which hosted 1992 Olympics and for South Africa, which hosted FIFA World Cup in 2010. Tokyo constructed 22 new highways and 2 new underground railway lines for 1964 Games. Seoul 1988 Summer Games involved construction of three subway lines, 47 extensions to bus routes and an enlarged international airport. Athens invested heavily in its transport infrastructure for the Summer Games of 2004. Over 210 km of ring roads and highways, 25 km of a new light railway and two new underground lines were constructed. Loscertales¹⁴ considered the 2008 Beijing Olympics Games catalyzed a major project of urban transformation and new infrastructure developmental projects in the capital city. These included Beijing's airport which was renovated and Terminal 3, the world's largest airport terminal, was added and the subway capacity and size were doubled. Marchesi disclosed that five rail projects have been put in place for urban mobility for 2014 World Cup, Rio. Also, substantial developments are required to provide sports facilities and accommodate thousands of athletes' and associated personnel. The Olympic Village of Helsinki Games of 1952 was designed from the outset as a permanent residential quarter. Similarly, the Olympic Village of Munich Games of 1972, which accommodated 10,000 athletes, is now, housing middle and lower income families. The Olympic Village in London, now named East Village, is converted into refurbished apartments, flats and townhouses. Khartoum which rushed to smarten up its rundown capital in 2006 for the purpose of hosting the African Union Summit Meeting in 2006 built luxurious Nile-side villas for accommodating the visiting presidents and extended the road network to connect and serve the Presidential Villas Complex and to transport 3,000 of the African delegates accompanying their presidents. For this purpose, Khartoum changed traffic lines and integrated the developed site into the urban fabric. Later the Presidential Villas Complex was rented for the American Embassy.

5.0 The Real Dichotomy in Urban Restructuring Strategies between North and South:

5.1. Cities of Global South

Currently, the world city status reports indicated that about two-thirds of urban residents (62 %) live in slums in African. Thus, the main tasks to be undertaken by developing cities are to address the effects of the phenomenal informal growth and to expand urban utilities to serve the surplus population. The difficulty is that migrants act ahead of government plans because cities lack development control and financial resources and have not yet put the tools of urban management, namely, spatial planning and information technology to good effect.

The other challenge facing developing cities is to smoothly shift from colonisers' urban policies since they were set primarily to serve the foreign ruling class. Khartoum Centre was chosen for residence of the British while preference was only given to government officials and wealthy people to reside around the Centre and the native population were thrown out of the town boundary. The colonisers' residential classification system when adopted at later times caused more planning difficulties giving the city no option but to continue sprawling with consistent horizontal and longitudinal expansions. To correct the distortions, Greater Khartoum is implementing a massive restructuring programme which included reallocation of incompatible urban functions and dilution of congested settlements lacking social infrastructures to bring justice between residents. Nairobi is set to decentralize services away from the CBD, JICA handed over in March 5, 2015 "Nairobi Integrated Urban Development Master Plan (NIUPLAN) 2014-2030". The objective is to transform Nairobi into "a globally attractive city". Kampala is implementing coordinated policies to address slums' growth through legal and land market reforms while providing security of tenure for squatters.

5.2. Cities of Global North

Contrary to the prevailing situation in the developing cities, the developed cities are experiencing decay and blight and these are the major impacts necessitating urban changes. The population

is currently engaged in more hi-tech activities and gradually abandoning old industrial facilities. To revive the decayed or deprived areas and create new spaces to diversify urban functionality and cling to the post-industrial era developed cities are adopting urban regeneration and land revitalization while most European cities are in favour of sustainable city models to comply with "Leipzig Charter on Sustainable European Cities". Almost all developed cities consider the overall urban quality, determined by the abundance of public spaces, beautified by manmade landscapes and green architecture is an essential requirement for establishing a pleasant environment. However, recent changes in Eastern Europe and China are pushing cities to accommodating global economy requirements to be globally competitiveness.

6.0 The Challenge of Executing Urban Restructuring Operations

Restructuring operations in most cases involve government acquisition of property for public purposes, relocation of businesses, demolition of structures, relocation and displacement of people, etc and they may not be smoothly carried out when restructuring involves forced relocation of the under privileged. Much resentment is precipitated if the operation is carried out in an atmosphere of government versus citizen and in absence of public participation and public scrutiny and if the operation is described as uprooting and replanting in a new alien and a hostile environment, even if the allocated site is better. Relocation of poor residents is a tough decision to make, to justify, to explain, and to carry out. But experience has shown that patient grass roots action through proper contact with citizens involved and media monitoring can produce miraculous results. Haste and authoritarian approach can produce irreversible damage and nasty unnecessary confrontation resulting in loss of lives. It was found that cooperation of the civil judges sitting as chair persons for committees helps a lot. In fact some relocations are simple, popular and gratifying. When Khartoum authorities penetrated the Corps of Engineers and Railway premises to improve accessibility to the Centre the action was hailed and cheered. The proper course of action for combating squatting seems like a mixture of tough government resolve, mobilisation of all bodies concerned and active sympathetic compassion towards those affected and above all propagation of provision of land through legal institutional means. However, it is important to recognize the different categories of relocation actions for each category requires a different set of guidelines. Generally, relocation actions should incur minimal cost, provide reasonable alternative sites, give adequate notice to affected population with minimum inconvenience to public, while establishing the necessary services in advance.

7.0 An Assessment

The restructuring programmes highlighted above have definitely made a positive effect in protecting the environment, attaining social elevation as well as, contributing to the activation of the urban economy in most cities and this is what urban sustainability is all about. Khartoum and IGAD cities gained real benefits from urban structure enhancement, particularly in treatment of huge slums and informal settlements. The dignity of their citizens is preserved and if heavy handed methods in some cases were applied it was the exception rather than the norm. The response of the interviewed relocated Khartoum dwellers is very positive and they were satisfied by the level of progress made and the legalization process that took place and this developed their sense of belonging to their new neighbourhoods. The other benefit of the restructuring programmes undertaken by IGAD cities is the change of the face of each capital city giving way for cityscapes to improve and urban networking to develop. These cities have enormous urban potentials and they can meet the future challenges without complications if they seize these opportunities and continue to carry out more urban structure adjustments.

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Engineering the Public Realm for Thriving Sustainable Communities

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Key words: urban density, placemaking, creative class, urban identity, public realm, design strategies, urban proximity, sense of place, cultural effervescence

- Introduction
- Acknowledging the check list for "Place Making": 12 strategies as a design tool to thrive urban developments
- Exploring the social need for creative class communities and their benefits within high urban intensity
- Engineering urban identity in an existing and growing city

1 Introduction

How to achieve the ideal city has been a human quest since the dawn of our civilization. From ancient Athens to modern Manhattan, from the Ville Radieuse of Le Corbusier to Broadacre City of Wright, from the modular planning of the Zhou (周礼) Chinese classical standards to the ongoing sustainable plan of Singapore. We, as civilization, have always strived to improve our built environment. But how can we transit from utopia to a desirable, reachable, coherent urban reality? How can we transform our current sprawled cities into an effervescent yet sustainable place to dwell? How can we measure the urban, social and economic variables in order to tailor successful and thriving cities? These concerns are addressed in this essay in the believing that is possible to find new growth paths for the coming years.

Much has been said about what the idyllic assets within the urban environment should be and more than ever there is an extensive group of specialist from the most diverse fields of knowledge dealing not just with urban matters but with the economic, social, cultural and natural factors involved in the design, development and maintenance of the metropolitan areas worldwide. In an increasingly urban based humanity we are urged to find accurate tools that allow us as designers, developers and investors to find the right ratio between well-being, sustainability and profit.

But instead of direct the attention to architecture, urbanism or cities we should direct it first towards people. Frequently, as Edward Glaeser states, we tend to confuse a city, “which is really a mass of connected humanity, with its structures” (Glaeser, 2011). Cities are successful because the people they attract. In order to understand the urban realm we need to understand people first, and how complex we tend to be when interacting in community. When individuals get together they can exchange experiences, knowledge, services and goods, and when they do it in the right environment these interactions multiply exponentially. Closeness equals development. Thus, one of the main purposes of our cities has been that of gathering diversity in a very compact area even now days that we have digital connections. Against the sprawling city we would like to aspire to a much dense, walk oriented, high efficient, multifunction urban cores. It is so that we can notice three key elements: diversity, proximity and environment.

These factors remain constant along the history of the breakthroughs of our civilization. Athens had its public squares, Paris its cafes and California has Silicon Valley. All of them places that encourage the easy encounter of people from different backgrounds in a specific location that allows free interaction. Most of the time these interactions take place in public spaces that are more related to the cultural effervescence of a city than to its technical or productive aims.

If we see an image of New York, London or Hong Kong we might find urban elements that repeat (tall buildings, noisy streets and human congestion) but definitely we won't mistake them between each other. Regardless their similarities they hold unique characteristics that confer them strong personalities. These cities are attractive not only because of their buildings but also because of what spreads among them. People, workflow, urban nature, food and markets, cultural expressions, an enormous amount of tangible and intangible variables materialize in the public realm.

People and companies alike strive to reach these places precisely because they are diverse, compact and have an exhilarating environment, goals that are followed by much of the developing cities around the world. So, once again, how can we achieve the ideal city with enough celerity, taking into account as many urban variables as possible?

2 Placemaking / 12 Strategies

Walking down the Ramblas in sunny Barcelona one can go from a calm café to a busy market, from a department store to a magazine stand, from the reclusion of a cozy apartment to the bustling activity of the wide pedestrian boulevards. It has a human scale and a vibrant energy that is quite desirable in an urban environment. The ability to achieve this kind of places is now known as Placemaking.

Accordingly to the organization *Project for Public Spaces* based in New York, "Placemaking facilitates creative patterns of activities and connections (cultural, economic, social, and ecological) that define a place and support its ongoing evolution" (*What is Placemaking?*). The main obstacle of this planning approach is that takes time. And in the light of the new circumstances where the population is growing in a disproportionately pace and the developers and designers are competing for an ever-changing market we cannot expect to have the same time as the global cities had to thrive urban developments. Here is where we have to be innovative and audacious by proposing new design strategies and methods that grant us the opportunity to rethink and recombine people's needs and the way they physically materialize. We need to find a way to measure, asses and implement these strategies in order to accelerate the urban processes successfully and in a thoughtful manner.

Other problem that could be related to the placemaking approach is the tendency to identify it as a flat model where its strategies are conceived mostly for public open spaces and not for a vertical enclosed model. But as we want to achieve denser urban cores the vertical answer to density has become a new frontier for designing and investment; it just takes a look to the Burj Al Khalifa and its 828 m and to more than 1000 skyscrapers at Hong Kong¹ higher than 100 meters to realize this. Accordingly to Professor Mike Jenks² there are two main ways to reach urban density and compactness:

- Building density: increasing ratio of foot print to occupied area (by increasing number of floors).
- Density of urban activities: increasing number of different activities and functions that happen in one building.

While density might be desirable what must be avoided at all costs if it is to keep the ongoing designing, building and investing in random, impersonal, detached from their context, monofunctional urban blocks. Therefore we have to implement new ways to achieve the desirable features of placemaking by increasing both building density and density of urban activities. To do so, we are designing a set of strategies that could help us to effectively attain such goals by measuring, assessing, designing and developing new compact dense vertical communities from a completely different perspective. Here are enlisted the first twelve.

¹1,326 skyscrapers in Hong Kong. A skyscraper is defined on Emporis as a multi-story building whose architectural height is at least 100 meters. This definition falls midway between many common definitions worldwide, and is intended as a metric compromise which can be applied across the board worldwide.

²Burton, Elizabeth, Mike Jenks, and Katie Williams, eds. *The compact city: a sustainable urban form?* Routledge, 2003.

- Proactive Communities
- Destination Poles
- Polyvalent Mixed Uses
- Social Investments
- Surgical Urbanism (Interventions)
- Dwelling Identity
- Co-working Habitats
- Neural Spaces
- Flexible Mega structures
- Experiential Environments
- Interaction Places
- Shared Spaces

2.1 Proactive Communities

A community goes further than random people bounded together to a building or a district. It also includes attraction by lifestyle, hobbies and interests. People like to be taken into account and feel useful and helpful within their communities. By creating sets of themes that comprehend different social targets and by giving physical space to each is possible to generate not just participation but also, and even more important, involvement. Urban farming, bike trails, playgrounds, cultural forums, shared working spaces are just a few ideas on how to make a **Proactive Community**.

2.2 Destination Poles

Instead of buildings let's create destinations. An Urban Destination is a place that attracts people regardless their background, age or education. It is a place so connected to the city that all the urban flows seem to pass through it. They work as extension of the public realm within close buildings. Transportation hubs, education and commercial districts and some public plazas are good examples of Urban Destinations.

2.3 Polyvalent Mixed Uses

The mixed use development model has not been enough to fulfill the celerity of the market changes and has not totally suit the needs of a highly dynamic social economy. Therefore the necessity to not just **increase the diversity of the uses** in a given project but to **consider the life expectancies of each activity** and the **possibility to recombine** them along short periods of time. It means to combine the flexibility of an Expo with the promptness of a Pop-up store to mix them with more permanent options.

2.4 Social Investments

Just as good design is translated into good business, investing in public space and in social projects also represents a direct and indirect increase in real estate capital gain. Happier people mean wealthier business. A Privately Owned Public Space (POPS) that allows interaction with the surroundings could attract a broader flow of people that will interact with the development and its establishments.

2.5 Surgical Urbanism (Interventions)

Similar to “*Urban Acupuncture*” (De Sola Morales, 2008) in its punctuality, but far more precise in its pertinence and in the cost-effectiveness of any set of design interventions (architecture, landscape, urban, graphic, etc.), the Surgical Urbanism aims to **study a vast amount of variables in order to determine the most suitable urban answers to achieve the best results in the shortest possible time**. The worldwide renowned case of the pedestrian streets in Curitiba might be a clear example.

2.6 Dwelling Identity

Every residential unit has the personal touch that its dweller confers to it; this uniqueness is summed up and is reflected in every neighborhood building up a kind of attractiveness that is particular and consistent to the idiosyncrasy of the people that lives there. By adding the characteristics that the dwellers transfer to their environment with the land use that has evolve and has adapt accordingly to their needs, each district ends up with an atmosphere that distinguishes it from any other. Unfortunately, we are standardizing the new urban development far beyond recognition creating *clone towns* that are identical and soulless. In order to boost the economy, to attract more people and investors each district, each block and if possible each residential unit has to keep that uniqueness that at the end reflects a healthy well integrated community. The Quartier Latin in Paris, Covent Garden in London or the well known SoHo in New York are places that have cared to keep, increase and evolve their Dwelling Identity.

2.7 Co-working Habitat

As the working trends around the world are changing, the places where we work are not keeping the same dynamic rhythm. Architecture solidifies faster than social phenomena and for the flexible current society other relation patterns are needed. Open working spaces with flexible time tables, changeable layouts and collaboration possibilities should mix with residential, entertainment and services facilities.

2.8 Neural Spaces

Our mood influences not only our behavior but also our consumption and investment patterns. Neurosciences have come a long way deciphering the manner our brain works and how it is affected by the environment. Now we have tools to help us understand how the light variations, the color palette and the materials selection could influence our states of mind, but even further, we can understand how people

behave under certain circumstances and **predict behavior patterns with spatial repercussion.**

2.9 Flexible Mega structures

There has always been a dichotomy between open and close space, public and private developments, and more often than is desirable cities end up with an accumulation of buildings that are detached from their surroundings. A Flexible Mega structure must provide Polyvalent Mixed Uses at the same time that primes a high chance of porosity or permeability allowing all the urban flows to transit freely. There should be a clear intention to give continuity to all activities by serving as a linking bridge between street level and higher floors.

2.10 Experiential Environments

Experiential Environments are tailored design spaces that stimulate all our senses while providing important information related to the immediate environ. They facilitate the transit and understanding of how a building, a public space, a district or even a city works by exalting graphic information and by adding surprise elements that help to mark certain situation, action or built element. The beautiful ethereal net sculptures made by Janet Echelman are an example.

2.11 Interaction Places

Technology is a tool that eases communication between people, unfortunately this tool hasn't surpass its physical limits and transfer its benefits to the tangible three dimensional world. New developments should integrate both, digital technology for communication and places that react to an interface shaped by human and digital interactions.

2.12 Shared Spaces

In order to implement fully functional Polyvalent Mix Uses is necessary to reconsider how to fit different activities within the same space. The traditional model of shared spaces gives a hint on how multiple activities could coexist using the same physical support. To take it to the next stage is needed to design new spatial solutions that integrate a wide range of possibilities on their configurations, intensity of uses and lease options.

This might be the beginning of a new design tool kit that allows us to explore innovative spatial configurations taking into account a wide range of variables. There is no fixed formula to achieve a great vertical community that can be seen as a contributing urban destination but there definitely are ways to approach to every particular problem from a set of urban strategies that can be mixed and adapted accordingly to the specific circumstances.

3 Creative Class

“To thrive, cities must attract smart people and enable them to work collaboratively.”

(Glaeser, 2011, p. 223)

But once again, cities are not about buildings but about people, and people are a very complicated variable to predict because of its flexible nature. This is especially relevant for the real estate fields it is crucial to spot trends on time in order to predict any possible market direction. The 21st Century has been witnessing a whole spectrum of social and natural changes that are constantly reshaping and recalibrating the early expectations on certain urban matters: the increase in natural disasters, the rural-urban non-stopping exodus, the international security matters, and the diverse financial worldwide crisis, among many others. Caught in between all these instability it is essential to find a thread to follow in order to attain urban responses that better suit the current scenario of uncertainties.

Amidst these fluctuations it seems there is a trend that helps to attract more capital, more diversity and more interest in a particular urban area by its inhabitants, the same way as lure does: the inclusion of the creative class seen as an economic propeller or as an urban catalyst.

The original definition of creative class coined by the American urban theorist Richard Florida has its roots in the understanding of the “human capital” as the base for regional developing. “The proponents of the human capital theory argue that the key to regional growth lies not in reducing the costs of doing business, but in endowments of highly-educated and productive people”(Florida, 2004). This model goes beyond the settled assumptions of location, transportation or natural resources as the only reason for urban development.

Furthermore, the creative class or the creative economy as popularized by the British writer and media manager John Howkins was estimated to be worth US\$2.2 trillion at the beginnings of this Century with an annual growing rate of 5 per cent (*Creative Economy Report*, 2013). But as stated in the Creative Economy Report of UNESCO “the notion (...) remains a very broad one as it embraces not only cultural goods and services, but also toys and games and the entire domain of “research and development” (R&D). Therefore, while recognizing cultural activities and processes as the core of a powerful new economy, it is also concerned with manifestations of creativity in domains that would not be understood as “cultural”. In this sense there are two main industries of the creative class to take into account: the cultural industries and the creative industries.

The cultural industries are deeply engrained to the local characteristics of any given society; they are more related to the traditional production ways and comprise a wide range of

expressions such as music, fashion and design, some forms of art and media industries (radio, film, television, etc.) “All of these productive domains have significant economic value, yet also are vectors of profound social and cultural meanings”. (*Creative Economy Report*, 2013) On the other hand, the creative industries include a broader scope of professional activities as they are inscribed in the innovation, research and development sphere.

Because of the broadness of its definitions the creative economy should be seen “as a complex system that derives its ‘economic value’ from the facilitation of economic evolution – a system that manufactures attention, complexity, identity and adaptation through the primary resource of creativity.” (Cunningham, 2008) This leads to the understanding of the creative class as one possible factor that could boost urban developments by attracting a wide range of professionals, companies and investors, but by no means as the only factor to rely on in order to accomplish urban projects success.

As broad as the definition for creativity, there is also a broad approach when talking about the creativity economy classification. UNESCO has been given to the task to gather the main classifications in the table below (Figure 1.1) (*Creative Economy Report*, 2013)

Figure 1.1 Different classification systems for the cultural and creative industries⁵

1. DCMS Model		2. Symbolic Texts Model		3. Concentric Circles Model	
Advertising Architecture Art and antiques market Crafts Design Fashion Film and video Music Performing arts Publishing Software Television and radio Video and computer games		Core cultural industries Advertising Film Internet Music Publishing Television and radio Video and computer games Peripheral cultural industries Creative arts Borderline cultural industries Consumer electronics Fashion Software Sport		Core creative arts Literature Music Performing arts Visual arts Other core cultural industries Film Museums and libraries Wider cultural industries Heritage services Publishing Sound recording Television and radio Video and computer games Related industries Advertising Architecture Design Fashion	
4. WIPO Copyright Model		5. UNESCO Institute for Statistics Model		6. Americans for the Arts Model	
Core copyright industries Advertising Collecting societies Film and video Music Performing arts Publishing Software Television and radio Visual and graphic art Partial copyright industries Architecture Clothing, footwear Design Fashion Household goods Toys		Interdependent copyright industries Blank recording material Consumer electronics Musical instruments Paper Photocopiers, photographic equipment Industries in core cultural domains Museums, galleries, libraries Performing arts Festivals Visual arts, crafts Design Publishing Television, radio Film and video Photography Interactive media Industries in expanded cultural domains Musical instruments Sound equipment Architecture Advertising Printing equipment Software Audiovisual hardware		Advertising Architecture Arts schools and services Design Film Museums, zoos Music Performing arts Publishing Television and radio Visual arts	

The previous chart is accompanied by a concentric model expressing the relationship between the creative industries and their actors. Figure 1.2 (*Creative Economy Report*, 2013)

Figure 1.2 Modelling the Cultural and Creative Industries:
Concentric Circles Model⁶



These two graphics show both the scope behind the creative industries and the open system of relations that could be created between them. What is really interesting about these considerations is how this economic sector could influence not only the social trends but also the way we are shaping the urban realm and how it can increase the placemaking phenomenon within a specific vertical oriented development.

In order to understand this better first is needed to introduce the concepts of cluster and agglomeration that are tightly linked to the desirable compactness and density of the city explained before. A cluster is primarily known as a group of companies that had settled together with the aim to produce a particular product or service, as Silicon Valley has successfully done with the high-tech corporations. "The proximity of these firms result in vigorous competition, spurs innovation, increases opportunities to share information, augments aggregate demand for particular inputs, and reduces transaction costs. In the cultural and creative industries, clusters are vertically disintegrated networks of production units that can function flexibly when faced by high levels of instability and the risk that prevails in the production and consumption of cultural goods and services. These networks in turn foster the rise of local labor markets that are marked by a wide palette of skills and sensibilities." (*Creative Economy Report*, 2013)

This clustering takes place in well define areas within the urban fabric, with particular characteristics that relate to a strong personality, reinforcing must of the time the atmosphere that is frequently related to creative activities and to areas with a strong sense of place. Barcelona@22 in the Catalanian capital or Factory 798 in Beijing could exemplify this case. The consolidation of these clusters derives in externalities affecting their surroundings by attracting people and investments that support their primary activities. This phenomenon leads to the agglomeration of such externalities influencing market trends, urban policies and urban interventions.

While clustering and agglomeration, just as compactness and density, are desirable characteristics in an optimal working urban environment it has been shown that inflexible monofunctional districts will end up close to entropy due to the lack of options to sustain the whole range of activities that an average citizen develops throughout the day. Here is where we have to identify and acknowledge what are the characteristics to which we feel attracted in certain places and those others that we feel repel to in order to mix them with more pragmatic assets to ensure a well-proportioned blend between attractiveness, functionality, use frequency and affordability.

Rotterdam has been an extraordinary reference in these matters. In the 1980's the city was mainly frequented to work during day hours and was abandoned by night. The way to change this by the authorities was to start investing into culture and cultural institutions. In 2001 Rotterdam was declared European Capital of Culture, action that marked decisively the future investments of the city. By 2005, the local authorities had created an institutional program to support creative industries which included urban investments in western Rotterdam. Accordingly to Leo van Loon co-founder of the Creative Factory in Rotterdam, a project benefited from such initiatives, the support of the government to the creative industries has generated over 10,000 employments and many others related to them as supporting services (restaurants, clubs, and cultural spaces) (*Rotterdam's cultural policies and their impact*) Is not a coincidence that in the past 2014 Rotterdam was elected as host of the 6th Asia-Europe Culture Ministers Meeting having as main topic Creative Cities.

Creative Factory itself has been reported as a case of success. The 2010 report related to creative industries from the European network of cities (Eurocities) declares that "The Creative Factory has created around 150 FTEs in one of the most deprived areas of Rotterdam. It has housed over 110 companies in a little over two years. Every city wants a creative hub, but no city wants to run the risk of managing it. The City of Rotterdam has put the risk of profit or loss with a private company and rents out its building at a fixed cost. Next to this the Creative Factory has set up new partnerships between businesses, education and governmental bodies." All this with a budget of €5.4 million both public and private funding that were used in different forms (i.e. Subsidies, investments, barter) (*Unlocking the potential of cultural and creative industries – Good practices through European cities*, 2010)

This success is also acknowledged by UNESCO reporting as some of the impacts of this project the rapid growth of creative companies, including affordable office space for start-ups, the enhancement of the surrounding inner-city area, stimulation of career development, collaborative cross-overs between different industries and increased visibility for the sector. (*Creative Economy Report*, 2013)

Cases like this demonstrate the potential of the creative industries to change not only the urban space but also the collaborative ways between public and private parties and even the reconsideration of business models. In the United States alone this force represents 2 million artists, 3.6 million cultural workers and 4.9 million cultural industry jobs, altogether a market of 11.5 million people leaving the creative industries aside. (*Creative Placemaking*, 2010)

There is no need to highlight the tremendous market possibilities that this signifies and the weight it holds when these possibilities are translated into urban interventions. This of course requires a whole set of actions from the most diverse actors, it is a planning strategy that needs the involvement of all the sectors that are able to decide or influence over urban matters, but it is quite important to notice that at the end people will feel more comfortable surrounded by an atmosphere capable to offer entertainment, security, nature, identity, proximity and beauty, aspects that are promoted both by the placemaking approach and by the creative class.

Having this into consideration Ann Markusen (*Creative Placemaking*, 2010) has come with the subsequent fusion of the terms and coined the concept Creative Placemaking in which explains the benefits of melting together the idea of creating a strong sense of place by empowering the action of the creative class.

Creative placemaking fosters economic development (*Creative Placemaking*, 2010):

- Recirculates residents' incomes locally at a higher rate
- Re-uses vacant and underutilized land, buildings and infrastructure
- Creates jobs in construction, local businesses, and cultural activity
- Expands entrepreneurial ranks of artists and designers
- Trains the next generation of cultural workers
- Attracts and retains non-arts-related businesses and skills

As has been described so far placemaking is desirable as long as is able to adapt its premises to a fast developing world and to the inclusion of vertical solutions that promote proximity, density of activities, diversity of functions and the possibility to extend the public realm into the core of vertical communities. On the other hand, the creative economies already are stimulating the development of highly active and concentrated urban cores but are not strong enough to rely entirely on them to achieve standalonesuccessful property developments. What is needed now is to take all the previous mentioned variables and engineer with them, piece by piece, the urban/architecture policies and strategies that would transform our cities in that ideal place that we all yearn for.

4 Engineering Urban Identity

“Good design is intelligence made visible”

Alina Wheeler

Endless roads of dull high towers spreading in all directions across our cities are a vision repeated far more frequently than desire. The cloning effect or the copy paste approaches are erasing any trace of singularity from our developing urban environments and as Moshe Safdie said in the World Architecture Festival 2014 held in Singapore: “Skyscrapers are creating disjointed and disconnected cities”, a sight quite far apart from any urban aspiration.

To remediate this image of degradation that inevitably comes to our minds when urban sprawl is mentioned, we need to start reconsidering the way we are addressing vertical communities. We are afraid and against most of the time of the sprawling city, an horizontal menace that consumes everything on its way, but at the same time we need to be careful to control and ensure the quality and livability of the sprawling verticality and how this is attached to a base that gives us the sense of rootedness and stability.

Imagine that instead of those dull high towers we were able to design buildings that interact with the environment, both built and natural, creating exhilarating communities where the exterior public space is integrated so well to the functions and activities contained by the building itself that would be hard to notice where they end and begin, a place that helps to perform every daily activity by linking at the same time the city's flows with the household tasks. A vertical community that considers diversity in order to foster any kind of creative expression while strengthening an identity and a sense of place. A community so daring and innovative that would be as profitable as urban enriching. This is possible by tailoring the way the implicated variables would interact between each other. It is first about the implementation of programmatic strategies that would provide enough flexibility to cope with the ever-changing markets that we are facing to serve at the end as flexible frames to the occupants, their activities and the surrounding people.

As exposed as we are to complex environments, it turns critical to develop capabilities to analyze and measure variables as the way to transform them; here lies the need to create, experiment and implement new urban, architecture and landscape approaches. The urban designers Reid Ewing and Otto Clemente (*Measuring urban design: Metrics for livable places*, 2013) have made a wonderful job by analyzing, describing and classifying the items that compose that element that they consider the most important of the public spaces: the street.

Starting from the assumption that *“inviting streets are the centerpiece of thriving, sustainable communities”* these planners have been given to the task of breaking into small pieces the complexity of the street as a key urban element. The central difficulty to accomplish this in an accurate way lays in the amount of tangible and intangible urban variables and the methods to

asses them. In order to do so they classified the perceptual qualities of the urban environment in 51 categories.

Adaptability	Enclosure	Novelty	Variety
Distinctiveness	Meaning	Transparency	Contrast
Intricacy	Spaciousness	Complementarity	Intelligibility
Richness	Coherence	Human scale	Refuge
Ambiguity	Expectancy	Openness	Visibility
Diversity	Mystery	Unity	Deflection
Legibility	Territoriality	Complexity	Interest
Sensuousness	Comfort	Identifiability	Regularity
Centrality	Focality	Ornateness	Vividness
Dominance	Naturalness	Upkeep	Depth
Linkage	Texture	Continuity	Intimacy
Singularity	Compatibility	Image-ability	Rhythm
Clarity	Formality	Prospect	

By classifying the possible perceptions found in the public realm they could devise measurement tools that help in one hand to understand what the elements that we find appealing are and in the other how they can be manipulated. This opens the field to the possibility of engineering urban identity grounded in a solid, clear and flexible method.

But once again, we are constantly confronted to paradigmatic urban oxymora like exterior-interior, horizontal-vertical or public-private that pose a problem in the urban thinking and in the urban actions that has not been fully addressed. Martha Schwartz, in her 2013 lecture at ILIA Beijing, said “landscape is everything but the building”. What would happen if we start disintegrating those boundaries?

Engineering urban identity would take to break down the urban complexity into its basic information units without isolating them in order to understand how they are affected between each other. These packages of information interact altering in subtle ways our built environment, shaping it and burdening it with positive, negative and neutral connotations. By retrieving the filtered data from those interactions and alterations is possible to project the impact that any given design solution could imply. Therefore, the variables can be manipulated in order to reconfigure new urban information packages that in the variation of their proportions could guarantee the consolidation of a desirable identity and by doing so, the success of the urban interventions.

The classification of the basic urban information units (BUI) intends to be a comprehensive atlas of the urban variables to analyze and correlate them with ease. This atlas aims to integrate a hierarchical summary of a wide range of factors that are implied in city making: social, cultural, spatial, natural, financial, governmental, political, technical, etc. with the final goal of clarifying their components into BUIs in order to accelerate the understanding of their associations and the implications of their alterations.

By taking these basic units, reorganizing them and altering their proportions is possible to design new strategies to be implemented in the creation of urban models that guarantee financial success by providing direct benefits to both the citizens and the city. It is a win-win approach that could lead us to a more desirable urban environment.

Why does this matter for urban development? It does matter because at the end good design is good business. According to the DMI (Design Management Institute) study, for the past 10 years design-driven companies have outperformed the Standard & Poor's 500 — a stock market index of 500 large public traded companies — by a whopping 228% (Study: Good Design Is Good For Business)

Design-driven companies are defined as those that make a significant investment in product design, smoother user experiences, beautiful branding and innovative advertising. (Study: Good Design Is Good For Business) It would be pertinent to add, those companies that spot opportunities and trends on time in order to define new paths.

5 Conclusion

People keep on being attracted to metropolitan areas worldwide, a trend that does not seem to be reversed in the near future, and with this, the challenges to achieve an ideal, sustainable, egalitarian city are far more reachable. The negative urban sprawl has to be remediated by more compact, dense and multifunctional urban solutions at the same time that the vertical sprawl has to find better ways to relate to the built environment and to the changing speed of urban phenomena.

Placemaking, as an urban approach that tries to conciliate the detaching of the new urban developments from their dwellers, gives some clues on how to transform our current cities into more friendly places and the raising of the creative class and its consolidation to leverage economic growth shows possible patterns to boost and improve featureless communities.

By breaking down urban complexity into basic elements is possible to start understanding the DNA of our cities, how we relate to it and what is that makes it attractive or repelling. If we are able to take those basic urban information units and translate them into design strategies by recombining and reconsidering them it would be possible to engineer a desirable urban identity responsive to the social needs and to the market aims.

In the near future the ideal thriving vertical community will be that one capable to take those information urban units and mix them with strategically flexibility in order to adapt its physical constrains to the needs of its users, as an evolutionary principal, the successful urban community will be the one that is most adaptable to change.

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Exploration on Transforming “New Development Area Planning” to “Built-up Area Planning” of the Development zone in the New Normal —With Planning Practice of National Development Zones in Suzhou as a Case Study

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Abstract: China is now undergoing an in-depth reform. The urban development focus has been shifted from “new development area” to “built-up area” The urban planning is faced with new challenges both in terms of theories and methods. Based on the planning practice in Suzhou, this paper mainly explores the concept and implementation approaches of “built-up zone planning” in the transition period in the hope of providing references for the compilation and practices of China’s “built-up zone planning.”

Keywords: Planning Transformation; Built-up Area Planning; Development Zone

1 Introduction

The development zone is a specific zone that a country or a district demarcates with special policies implemented to attract external production elements, and promote its own development. Over the past three decades, Chinese development zones have obtained remarkable achievements in promoting local economic development, attracting foreign investments and introducing advanced techniques relying on their favorable locations, land supply and policies. Though just accounting for less than 2% of the national land, the national development zones has contributed nearly one fourth to GDP, thus becoming an important growth pole of Chinese economy. Against the backdrop of the new normal, and the transition development in China, the previous development mode featuring scale expansion has been faced with its bottleneck. It is imperative to transform “physical expansion” to “built-up area improvement” in the urban area. Over the past three decades, Chinese development zones have been the major zones of urban construction land growth in cities, and have gradually become an indispensable part in urban new districts. In the transitional period, they are key areas of China to accelerate transforming. Thus, the planning of the development zones should be transformed from “new development area planning” to “built-up area planning,” and seek innovations and breakthroughs of their planning strategies and techniques.

Suzhou is located in the southeast of Jiangsu province, China, with Shanghai to its east, Zhejiang to the south, Tai Lake to the west and the Yangtze River to the north. In 2014, Suzhou City achieved GDP of 1.3761 trillion yuan (221.7 billion US dollars), which occupied the nation fourth next to Beijing, Shanghai, Guangzhou, Shenzhen and Tianjin, and its regional GDP /capita reached (according to the resident population) 130,000 yuan / person (21 thousand U.S. dollars / person). The main reasons for Suzhou's economic rise are three: first, prominent regional advantages, Suzhou nears Shanghai the economic center of China, and belongs to China's most economically advanced Yangtze River Delta region; second, excellent construction conditions, Suzhou is located in the Middle-lower Yangtze Plain and Tai Lake Plain, low and flat, and the plain accounts for 55% of city area always which is conducive to large-scale urban construction; Third, national policy support, Suzhou is the city with the most national development zones, about 13, which occupy one third of Jiangsu's, in which the new industrial park is the pioneering undertaking of bilateral cooperation. This paper adopts the planning practice of Suzhou as the research object to explore concept and implementation path of “built-up area planning” for the development zone during the transitional period.

2 The Background and Motivation of Transforming “New Development Area Planning” to “Built-up Area Planning”

2.1 The Change of Developmental Background

After the financial crisis, profound changes have taken place in the domestic and international circumstances. On the one hand is the change of the international situation. After the financial crisis, European and American countries have implemented "Re - industrialize" strategy as the global economic slowdown, the real economy leads by high-end manufacturing or strategic emerging industries reflowed to the "mother country", and the new trade protectionism begin resurfacing. China development zones especially in the eastern coastal areas which pay great attention to foreign capital utilization and export processing will face the impact of the post-financial crisis era. On the other hand is the transformation development of China itself. Over the past three decades of "super rapid growth", China's economy has leapt to the second in the world. With China's reduced demographic dividend and rising labor costs, a large number of foreign companies withdrawing from the Chinese, manufacturing industry, especially labor- intensive manufacturing industry has accelerated its transferring to Southeast Asia and other overseas regions. Those will add some new challenges to the development of China's development zones, and have profound impact on the future direction and path of development zones in China.

2.2 The Prominence of Self Problem

2.2.1 Resources and Environment Constraints Restrict Sustainable Development

In the early stage of development, large amount of land in the development zone were sold in a very low price by agreement in order to form scale quickly, meanwhile, early due to lack of management experience in the industrial park, and lax supervision of enterprise land requirements, the scale of land grant far exceeded enterprise actual needs, large amount of enterprise enclosure behaviors were found. A large number of lands in development zone were utilized inefficiently and extensively that left a large amount of land fallow, at the same time, available land for construction within the scope of development zone is increasingly scarce.

2.2.2 Rapidly Growing Output Benefits are Unsustainable and They Forces Transformational Development

During the past decade, China relied on "WTO" bonus and demographic dividend, its manufacturing rise in high speed, and each development zones has entered a rapid development period. However, along with these dividends gradually weakened, the development of development zones has encountered bottle-neck. With the requirements of transformation of economic development increasingly urgent, promoting the development of modern service industry, and accelerating upgrading traditional manufacturing industry become an inevitable choice for transformation development of development zones.

2.2.3 The Increase of Regional Energy Level and Land Value Promotions Functional Replacement

From the development stage of development zones, the advanced development zones in east coastal areas of China have been experiences nearly 30 years of development. Most of them have faced transformation from a purely industrial area to an overall new urban area, and development zones in other regions will also gradually face the requirements of this transformation in the future. Development zone will increasingly become the general sense of urban district in the aspects of population density, level of facilities, functional types, etc., to undertake, share part of urban functions, and decentralize the main city population.

3 Ideas about Built-up Area Planning

Due to change of developmental background and the prominence of self-problem, the development of development zones has entered a critical period of transformation development. Under maintaining the invariability of scope of development zones and total amount of land resources, the key to solve these problems are concentrated in the consolidation of the build-up space, root out land potential, improve land efficiency, and improve overall function, etc. The priorities and approaches of development zone planning should be also transformed from the original “new development area planning” to “built-in area planning”, and mainly achieve changes in five aspects on the contents and methods of planning(Figure 1).

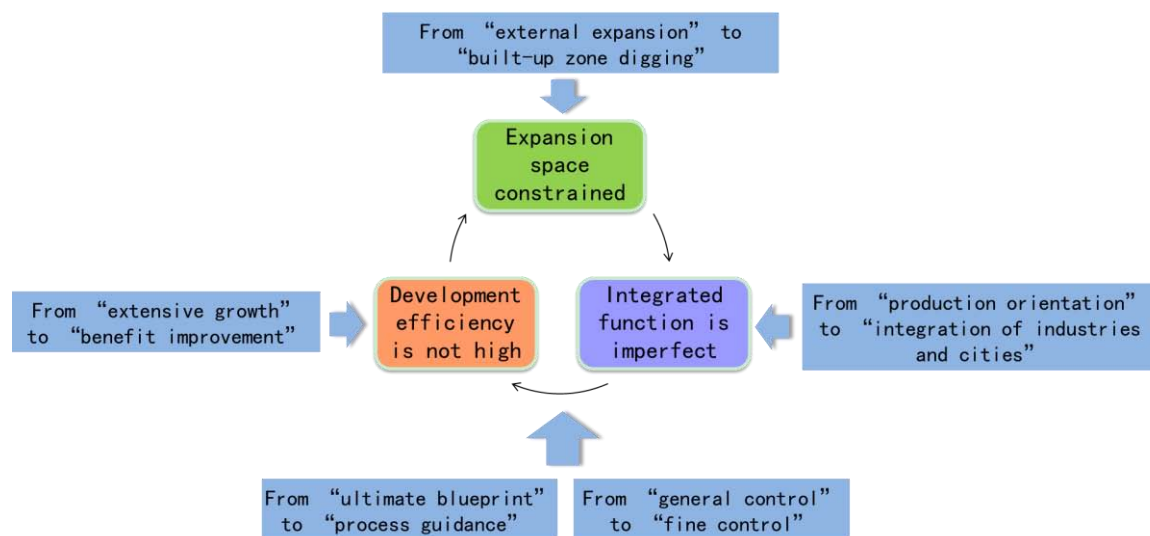


Fig.1 Overall Technical Route

3.1 From “External Expansion” to “Built-up Zone Digging”

The scope of development zone is usually difficult to expand once determined. As the development zone construction, stock of buildable land is bound to be gradually reduced; therefore, development zone planning must shift from the original pursuit of grand scene to deep ploughing and intensive cultivation of the stock land. Overall evaluating constructed land especially industrial land by means of combination of quantitative and qualitative, and judging which of them can be renewed or modified, so as to fully dig the build-up space, meanwhile, conducting an overall assessment to the current situation of construction to discover status and existing problems. On this basis, in a given scale of construction land conditions, to arrange various types of construction land function more scientifically, and reserve flexible enough space to ensure a reasonable, orderly and balanced development of the development zone.

3.2 From “Extensive Growth” to “Benefit Improvement”

Relatively mature development zone is difficult to improve the economic output through newly add large-scale construction lands due to space constraints, thus, the development of development zone should transform from the quantitative growth to the qualitative improvement. By vigorously develop modern service industry, industrial replacement from inefficient to efficient, improve intensive of land, set the access threshold of average inputs and outputs of land, establish and improve operational evaluation and withdrawal mechanism and other methods, the development zone is able to continuously increase /unit area output of land, upgrade industrial structure, enhance built-up space efficiency, so as to guide transformation development of development zone.

3.3 From “Production Orientation” to “Integration of Industries and Cities”

In the initial stage of construction, development zone regards the development of industry as the main task, and the planning and construction of living space tend to lag behind. With the transformation of our country's economic development pattern, which gradually moving elements from investment-driven to innovation-driven, development zone demand for talent rising. Favorable living environment and perfect supporting facilities in development zone have become important conditions for attracting talent. The development zone should adjust its built-up area, built a general pattern featuring a balance between workplaces and residences, improve the public facilities and open space, increase attractiveness and promote transitional development.

3.4 From “Ultimate Blueprint” to “Process Guidance”

In the initial stage of construction planning, development zone pays more attention to the arrangement of structure and land, which emphasizes on rigid control, adopted blueprint model, in order to facilitate rapid construction. After entering the mature stage, the development zone planning would be transformed to “built-in area planning”. It is necessary to focus on long-term development, but also base on the recent reality, which pays attention to implementation guidance to planning in stages. The development construction of development zone is divided into several stages accordance with the planning principles of "combination of near and far, moderate change, step by step implementation," give periodical guidance and planning, fully ensure the impenetrability of every planning stage, planning and implementation in an orderly way.

3.5 From “General Control” to “Fine Control”

After the planning object is transformed from the new development area to the built-up area, the most difficulty is about the redistribution of benefits. Relying on purely spatial planning method is difficult solve practical problems. Facing complex conflicts such as diversified and decentralized property owners, multiple benefit gambling, development rights and redistribution of development interests, and a series of policies, including land, property rights, taxation, investment and financing will be the key study content of planning and implementation. Meanwhile, it should strengthen transformation and renewal economic calculation; enhance system building and supporting policy research, to improve operability of all stages of land updating.

4. Planning Practice

The area of Suzhou Industrial Park (SIP) is 288 square kilometers, and its GDP in 2014 was 2000 billion (32 billion US dollars), the area of Suzhou National New & Hi-tech Industrial Development Zone (SND) is 258 square kilometers, and its GDP in 2014 was 1000 billion (16 billion US dollars), which are located east and west side of the old city of Suzhou, and in the second and twenty-fourth place to the 2014 Chinese state-level development zones list respectively.

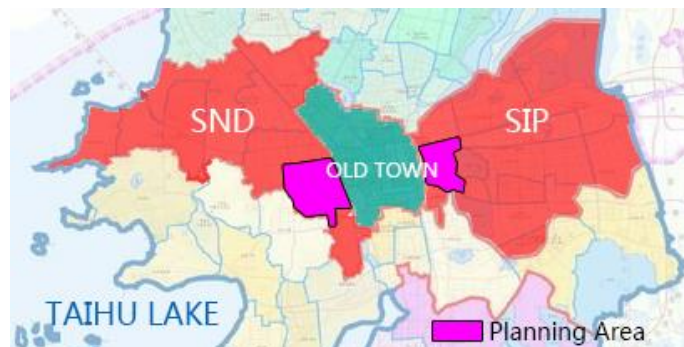


Fig.2 Location Map for Planning Range Area

4.1 Dig the Build-up Space Based on Overall evaluation

The first step of built-up area planning is to evaluate the build-up land as renewal basis. Planning evaluates current Overall benefits of industrial land (low renewal cost, single property rights) from the input and output of land, environmental impact, land use intensive nature, enterprise development trends and other aspects, Overall assesses the status of industrial land development, and assesses the land values of the current industrial land from the distance between land and lake, residential areas, rail station and the central area, etc. What’s more, the plots boundaries of evaluated industrial land based strictly on property rights boundaries to ensure that the evaluation results can effectively support the implementation of subsequent renewal.

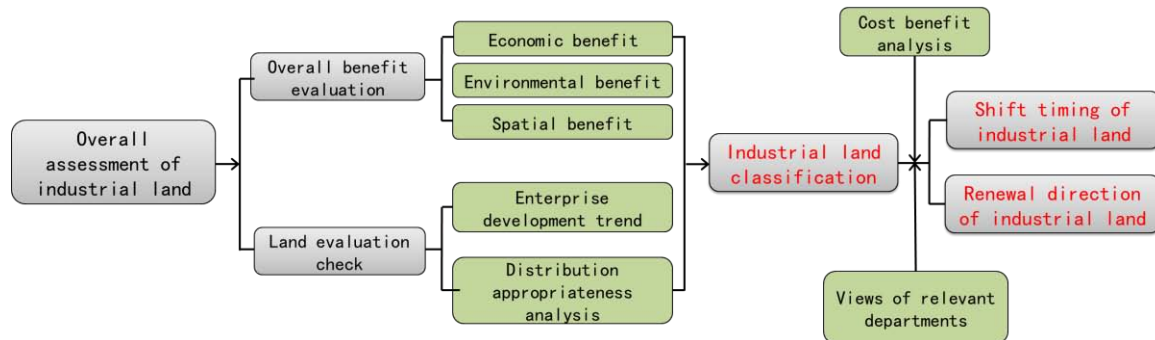


Fig.3 Overall Evaluation System of Industrial Land

4.1.1 Evaluation of the Overall Benefits of Lands

The overall evaluation of industrial land starts from three aspects, economic benefits, resources and environmental benefit and spatial benefit. It identified 13 secondary indicators, given the appropriate weight according to the relative importance of different indicators.

Table 1 Overall Evaluation of Industrial Land

First Class Indicator		Second Class Indicator	
Title	Weight	Title	Unit
Economic benefit	0.65	Output /land	Hundred million yuan / km ²
		Output /capita	Million yuan / person
		Employment /land	Million people / km ²
		Benefit /land	Hundred million yuan / km ²
		profits tax /land	Hundred million yuan / km ²
		Total assets /land	Hundred million yuan / km ²
Resources and environmental benefit	0.25	Energy consumption /unit of output value (electricity)	KWh / million yuan
		Water consumption /unit of output value	Ton / million yuan
		Waste water emission /unit of output value	Ton / million yuan
		Waste gas emission /unit of output value	M ³ / million yuan
		Solid waste emission /unit of output value	Ton / million yuan
Spatial benefit	0.10	Plot ratio	—
		Building density	%

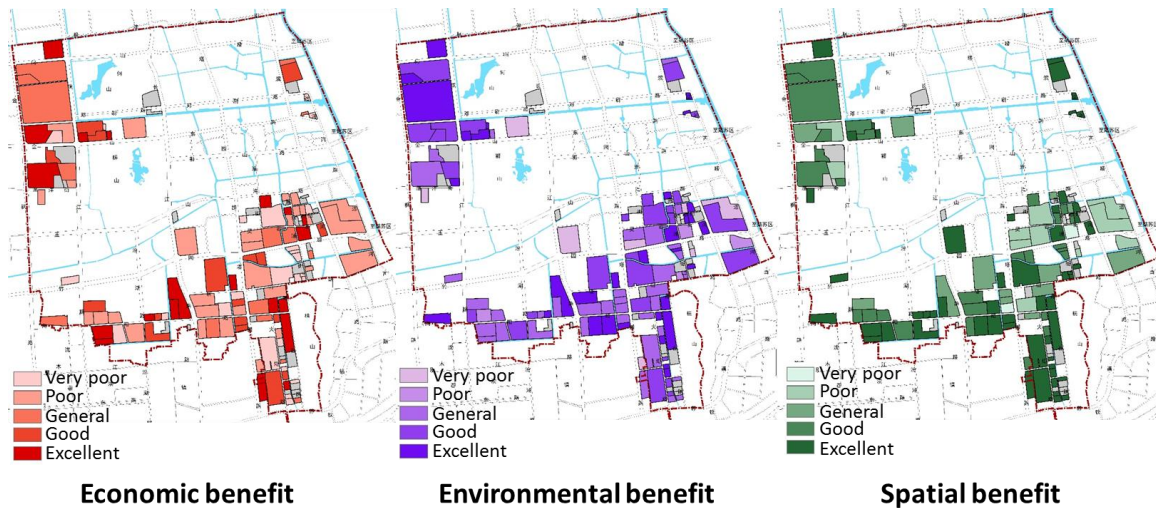


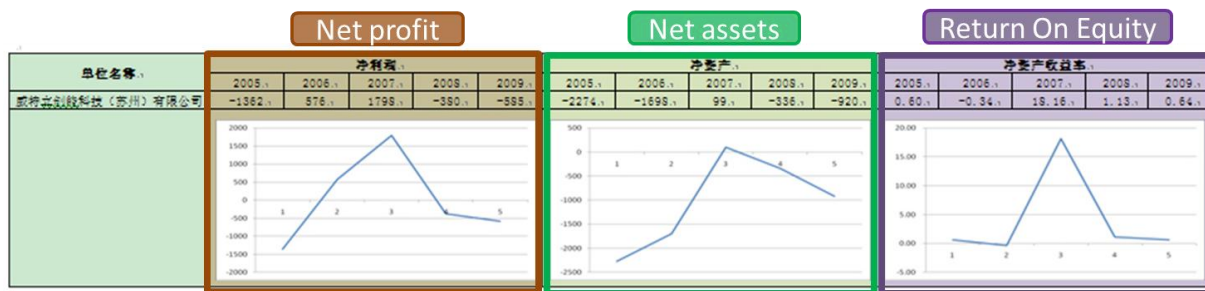
Fig 4 Overall Benefit Evaluation of Industrial Land in the SND

4.1.2 Analysis into Corporate Development Trend

Through an analysis into the variation trend of three values of industrial land in recent years, i.e., net profit, net assets and net return on equity, we can gain a deeper understanding of the enterprise’s management efficiency and profitability. Among them, net return on equity is a main evaluation index. On this basis, we can divide enterprises into four types, namely, rapid enterprises, slow enterprises, decreasing enterprises and indebted enterprises.

Table 2 An Analysis into Corporate Operation Efficiency

Name	Definition	Corporate Features
Net Profit	Total profitx(1 – income tax rate)	The main index to measure the operation efficiency of an enterprise and reflect corporate profitability
Net Assets	Assets – Liabilities	Reflect an enterprise’s assets scale and quality
Net Return on Equity	Net profit / Net assets	Higher index suggests higher earnings from investment. It is an important index reflecting the overall ability of an enterprise.



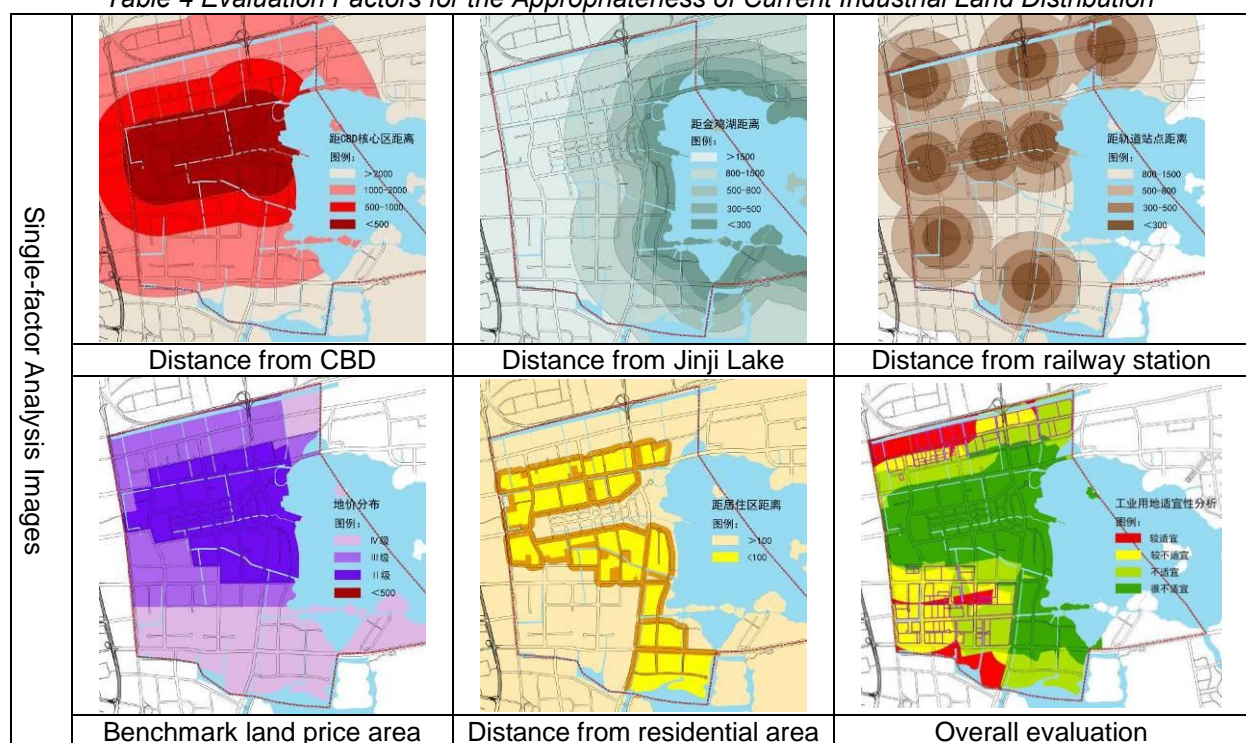
4.1.3 Analysis into Industrial Land Distribution Appropriateness

With land value as the core, from the perspective of traffic location, geographical location and economic location, etc., the appropriateness of current industrial land distribution is evaluated and the rationality of current industrial land distribution is judged comprehensively. The planning selects five factors, i.e., distance from CBD, distance from the Jinji Lake, distance from railway station, distance from residential area and benchmark land price area, to evaluate the land value within the planning scope and lead the transformation or relocation of industrial land located in high land value area, to exert the land value effectively.

Table 3 Appropriateness Evaluation Factors and Grading of Industrial Land Distribution (unit: m)

Grading Type	Weights	Level 1 (10 points)	Level 2 (8 points)	Level 3 (6 points)	Level 4 (4 points)	Level 5 (2 points)
Distance from CBD	0.3	>2000	—	1000-2000	500-1000	<500
Distance from Jinji Lake	0.25	>1500	800-1500	500-800	300-500	<300
Distance from residential areas	0.2	>100	—	—	—	<100
Located land price zoning	0.15	Level IV	—	Level III	—	Level II
Distance from the rail station	0.1	800-1500	—	500-800	300-500	<300

Table 4 Evaluation Factors for the Appropriateness of Current Industrial Land Distribution



4.1.4 Analysis of the Relevant Departments Views

China Merchants, Economic Development and Environmental Protection and other relevant departments are in direct contact with the enterprises, which long - term tracking enterprises developments and have collected a lot of first hand materials about enterprises development. Mainly to understand the enterprise development situation, development vision and future prospects from the relevant departments, and accordingly improve and correct the previous objective assessment results to reach a more accurate reflection of the real situation of enterprise development. So that to make the evaluation of industrial land more comprehensive, true and reliable.



Fig.5 Views Summary Graph of Relevant Departments to the SIP and SND

4.1.5 Result of Overall Analysis

With the overall benefit evaluation as the main evaluation factor, various land value evaluation factors are taken into consideration. Industrial land is divided into five categories according to its quality, as an important basis for the renewal of industrial land. Meanwhile, information about each industrial plot and the evaluation results are integrated to form an industrial land evaluation graph, to provide an even more complete basis for subsequent planning and decision-making.

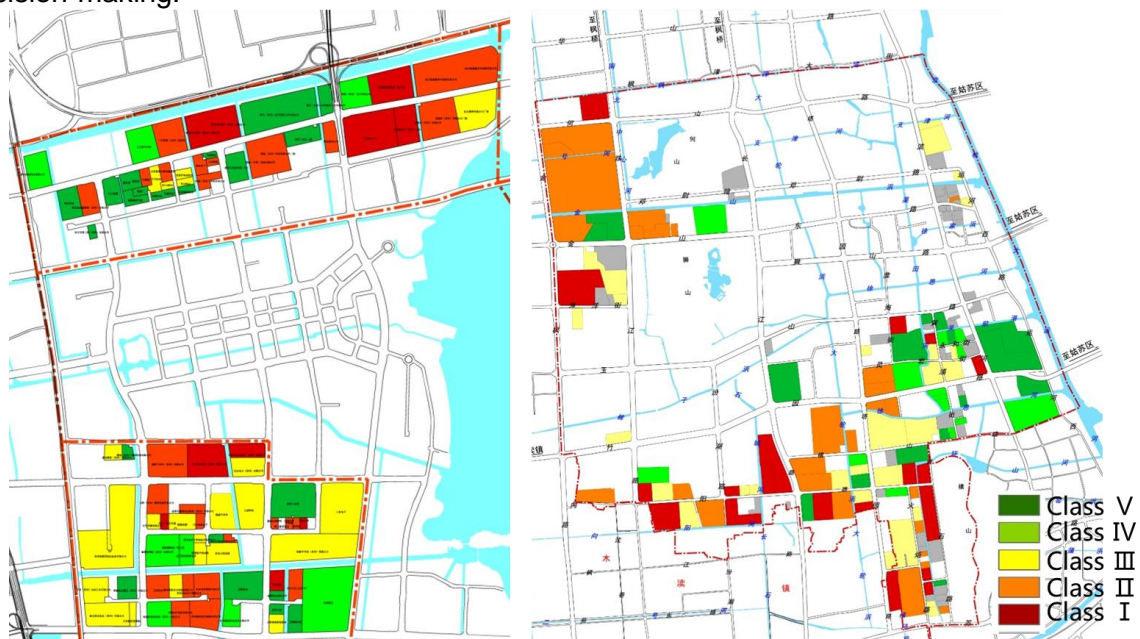


Fig.6 Overall Evaluation of Industrial Land of SIP and SND

4.2 Find the Core Problem Based on the Status Assessment

Analyze and evaluate the total amount, distribution, usage situation of current public service facilities, municipal facilities, green space and road traffic to find the current existing problems. On this basis, guide the renewal of industrial land, from the perspectives of solving current problems, improving the urban functions and increasing the efficiency of space resource use. Industrial land renewal requires examining regional development direction, the current existing opportunities and major problems from a larger range under new background situations of the park industrial transformation, intensive development, low-carbon construction etc., to determine renewing ideas of industrial land. Taking the opportunity of industrial land renewal, promote the transformation and upgrading of the overall region, and

enhance overall regional service facilities and environmental quality standards. The following takes the Suzhou Industrial Park as an example, the planning select 1st Stage Park with relatively independent functions and clearer boundary as the object for analyzing and appraising. Its total area of about 22 square kilometers, the total household population of about 15 million people, and resident population of about 20 million people.

4.2.1 Review of Land Use

This planning of industrial land is adjacent to the park CBD. The nearest industrial land is only 500 meters from CBD. From the areas around domestic and foreign urban CBDs, there are mainly residential and cultural areas, as well as a large green space around CBD. All industrial land is more than 1000 meters from CBD and mostly port-centered industry, which relies on convenient shipping and other traffic resources, etc.

From the composition of land, we can see that the proportion of residential land around park CBD is too low, while the proportion of industrial land is too high. It should attribute to the positioning of industrial park at the beginning of establishment and the planning concept of balance between office and residential and the 1st Stage Park construction. Therefore, a large amount of industrial land is distributed around CBD. However, with the changes in park positioning, transformation and upgrading, this layout pattern no longer adapts to current development and needs change. In the meantime, the proportions of common facilities, roads and green space also need to be improved.



Fig.7 Current Land Use of SIP

From the development intensity, the average plot ratio of established plots at 1st Stage Park CBD is 10.0. The average multilayer plot ratio of surrounding residential area is about 1.2. Most of the average high-rise plot ratios are 2.0. And the plot ratio of peripheral industrial land is below 0.8, some even less than 0.3. A lot of industrial land is idled, which fails to reflect the land value around CBD.

4.2.2 Review of Public Service Facilities Layout

The overall scale of the 1st Stage Park is insufficient. According to a permanent resident population of 200,000 people in Huxi District, the park lacks 114 primary schools, 27 junior middle schools and 33 senior middle schools. Besides, the residential land in the lakeside area is far from the supporting education facilities. Suzhou Industrial Park takes neighborhood centers as basic business services facility node, it serving a population of approximately 20,000 people, service radius of about 500 meters. 1st Stage Park existing 4 neighborhood

centers, and neighborhood supporting in partial region is insufficient, proportion of public service function in part of neighborhood centers below normal. Other public service facilities need to be improved; the Xinghai Natatorium is the only area-class sporting facility in 1st Stage Park, as well as residential area-class reading room and health service stations, and lack of area-class medical, cultural facilities.

4.2.3 Review of Landscape Environment

There are about 131 hectares of public green space at the 1st Stage Park, about 25 square meters per capita, which are mainly distributed along the Jinji Lake. The greenbelt standard per capita is very high, but relatively concentrated. The configuration of community and Neighborhood Park is insufficient.

4.2.4 Review of Traffic System

In terms of the road traffic, the traffic bottleneck is outstanding. The planning scope is between the ancient town and the Jinji Lake. On the one hand, it cannot connect the road networks in the west. The road capacities in both sides are not matched. In the east, due to the restriction of the Jinji Lake, the traffic and communication between the east and west of the lake can only rely on several primary roads. On the other hand, since there is a lot of travelling outside the area, it has greater demand for external traffic and communication. The result of the interaction between these two aspects is that, at present major external traffic channels form the main traffic bottleneck of the park. In terms of the public transit, the density of public transit network of the 1st Stage Park reaches 3.32 km/km². The line coverage is 79%, among which the coverage of primary roads is 100%, secondary roads 62% and by-passes 35%. Bus lines on primary roads often overlap.

The repetition rate of main route is high, while the repetition rate of some minor and branch road are lower. The bus line system remains to be optimized.

4.3 Industrial Development Guidance Promoting Improvement in Benefits

Gradually guide the development zone to developing and transforming from the industrial park to the Overall new town, from “made with men” to “made with wisdom”, so that to build up intellectual creation-based overall urban with city and industry integration, quality service, high-end quality, international standard. Insist on policy guidance, enterprises willingness, and market selection. Gradually transform from the industrial zone to the mixing zone of production and research in recent stage, to the mixing zone of trade, industry and research in medium stage and to the modern service industry cluster in late stage. Develop goals and strategies of industrial development in different stages. The required spatial carrier for transformation is mainly get by industrial land renewal.

Table 5 Development Zone Staged Development Goals and Strategies Guidance

	Recent stage	Medium stage	Late stage
Goals guidance	From the industrial zone to the mixing zone of production and research	To the mixing zone of trade, industry and research	Modern service Industry cluster
Industry upgrading strategy	2 + 2.5 industries as leading, coexistence of mixed land of production, research and development, actively using part of the industrial plant transformed with creative industries, industrial design and other functions.	Coexistence of 2 + 2.5 + 3 industries, the industry pattern of research and development headquarters, high-tech industries, modern services, creative industries and other multi-industry joint development.	2.5 + 3 industries as leading, attract international, national and local research and development headquarters to settle in, develop characteristic and creative industries; improve living supporting facilities.
Spatial development strategy	Guiding enterprises to set up research and development center, formed mixed land of	Introduce corporate headquarter, increase investment in research	Form research and development headquarters and creative industries

	research and development, production; Using of industrial plant transformed into creative industries.	and development; attract characteristic creative industries; strengthen the construction of living supporting facilities.	concentrated area, attract intelligent people to settle in; actively develop the modern service industry.
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4.4 Space Reconstruction Promoting Integration of Production and the City

4.4.1 Promoting Functions, Guiding City and Industry Integration, and Optimizing Urban

Overall Structure

First is gathering function of modern service industry. Combined with the existing modern service industry area in development zone, through guiding industrial land to renewing as modern service industry, making the finance, consulting and other functions to concentrating to the central area, to strengthen the central zone function, and gradually form a creative research and development gathering area. Both collectively form the main engine of transformation development. In the Suzhou New District planning, E-type high-end service area is constructed along the rail transport, main city roads and urban original modern service concentration space, and innovative research and development gathering area with beautiful environment is constructed along landscape resources like eastern mountains and the Grand Canal.

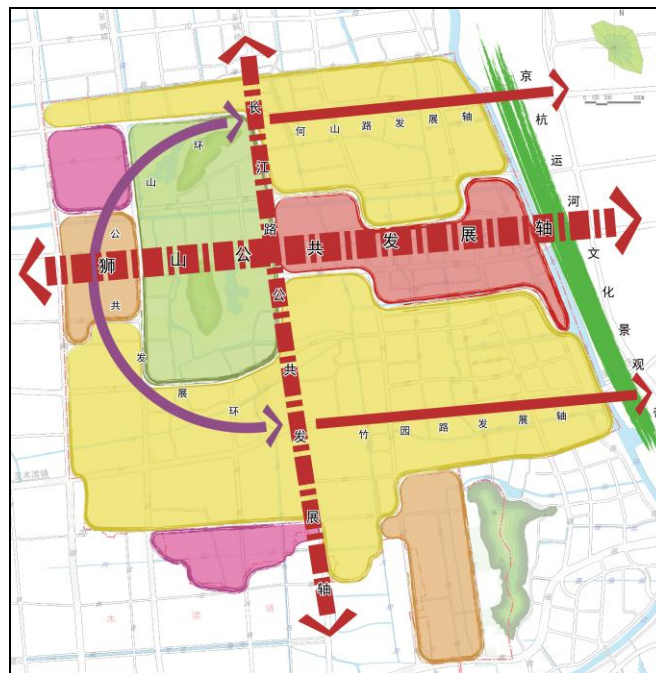


Fig.8 Combination of Digging for Build-up, Making up for New Development, and Improving Quality

Second is creating layout of job-housing balance. Gradually breaking the land distribution layout with current strict functional division, and adopting the grouping job-housing balance mode. To realize job-housing balance within a small range, so that to reduce the impact on traffic. In the SIP planning, it divides neighborhood units, optimizes the structure of 1st Stage Park, strengthens North-South contacts, and constructs three main areas with balance in production and residence, which forms the overall structure of “one core, two hearts, three axis, and three areas”.

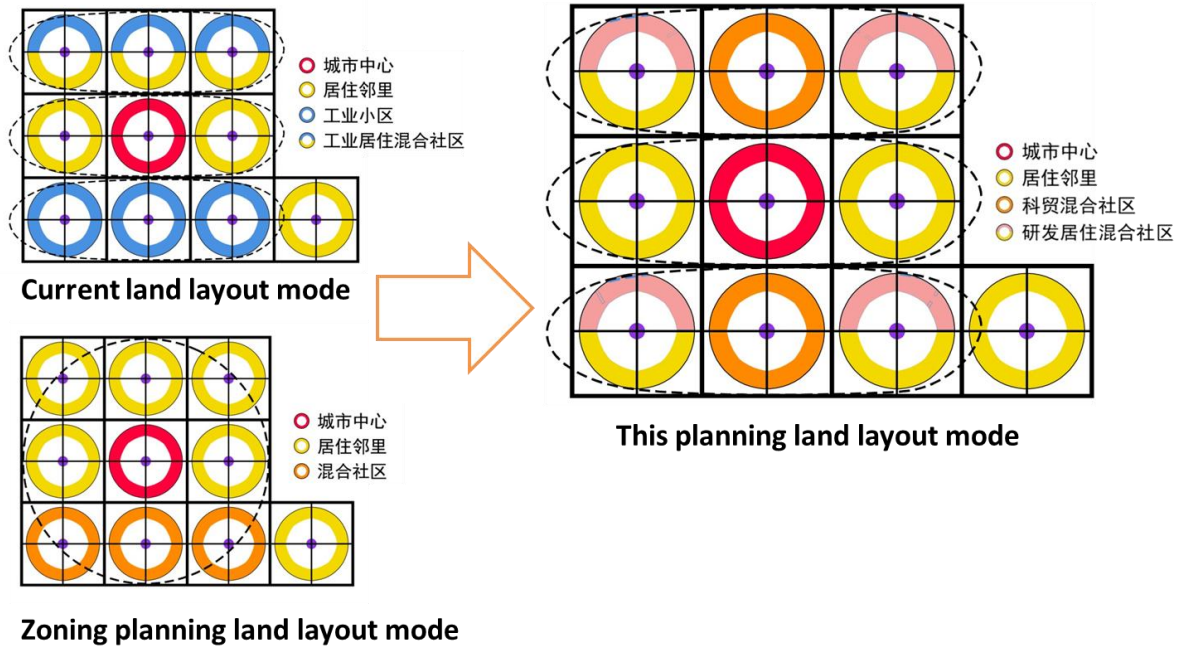


Fig 9 Planning Structural Adjustment Idea

Current land layout adopts grouping relatively balanced in production and residence mode. Zoning planning land layout uses balance in production and residence mode in a larger area. For this planning, it divides neighborhood units, and realizes job-housing balance within a small range, to reduce the impact on traffic.



Fig.10 Functional Structure Planning Map

4.4.2 Given priority in Public and Highly Efficient Land and Improve the Overall Benefit

Industrial land renewal follows principle of the "excellent land for best use", which given priority in city roads, municipal utilities, public welfare facilities, green spaces in parks and other land, to help the quality improvement and function perfection of urban area. Commercial land layout follows the principle of priority in level; benefit leading, giving priority to protecting land supply of modern service industries, innovative research and development and other "tax source" industries.

4.4.3 Integrate Public Transit and Land Development, to Promote Intensive Development

With Suzhou Industrial Park as an example, external traffic connection within the planning scope has obvious traffic bottleneck, so it is imperative that more external channels be developed and traffic pressure outside the area be relieved. Meanwhile, combine the displacement and transformation of industrial plots, intensify the road network and satisfy the demand for plot use. On the other hand, in the future more railways will be built at the 1st Stage Park. We should guide it to become the major traffic method for residents and employees. The planning puts forward the strategy of guiding urban center system with railway transportation and building areas with high visitors flow rate and highly-dense residential areas around the railway stations, to form a central system within 300 meters around the stations.

4.5 Implement by Stages to Guide and Promote Orderly Renewal

On basis of industrial land evaluation, situation existing problems, major infrastructure construction period and the urgency of facilities construction demand, the renewal timing recommendations are determined. Adding the facilities in stages, perfecting green space system, and optimizing transportation system, the park is guided and improved step by step.

Table 6 Staged Land Renewal Strategy Guidance of Suzhou Industrial Park

	Recent stage	Medium stage	Late stage
Renewal emphasis	Industries begin to transform, settling conflicts between production and residence, and relieving supporting pressure	Full-scale transformation in industries, increasing the proportion of living, and forming a Trade Center	Industrial upgrading is completed, basic balance between production and residence, perfect spatial shape
Renewal impetus	Rail stations develop around, International Science and Technology Park leading, a spontaneous demonstration in transformation	Rail stations develop around, migration of 220KV high voltage	Rail stations develop around, north and south area center leading
Renewal area	Combined with future rail stations, increasing residential land, neighborhood centers and other ancillary services facilities. Along the south bank of Loujiang River, some enterprises land transform to land for research and development, which forming s initial	Construction of north and south area center, pushing full-scale transformation in south and north industries	Optimizing the space environment, Strengthening living and service functions in area to attract corporate headquarters, research and development centers and other settled in, by "Headquarters - manufacturing - bases" function chains radiation to drive development of the whole park industries; introducing industrial design, advertising, art, fashion and other creative industries

	prototype of a research and development area.		Form gathering area of research and development headquarters in the northern part and the south is gathering area of creative and cultural industries
Added facilities	Adding three primary schools; one new hospital and neighborhood center	Expanding two primary schools; adding two new neighborhood center based on rail stations, and adding two green space to park	Adding a school for nine-year compulsory education; adding a new area-class park, an area-class cultural and sports centers and a cultural and entertainment facility
Improve transportation	Partial nodes transformation based, optimizing running east-western traffic, encrypting road network, to enhance the overall road network efficiency and trip quality	Connecting through the main road, encrypting the road network	Road network basically formed, primarily in improvement, supplemented by transformation.

Meanwhile, optimize the control way of staged guidance. New development zone planning of development zone controls land use mainly through land use planning map plus in the form of plans. However, built-up area planning should be more emphasis on the current development and objective expression of trends to facilitate planning decisions and adjustments. Guide each industrial land in different time periods with corresponding statuses, ensure that demands can be met, and the facilities can be landed. Develop a staged implementation guidance map based on the evaluation of industrial land and the planning is divided into four stages. Develop detailed plans for industrial plots, and indicating its evaluation findings and guidance recommendations for the staged implementation, which can not only carried out better guidance in stages, but also leaves room for future flexible adjustment.

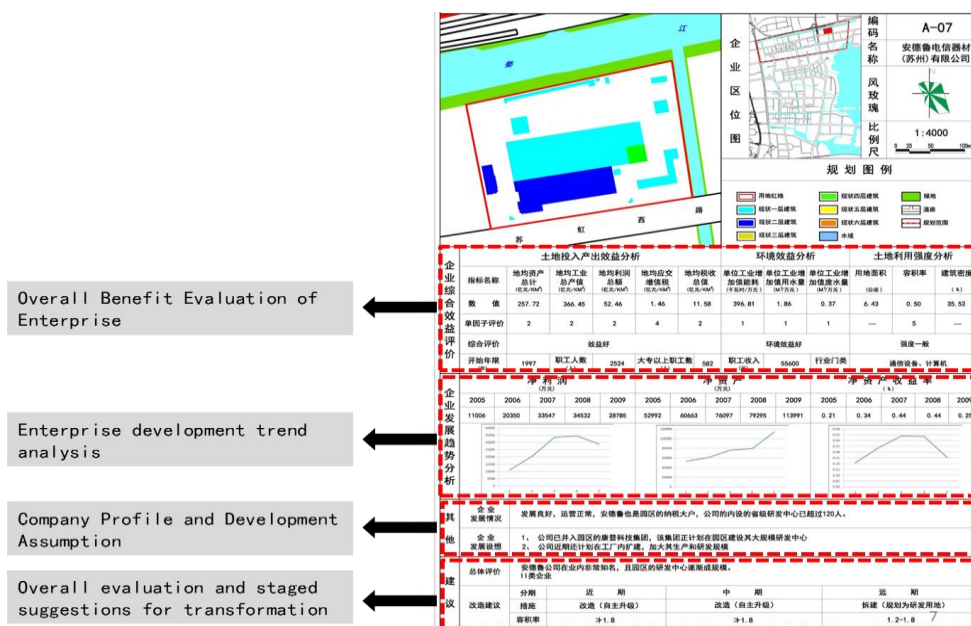


Fig.11 Industrial Land Evaluation and Renewal Plan

4.6 Differentiate Renewal Mode to Promote Planning Implementation

After the planning objects transformed from new development to build-up, the main difficulty lies in the redistribution of interests, especially the redistribution of added -value benefits which brought by land renewal. Relying on simple space design is difficult to solve practical problems and the importance of the renewal mode, system design, planning supporting policies and other studies have become increasingly prominent. The interest bodies of industrial land renewal in development zone including the government public sector and the property owners, developers and other private sectors, the relationship among each interest body should be effectively coordinated, and it should also fully consider views of interest parties that surrounding the renewing plots.

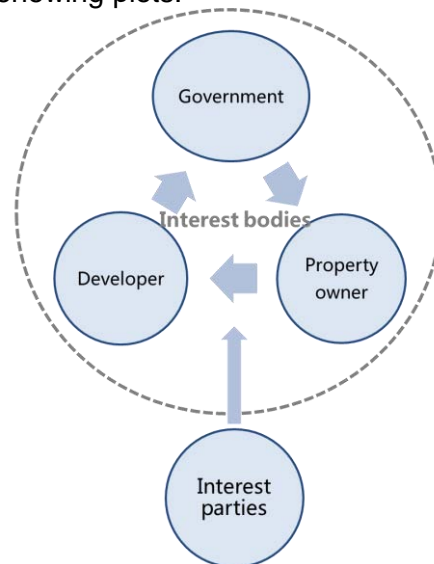


Fig.12 Interest Bodies and Interest Parties in Land Renewal

Depending on the differences of the renewal subjects, the renewal modes can be divided into the government-led, market-driven, autonomous renewal and cooperative development four models (Table 4). The selection of renewal mode is necessary to consider aspects of land use rights and building property rights of the renewal land, economic strength of renewal subject, land usage after the renewal, etc. For example, state-owned industrial standard factory building is appropriate to adopt the government-led mode or autonomous renewal mode; transformed into public service facilities or green spaces after the renewal, which lacks of direct economic benefits, it is difficult to adopt market-driven mode and autonomous renewal mode, instead, it is appropriate to adopt the government-led mode. Meanwhile, it should not lose sight of the interests of interest parties surrounded the renewal land under various development mode. Strengthen the public participation, to ensure the widest public interest of the public.

4.7 Pre-designed System Guarantees Planning Implementation

Sound legal and regulations is a prerequisite for the smooth conduct of land redevelopment. Only there is law to follow and enforcement strictly, can effectively protect the legitimate interests of all parties and build trust basis of various interest parties. The core of urban renewal planning management is to establish an institutional framework to match with the modern property rights system. Build-up area planning in development zone should give full attention to the rights of all parties and balance the interests of all parties, develop planning techniques and institutional system for the implemented city, insist the marketed operation led by the government, and the renewal driven by the market and the government. To establish measurable policies and regulations, management mechanism, operational guidelines and technical standards, guarantee renewal implementation in development zone is in order.

Since the build-up area renewal in development zone is still in its infancy, which is not yet formed a relatively sound policies and regulations suitable for its own characteristics, remained to explore further. Author believes that relevant policies and regulations should focus on adjusting two aspects of the interests. One is the direct benefits from land renewal, namely redistribution of value-added benefits, which involves government, developers and property owners. How to reasonable distributing the value-added benefits among the three is the key to the build-up area renewal, which is required to develop corresponding distribution plans in various renewal modes, and to be determined in the form of policies and regulations. Made it rule by law, abide by regulations, to ensure consistency of the policy, and to enhance communication among interest bodies at the same time; the other one is indirect benefits from land renewal, namely the effect on the surrounding area. It may be positive exterior effect, such as the factories are renewed to green space and public welfare services facilities, and may also be negative exterior effect, such as be renewed to municipal utilities, therefore, it should strengthen communication and coordination with neighboring interest parties in the planning.

5 Conclusion

After nearly 30 years of development, development zones have obtained remarkable achievements in promoting local economic development, attracting foreign investments and introducing advanced techniques, and becoming an important growth pole of Chinese economy. Against the backdrop of the new normal, and the background of transition development in China, the previous development mode featuring scale expansion has been faced with its bottleneck. Its development transformed “physical expansion” to “built-up area improvement”. The built-up area planning refers to promote functional optimal adjustments in built-up area by urban renewal and other means. Compared with new development zone planning, the built-up area planning has different characteristics, one is change of property rights, because construction land use rights are scattered in various land user's hands, and under the constraints of modern property rights system, change of property rights is more difficult, with more complex power relations involved; second is renewal income distribution and impact, government is not at liberty to dispose of land, benefits of land redevelopment need to concern of all parties, and it should also consider the renewal impact on the surrounding interest parties at the same time. Thus, the built-up area planning needs to explore consultative planning method which makes government, interest bodies and relevant interest parties to participate together, interactions and balance the interests of all parties.

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REINVIGORATING THE NIGERIAN INDUSTRIAL SECTOR THROUGH EFFECTIVE PLANNING

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Abstract

Industrial development has been a major catalyst in the employment of people in the Nigeria labour market. Due to poor regional development plan, industrial sector have been neglected in favour of oil sector which made Nigeria a mono-cultural economy, resulting into decrease in sales/turn-over and margins across the manufacturing industry sub-sector with rare cases of expansion. This resulted into the 'moving away' of industries (which are, most often, local manufacturing industries) that could not cope with the challenges. This paper, therefore, examines the state of local industries with the view to 'reinvigorating the Nigerian industrial sector'. The paper relied on data from secondary sources. Drawing from local and global examples, issues on the challenges facing the Nigerian industrial sector since independence are considered. The major factors that forced the traditional industries to 'move away' are established. The implication of the situation on physical planning activities is also discussed. The paper revealed that the average manufacturing capacity utilization (AVC) is not only very low but has been fluctuating. In 1980, AVC was 70.1%, 1985; 36.3%; 1990, it rose to 40.3%; and by 1995, it stood at 29.29%. The fluctuating trend continued in 2000 when AVC was 36.1%, and rose to 54.8% in 2005 and in 2008, it dropped to 53.84%. The paper recommends proper regional development planning, such as local industries clustering – based on similarities in output, input and/or technology – as a strategy for promoting local industries.

Keywords: Local industry, Industrial Sector, Development, Physical planning, Reinvigorating, Nigeria

1. Introduction

It has been argued that the fastest trend through which a nation can achieve sustainable economic growth and development is neither by the level of its endowed material resources, nor that of its vast human resources, but technological innovation, enterprise development and industrial capacity. For instance, despite its poor natural resources, and the hurdles it faced from 1920s chronic inflation, Germany has effectively exploited the manufacturing sector and rose up to become the largest economy in Europe and the fourth largest in the world.

The history of industrial development and manufacturing in Nigeria is a classic illustration of how a nation could neglect a vital sector through policy inconsistencies and distractions attributable to the discovery of oil (Adeola, 2005). After the discovery of crude oil in Nigeria in

the late 1950s, the nation has shifted from its preeminent developing industrial production base and placed heavy weight on crude oil production (Englana, et al. 2010); not only has this jeopardized its economic activities, it also aggravated the nation's level of unemployment.

Nigeria has performed poorly and far below expectation, in the area of industrialisation, when compared to some regional and global counterparts. For instance, in the United States, Brazil, China, India and South Africa, the manufacturing sector contributes 13 per cent, 15 per cent, 30 per cent, 14 per cent and 15 per cent to their Gross Domestic Product, while employing 13 million, 15 million, 100 million, 30 million and 1.5 million people respectively (Oluwa, 2015). In Nigeria, the manufacturing sector contributes a meagre four per cent to the GDP, while employing only two million people (CBN, 2011).

World Bank Development Indicators (2012) have placed Nigeria within the 47 poorest countries of the world. The issue of poverty can be easily traced to mono-economic practice and underutilization of the nation's endowed resources, especially in manufacturing sector, which could have opened up windows of opportunity in job creation and economic development.

It was noted by the *Daily Independent* (2015) that some of the challenges faced by many investors included weak consumer demand; cost and access to credit; cargo clearing processes; transportation costs, especially the collapse of the rail system; institutional problems, and corruption (Uma et al., 2013), especially in relation to public sector transactions. Other concerns of the manufacturing sector are the uncertainty and inconsistency in the policy environment (Sanusi, 2010; FGN, 2014), growing insecurity (*Daily Independent*, 2015), manpower issues and the relevance of educational curriculum to the needs of the economy (Adeoti et al., 2010; Sanusi, 2010), high level of receivables across sectors, power supply challenges, poor sectoral linkages and weak commitment to the development of indigenous enterprise (Uma et al., 2013).

These challenges, as noted in this section, resulted in a decrease in sales/turn-over and margins across the manufacturing industry sub-sector and rare cases of expansion, diversification and new employment while importation of technical skills required by the industry affected the bottom line. As a result, industries that could not cope with these challenges (which are, most often, local industries) are forced to 'move away.' The term "move away", as it used in this paper, represents various situations that reduced the production of the manufacturing industries – shut down, relocation, and abandonment of factories, and reduction in production capacity, etc.

Against this background, this paper discusses the challenges that has faced the Nigerian industrial sector since independence, with particular reference to the traditional industries. The paper analyses the state of industries in Nigerian cities and establishes the major factors that forced the traditional industries to 'move away.' The implication of the situation on physical planning activities is also discussed. Finally, the paper suggests what need to be done to revamp the industrial sector in Nigeria.

Methodology

This study relied on secondary data sources generated from textbooks, journal articles newspapers, internet sources, etc. These included Nigeria Industrial Revolution Plan,

Federal Ministry of Trade and Industry, National Bureau of Statistics and Central Bank of Nigeria, among others. All data were content analysed.

2. The State of Industries in Nigerian Cities

Nigeria's manufacturing industry has suffered from neglect since the 1970s when the country's economy has depended on the petroleum sector. As the government tries to diversify the economy, it is working to reinvigorate the manufacturing sector so as to increase its contribution to Nigeria's prosperity. A preponderance portion of the industries are located in cities. Lagos and its surroundings are home to about 60% of Nigeria's industrial base (Corporate Nigeria, 2010). Other key industrial centres are Kano, Ibadan, Kaduna and Onitsha. Nigeria's most important manufacturing industries include beverages, cement, cigarettes, food processing, textiles and detergents.

Nigeria's limited industrial sector is strikingly evident when considering trade flows. Today, the industrial sector contributes just 3 percent to export revenues but accounts for over 50 percent of imports (CBN, 2011; CBN, 2012; FGN, 2014). The country's trade balance on manufactured items is therefore causing a severe drag on Nigeria's balance of payments. Oil overwhelmingly dominates our trade at over 90 percent of total exports but drives a very small portion of other industrial activities, including refineries (FGN, 2014).

The contribution of the manufacturing sector to the Gross Domestic Product (GDP) has changed little over the course of the decades since independence. From a modest 4.8% in 1960, manufacturing contribution to GDP increased to 7.2% in 1970 and to 7.4% in 1975. In 1980 it declined to 5.4%, but then surged to a high record of 10.7% in 1985 (CBN, 2011). By 1990, the share of manufacturing in GDP stood at 8.1% but fell to 7.9% in 1992; 6.7% in 1995 and fell further to 6.3% in 1997. As at 2001 the share of manufacturing in GDP dropped to 3.4% from 6.2% in 2000. However, it increased to 4.16% in 2011 which is less than what it was in 1960. Currently, Nigeria's manufacturing sector's share in the Gross Domestic Product (GDP) remains minuscule (CBN, 2011).

Comparing the situation with other emerging economies, manufacturing contributes 20 percent of GDP in Brazil, 34 percent in China, 30 percent in Malaysia, 35 percent in Thailand and 28 percent in Indonesia (Ogbu, 2012). The more recent experiences of the East and Southeast Asian economic transformations demonstrate that diversification into manufacturing and industrial production facilitated by what Arthur Lewis calls the "intelligent governments" are critical to poverty reduction.

As at 2014, the sector contributes 4% to the country's GDP (News24, 2014; FGN, 2014). While industries like cement, beverages and food processing attract investment from home and abroad, other industries are moving away. Corporate Nigeria (2010) reveal that between the year 2000 and year 2010, more than 850 manufacturing companies either shut down or temporarily halted production. Capacity utilisation in manufacturing is around 53%. Import of manufactured goods dwarf sales of home-grown products – manufactured goods have constituted the biggest category of imports since the 1980s.

Nigeria had automobile assembly plants that predated her independence, producing cars, trucks and buses from completely knocked down parts. But by the 1980s, the sector had faced challenges owing to the Structural Adjustment Programme, which curtailed consumers' purchasing power and made many Nigerians to settle for imported, fairly used vehicles (Economic Commission for Africa (ECA) (2014)). Smuggling through porous

borders, poor infrastructure and bad government policies also conspired to bring manufacturing to its knees. Consequently, millions lost their jobs thereby exacerbating poverty.

The textile sector is a case in point; once one of the country's most successful industries has collapsed in recent years. It employed about a million people, accounting for over 60 per cent of the textile industry capacity in West Africa, and empowering millions of households across all geopolitical zones of Nigeria. It has faced the challenges of insufficient power generation and smuggling of exotic textiles, the story soon changed and the sector took a massive dive into an industrial abyss (ECA, 2014).

In 1985, the textile industry employed 200, 000 people. Unfortunately, however, the industry now provides jobs for only 25,000 people; imports supply around 90% of Nigeria's textile needs (Corporate Nigeria, 2010). At a point during the crisis in the sector, from about 180 thriving textile companies, the number came down to almost zero."

Food processing is an important part of Nigeria's manufacturing industry. The sub-sector has grown at an average of 10% a year over the past number of years, mainly due to import restrictions put in place to secure the market for Nigerian food products (FGN, 2014). Capacity utilisation, however, continues to fall year in, year out due to the same factors plaguing the rest of the manufacturing industry: infrastructure problem and electricity shortages.

Despite the apparent shortcomings in the industrial sector, Nigeria has no effective industrial policy that promotes manufacturing; at least not in the sense of policy which provides practical solutions to the difficulties encountered by incipient entrepreneurs or emerging manufacturing firms.

3. Why are Industries Moving Away?

The biggest problem facing the manufacturers over the past two decades has been inadequate infrastructure in general and lack of power supply in particular (CBN, 2012). The challenges arising from unfriendly operating environment and infrastructural constraints, particularly in the areas of power and energy and security, which, when added up to other recurrent businesses threatening economic and social ailments, would easily wipe out any gains of progress and recovery. The country set a target of generating 6,000 MW of electricity by the end of 2009, but estimated national demand is 25,000 MW (CBN, 2011). Manufacturers have mainly installed their own generators to compensate for spotty supply from the state – the manufacturing industry as a whole generates around 72% of its own energy needs (Corporate Nigeria, 2010). By implication, operating these generators greatly increases the cost of manufacturing goods, and the cost increase is passed on to the consumer, making it difficult for Nigerian goods to compete favourably with cheaper imports.

Nigerian industrial firms, as observed by Adeoti et al. (2010), have peculiar features of high level of imported plants and machinery and a weak science and technological infrastructure in terms of needed human capital cum capability for adoption, adaptation and assimilation of important technologies. Consequently, some industries invested with huge capital such as petrochemical complex, iron/steel and fertilizer plants have not been able to bring about innovation and as such unable to make meaningful effect on the economy.

The security situation in the country is a major concern to investors. Beyond the direct consequences for the economy, it had profound effect on the perception of the country as an investment destination. The security problems has worsened in recent years, especially in the North-eastern part of the country, and, consequently, affected the economies of the affected states, which suffered setbacks following the closure of companies and relocation to other states, with profound job losses.

Many indigenous firms, as a result of the security situation, lost sizeable portion of their sales, as they could no longer access most part of the Northern market; while manufacturing firms sourcing raw materials from the North faced new challenges. Projects funded by banks in the affected states were also at risk and many bank branches were closed, while the working hours for others were drastically reduced. Sales representatives of many companies had to flee the affected states, while many projects under construction in the North were abandoned (*Daily Independent*, 2015).

Funding was also identified as a major problem faced by investors in the industries. The cost of fund in the economy is high and access to credit is even a more a serious problem, as the tight monetary policy stance of the CBN is a major factor that affected the credit conditions (*Daily Independent*, 2015). Collateral cover requirements by banks were beyond many investors, which impeded access to credit, slowed down the tempo of economic activities and undermined intermediation role of banks in the financial system (*Daily Independent*, 2015). Many manufacturers faced difficulty, delays and high cost of getting bank loans, while innovation and planning by manufacturers also suffered as a result of uncertain and unstable policy environment.

As china strengthens its trade links with Africa, it is fast becoming a key partner for Nigeria. In 2009, Bilateral trade between Nigeria and China was worth over USD6.5 billion, between year 2000 and 2010, exports from China to Nigeria have increased 400%, while exports from Nigeria to China increased 200% within the same period (Corporate Nigeria, 2010). Nigeria gets light industrial products and manufactured goods from China, while China imports petroleum, timber and cotton from Nigeria.

Our attention has been drawn to the rapid rise in imports from China as a prime cause of the decline in Nigeria-based manufacturing. Less widely recognised is that this rise has been accompanied by a large decline in imports from Japan and European economies. Some of the imports from China are goods that were previously imported from Japan, the United Kingdom and the United States.

Sanusi (2011) noted that countries such as Thailand, Malaysia, India and Indonesia were far behind Nigeria in per capita gross domestic product in the 1970s but are now very much ahead of Nigeria, and that the major factors contributing to the decline and poor performance of the Nigerian economy are political instability, lack of focused and visionary leadership, economic mismanagement and corruption. These have in various ways adversely affected industrialization and hindered the aspirations of private entrepreneurs.

Gire (1999), cited in Uma et al. (2013), notes that the industrialisation saga of Ajaokuta Steel Company Limited established as the major iron base and other steel rolling mills at Aladja, Jos, Katsina and Oshogbo have serious problems. The worst is Ajaokuta, which is largely due to corruption, lack of foresight, incompetence and instability of policies at the federal government level.

Furthermore, the corrupt practices experienced at the commencement of business registration, obtaining loans and pattern of tax assessment have been demoralising and pose a negative signal for investment to flourish (Uma et al., 2013). Just as Oloja (2002), cited in Uma et al. (2013), posits that it is difficult to enter an office in Nigeria and get your file attended except you give kickback.

With all these complications in mind, estimating how far, low wage imports can be blamed for the decline of Nigerian manufacturing is fraught with difficulty. The implication is that jobs lost directly attributable to low wage trade increases. The most obvious reason for manufacturing to fall as a share of value added is that manufacturing prices have been falling relative to services, because manufacturing is on average more productive than services and more likely to face international competition (Brinkley, 2009).

4. The Planning Implication of the State of Local Industries

Nigeria is reputed for its robust natural endowments, youthful demography, large coastlines, largest population in the continent, seventh largest oil-exporting country in the world, a large enterprising population, an innovative banking sector, a GDP growth of 6.6 per cent in 2012 (CBN, 2012), which is one of the best globally; rising foreign reserves which was \$44.5 billion as at November 2012, and excess crude account of \$9.6 billion and a stable polity (CBN, 2012). These endowments were expected to serve as a catalyst in establishing and addressing the industrial sector challenges if properly planned and managed, but urban sector is witnessed by mass exodus of rural inhabitants to the urban areas in search of jobs which proves to a large extent to be non-availability since there was no enough industries to absorb the unemployed youths. The existing industries are operating far below the ideal resources that are supposed to be fully employed to enhance production and growth. Fertile soil and manpower, among others, are underutilized (Uma et al., 2013).

While this situation can be attributed to many factors, the high level of unemployment experienced in Nigeria is largely connected to deficiency in industrial sector. The teeming population who became unemployed as the traditional industries moved away have been compelled by the desire to meet their basic needs to opt for crimes such as kidnapping, armed robbery, acts of terrorism, and fraud, making the economy highly unstable for smooth business operation by both domestic and foreign investors.

Although government often comes up with a lot of statistics to show improvement but an economy is not only run on statistics rather on human beings circumstances (Uma et al., 2013). As noted by Olsen (2013), Nigeria might be heading for sociological crisis with growth of unemployment from 9.1 million in 2008 to 16 million in 2011. Labour force rose at the same period from 61.1 million to 67.2 million while the rate of growth of unemployment in 2008 was 14.9 percent, it rose to 23.0 percent in 2011 (Olsen, 2013).

This situation (failure of the industrial sector), in response, has resulted to imbalance in development couple with high overcrowding in the urban areas with associated housing problems, road congestion, and pressure on use of facilities, slum development, urban sprawl and crimes.

5. Past Efforts toward Revamping the Industrial Sector

Prior to, and after, independence, Nigeria has come up with ways, strategies and developmental plans to establish and ensure functional industries with the intention to increase resources utilization and economic growth. In the recent past, Nigeria has come up

with different incentives and policy measures to revitalise the ailing industrial sector (Uma et al., 2013). The government has embarked on a major drive to improve power generation with the express aim of providing the enabled environment for industry. In March 2010, the federal government unveiled plans to invest USD 3.3 billion in power projects throughout the country.

In May 2010, the Nigerian government announced a USD 1.3 billion funded to help banks extend credit to the manufacturing sector, following the decline in available financing after the onset of the global economic crisis (Corporate Nigeria, 2010). To help the traditional industry compete more effectively with foreign imports, the government introduced a new tariff regime in 2010. The tariff regime was drawn up in cooperation with stakeholders like the Manufacturing Association of Nigeria (MAN) and is designed to encourage investment in the sector. The government offers capital allowances for the import of manufacturing machinery, as well as tax breaks for research and development and for self-provision of energy and other infrastructure.

Industries locating in the Free Zones are eligible for further incentives. These areas, designed to boost the country's export trade, allow many manufacturing industries to site inside them – among the qualified industries are electrical goods, textiles, wood products, petroleum products, pharmaceuticals and chemicals. In order to locate in the Free Zones, companies must export at least 50% of goods produced.

To revamp the textile industry, the government introduced the Cotton, Textile and Garment Scheme – in the form of intervention fund – announced in October 2009 and operating since early 2010. The fund, worth USD 658 million, was to be sourced and administered by the Bank of Industry. In May, 2010, new cooperation between India and Nigeria to revitalise the textile industry was announced – India is to contribute technology and expertise to help get the sector back on its feet.

In 2013, the government of Nigeria began to take more proactive steps to stem the decline in the industrial sector. Beginning with cement, local manufacturers like Lafarge WAPCO Plc. and Dangote Cement Plc., owned by one of the Africa's wealthiest man, were encouraged to invest billions of dollars in existing and new factories, ending years of imports. At least 1.6 million jobs have been created in this sector already. Trade and Industry Minister said with 28.5 million metric tonnes produced in 2013, with more than 8 million metric tonnes in excess of domestic demand, making the country a net exporter of the building material for the first time (ECA, 2014).

Also in a bid to end sugar imports, the government says it has been able to attract about \$3 billion in investments to this sector within a year of flagging off the new policy. The government has put together a more comprehensive industrial plan to diversify the economy, achieve inclusive growth and reduce poverty. On Feb. 14, 2014, President Jonathan formally launched the comprehensive Nigeria Industrial Revolution Plan which he described as “the most ambitious industrialization programme” ever pursued in the country (FGN, 2014). It is designed to “accelerate growth in those industries where Nigeria has comparative and competitive advantages such as the processing of food and agricultural products, metals and solid minerals processing, oil and gas related industries, and construction, light manufacturing and services.”

6. Revamping the Industrial Sector through Planning

A review of previous development plans spanning the 1950s to 2007 reveals that the same issues that haunt Nigeria's manufacturing sector have lingered on for decades (FGN, 2014). Over the years, there has not been consistency in the application of Nigeria's industrial policies. On many occasions agreed policies are not effectively executed, and in other cases policy executions are not sustained. Industrialists have raised this as a key issue that makes it difficult to plan their investment programmes and commit to large capital expenditure (expansions or green field projects) which require sufficient visibility on government policy.

In the modern global economy, industrial development is not luck; it is a nation's choice. With continued globalization of the world's economy, the convergence of consumer tastes, and world-wide dispersal of industrial technology, the manufacturing sector has never been as competitive as it is today. Companies are no longer concerned about firms within their geographic jurisdiction, but with every competitor all over the world. Low international freight costs and unprecedented levels of information available over the internet have truly transformed the world into a single accessible market. In today's world, the fierce global competition has reduced the likelihood of spontaneous development of new Industry.

Countries must, therefore, have a deliberate, precise, and intense approach to nurture and expand industrial activities. This is even more paramount for a country like Nigeria, starting from a relatively low manufacturing base. Despite the varieties of incentives, strategies, plans and policies to improve the traditional industries in Nigeria, the average manufacturing capacity utilization (AVC) is not only very low but has been fluctuating. In 1980, for instance, AVC was 70.1%; by 1985, it fell to 36.3%; in 1990, it rose to 40.3%; and by 1995, it stood at 29.29% (CBN, 2009). The fluctuating trend continued in 2000 when AVC was 36.1%, and rose to 54.8% in 2005 and in 2008, it dropped to 53.84% (CBN, 2009).

Nigeria is the most populous country in Africa, and as the country works towards its goal of becoming one of the world's top 20 economies by 2020, its market for manufactured goods is expanding. With considerable mineral resources, including tin, iron ore, coal, lead, zinc, and oil and gas, as well as large arable land resources, Nigeria possesses the capacity to produce many inputs for manufacturing. The advantages of appropriate industrial base for an economy lies in its combination of suitable technology, management techniques and effective planning in order to move the economy from a traditional and low level of production to a more automated and efficient system of mass processing and manufacture of goods and services.

Provision of decently maintained physical infrastructure is a key to economic growth, employment generation and poverty eradication (Owolabi, 2004). The lack of it is associated with high production costs, weak competitiveness and low access to market in a free market economy and globalization. Nigeria exports more of raw materials due to lack of industries to add more values to our products so as to compete vigorously in the global community and also raise more foreign income needed for development.

Like most developing economies, some industrial sectors have evolved into oligopolies, with just a few companies controlling majority of the market (FGN, 2014). Judging from history, more developed markets like the United States and European Union have ensured existing players do not erect artificial barriers preventing new entrants. Competition brings new ideas and technologies, and encourages established players to keep improving their operations and products. Today, Nigeria does not have an adequate set of policies, regulations, and laws to control anti-competitive practices in Industry. Capabilities need to be developed in

investigating and sanctioning anticompetitive practices such as – price collusion, dumping, exclusive dealing, refusal to deal, dividing territories, and many others.

According to FGN (2014), “Made in Nigeria goods” are not patronized enough by both the private sector and public sector (i.e. all tiers of governments Federal, State, and Local). Existing government laws and policies on leveraging public procurement to drive industry will need to be enforced. Everywhere in the world, public procurement is strategically used to promote industrialization in selected sectors (e.g. the U.S. defence spending in the aeronautic industry; European Union spending on Alternative Energy and Agribusiness). The Nigerian government must leverage its public sector spending to encourage local industry, while also ensuring the country complies with its international trade obligations. In addition, the private sector should be encouraged to support local production by buying locally produced goods where possible.

A new paradigm is required on the African continent, to change the old policies of exporting raw materials and jobs, without building up capacity in areas of comparative advantage, driven by raw materials, markets, cheap labour, and other strengths. Policy makers must consider that in most circumstances investors always have the options to relocate. Investments have become less sticky than in prior decades. Even in China, despite large investments, manufacturing plants are beginning to move out to neighbouring countries like Vietnam and Thailand due to lower labour costs in those countries. The context for Nigeria, therefore, is not just to become competitive, but actually to remain competitive.

With a visionary and purposeful leadership, good governance, effective legal, regulatory and institutional framework, as well as structural economic reforms and the political will to see through the reforms, Nigeria can leverage and consolidate on the experiences of the industrialised countries, in our quest for industrial revolution.

Economic Planning

Clearly, future strategies for land use planning need to be economically empowered. This is the only way to generate the income needed to enable individuals, households, and governments to pursue their own development priorities and to support their path to self-reliance. This must be the ultimate goal of all efforts to invigorate the local industries in all its dimensions. In fact, the United Nations Industrial Development Organization (UNIDO) (2014) affirm that there is not a single country in the world that has reached a high stage of economic and social development without having developed an advanced industrial sector.

Evidence proving that industrialization is an effective poverty reduction strategy is not hard to find: Whether we look at the early advances of the European countries, the United States or Japan, or those that caught up with the global trend in the latter half of the 20th century, including the Republic of Korea, China, and the many other Asian ‘tigers’ and ‘dragons’, it was always industrial development and trade in industrial goods that shaped their successes (UNIDO, 2014).

The structural transformation that occurs when economies move from a high reliance on agriculture and natural resource extraction to activities that foster local value-addition and related services has a dramatic development impact. It unleashes dynamic and competitive economic forces that generate employment and income, facilitate international trade, and use resources more efficiently. This experience has repeated itself around the world since the original industrial revolution of the mid-18th century (UNIDO, 2014).

Social Planning

To really improve the standard of living of people through the local industry, the benefits of growth have to be shared more equitably. This can be achieved when decent employment opportunities are available for all segments of the labour force. Manufacturing industries and their related services sectors can absorb large numbers of workers, provide them with stable jobs and good benefits, and increase the prosperity of their families and communities. An efficient agro-industry, combined with increased investment in agriculture, enhances economic stability for rural households, increases food security and promotes innovation throughout industrial value chains.

It is essential to better integrate women and youth in the process of creating an industrial workforce. This not only yields positive multiplier effects for households and communities but also contributes to greater social cohesion and reduces crime and conflicts.

Regional Planning

Clustering is the right strategy when focusing on the promotion of local industries, particularly when industries are geographically scattered and they tend to agglomerate in accordance to similarities in output, input or technology/machineries, etc. Clustering helps to facilitate the evaluation of the programme performance which theoretically can be expected to be a growth point in each respective area (United Nations Conference on Trade and Development (UNCTAD), 2004). It also has the potential of creating an embryo for efficient networking among similar or related clusters. The local industries cluster development programme basically creates an integrated support to selected clusters.

Four main criteria should be considered for the selection of the cluster, namely:

- The prospect of a market for the product of the cluster;
- Availability of local raw materials within the cluster;
- The number of local industries and total monthly sales of the cluster in order to make it sufficiently feasible for them to absorb the business development services and financial services provided to the clusters;
- Action taking capacity, with priority given to improved technology, the existence of linkages and infrastructure supports.

In implementing the clustering strategy the principles that should guide the programme are promoting business alliances, institutional synergy, outsourcing and benchmarking. These principles should be adopted to optimize the utilization of local resources. Under the clustering system the multi-stakeholder forum can easily be materialized (UNCTAD, 2004).

Infrastructure Planning

How much impact infrastructural planning has on the local industry and its sustainability is ultimately defined by a framework of stable economic, legal, and political conditions, as well as policy incentives to invest in the necessary education, infrastructure, product quality, agri-business solutions, innovation, and entrepreneurial skills. There is need to establish integrated strategies that seek to promote economic and industrial growth within a socially inclusive and environmentally sustainable framework.

Regular power supply is the hallmark of a developed economy. For the economy of any nation to grow, the country must invest heavily in all the sectors including social institutions, agriculture, healthcare, good network of roads, efficient transportation system, and reliable power sector.

Energy failure is a factor that makes local industries 'move away.' There is, therefore, an imperative to increase energy efficiency in industrial production. Since energy inputs represent an important cost of production for industries, clean energy and energy efficiency have progressively become core determinants of economic competitiveness and sustained growth.

A nation whose energy need is epileptic in supply prolongs her development and risks losing potential investors. Restructuring therefore necessitates changing the overall structure of the electricity industry.

The country is still trying to attract major private investors in the power sectors when a vertically integrated state owned Power Company is broken up into separate generation, transmission and distribution companies and when private investors and market participants are introduced. This proposed structure increases the demand for management talent for all the new power sector companies that are being created. Proper implementation of the reform program will promote efficiency and growth in the power sector. The reform will lead to improved electricity services as it will encourage private sector participation and investment in the manufacturing industry.

Global Trade and Competitiveness

Trade and investment have long been considered powerful instruments to promote development (UNCTAD, 2004). They open new markets and permit the expansion of productive capacity and higher levels of income and employment. One of the main concerns of developing countries with respect to their participation in global trade is their lack of competitiveness. They need to solve supply-side constraints, to build up national productive capacity as well as an efficient trading and transport infrastructure, and to engage fully in a coherent export and investment promotion strategy (UNCTAD, 2004). To be a real tool for development, global trade must locally induce a virtuous circle involving diversified higher-added-value exports and better-paid jobs. Mere increases in exports do not guarantee development.

According to the World Investment Report 2002, "greater competitiveness allows developing countries to diversify away from dependence on a few primary-commodity exports and move up the skills and technology ladder, which is essential to sustain rising wages. It also permits the realization of greater economies of scale and scope by offering larger and more diverse markets" (UNCTAD, 2002). This means diversifying the export basket, sustaining higher rates of export growth over time, upgrading the technological and skill content of export activity, and expanding the base of domestic firms able to compete globally (UNCTAD, 2004).

7. Conclusion

This paper has identified some key issues that compelled local industries in the developing countries, especially in Nigeria, to 'move away'. Nigeria is committed to becoming one of the world's top 20 economies by 2020, and invigorating the local industries must be an important part of its strategy for growth. There is need to learn from the case of China's automotive industry, Lau (2004) found that the success or failure of an industry or a firm is a function of the nature and pattern of policies pursued by the government. As pointed out in this paper, government's role in the industrial sector should become that of an enabler or facilitator by

implementing policy initiatives that will allow the private sector to take the lead role, particularly in manufacturing activities. In this regard, the federal government should intensify efforts to promote the patronage of made-in-Nigeria products through the implementation of its local patronage policies and programmes. As a regional development strategy, this paper recommends local industries clustering – based on similarities in output, input and/or technology – when focusing on the promotion of local industries.

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Leverage economic growth from urban development in Rwanda

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Introduction

Rwanda has made a remarkable economic growth during the recent two decennia after the 1994 genocide. Currently the country has the highest population density on the African main land (comparable with Netherlands and South Korea), while the amount of people living in urban areas is only 17%. The Government of Rwanda is promoting rapid urbanisation for mainly two reasons: to speed up economic development and to preserve the precious (fertile) land. Therefore six poles of growth (secondary cities) were selected. UN-Habitat was asked by the government of Rwanda to support the development of strategic plans for the country that enhance spatial-economic development.

Rwanda strives to become a middle-income country. Most countries, however, that are considered middle-income countries have at least half of their population living in cities and agriculture with sufficient yields to feed both urban and rural population. In practice this means the Rwandan urban population should triple and the agricultural system should reform. Currently the government of Rwanda is actively promoting rapid urbanisation as one of the key drivers of economic growth

Not many countries in the world are actively stimulating urbanisation as such. This makes the case of Rwanda quite unique but also challenging. The GDP (PPP) is around 1,500 USD per capita, the spatial configuration in the country is complicated and most people – also in the cities and towns - still rely on their income on agriculture. Economic activities other than agriculture are not very diverse (trade, tourism, hosting of conferences) and a production industry is not yet developed, resulting in a negative trade balance.

In this paper we describe the spatial-economic configuration of the country, emphasising the strong relation between rural and economic development. Despite striving for large cities we promote the development of polycentric towns that share facilities and develop economic strategies that strive for complementarity rather than competing with one another.

1. Rwanda's spatial economic layout

Rwanda, *Le Pays de Mille Collines*, is with 27 thousand square kilometres one of the smallest countries in Africa (the same size as Belgium). This hilly landlocked country, with high volcanoes in the north and sloping hills in the east has no planes or large open areas suited to build large cities. Hills are surrounded by wetlands that are used for agriculture and form a natural barriers between hillsides; often easy to pass through, but difficult to use as a connector for traffic unless significant investments are made.

Settlements are – logically - mainly situated on ridges. Ancient villages were situated on the hilltops for protection and villages still are. Not to protect from foreign intruders, but to protect from natural hazards. In the capital Kigali one finds large villas on top of the hills and informal settlements on the hill slopes. Although 62% of the land can be considered 'buildable', meaning the hill is not steeper than 20% and the area is not prone to flooding or volcanic eruptions, this 62% is dispersed and divided by wetlands and hills.

Having the highest population density on the African mainland, but being among the least urbanised countries in the world, the population is scattered all over the country, leaving hardly any *in potential buildable* location fully unspoiled. As around 70-80% of the

households rely for their income on agriculture, this fragmented way of settlements is a direct effect of people living close to their land.

Rwanda's capital is located in the centre of the country. All the country's main roads lead to Kigali and pass through. At the borders of the country, intermediate city functions as trade posts/ gateways. In the northwest and -south with Democratic Republic of Congo (DRC), in the south with Burundi, in the north with Uganda and in the southeast with Tanzania. The trade with the surrounding countries mainly consists of agriculture products and cash crops. The roads between the gateway cities and Kigali are used to 'feed in' the products from the rural areas, resulting chains of market towns along these national roads.

The high population density means there are opportunities to benefit from one another's proximity by creating new business opportunities that require different expertise, an improved value chain or much labour. In practice this means people need to be clustered more in cities and towns (need for city extensions) and the connection between the cities and towns should improve to create a network of cities. (Sally Murray, 2014)

Currently these potential benefits seem not exploited fully. Besides some single factories, no large production is to be found but for agro-processing. There are no examples of neighbouring villages that each fulfils a role in a production process or value chain.

Development strategies are developed on a district scale often ignoring the regional scale before jumping to the national level. (UN-Habitat and the Government of Rwanda are currently working on a Spatial Development Framework which has much more of a regional approach).

UN-Habitat distinguishes 5 types of human settlements in Rwanda, based upon availability of physical infrastructures and socio-economic key functions:

Typology	Capital city
Main characterises	Centrally located is the administrative centre of the country and the strongest city to drive its own economy and the national development, by attracting and generating national and international employment.
Functional complexity	<ul style="list-style-type: none"> - City-scale access to electricity, water, sewage and waste management services. National/international road and air transportation and communication. - Effective local and city-level transport system. - Provincial level of government institutions, judiciary and security services - Presence of national industry clusters supporting national economy and some international export markets - Presence of National Public and Private Universities or higher-learning institution - Public and private hospital and clinics - City level range of cultural, arts and sports centres
Number/names	1, Kigali
Inhabitants	1 Million
Growth rate	4,8% p.a.

Typology	Secondary Cities in Gateway Areas
Main characterises	Secondary cities strategically located at the cross-border areas to support international export trade and attract strong levels of job growth nationally and in their own regions.
Functional complexity	<ul style="list-style-type: none"> - City-scale access to electricity, water, sewage and waste management services. - National and District road transportation and communication. Effective local and city-level transport system. - Provincial and District level of government institutions, judiciary and security services - Presence of centres of manufacturing, energy, tourism or resource development and business services supporting national and local economies. - Presence of Vocational Training Centres and Technical Secondary Schools - Government District Hospital - City level range of cultural, arts and sports centres
Number/names	5+1 (Huye, Musanze, Nyagatare, Rubavu, Rusizi, later stage Kirehe)
Inhabitants	30 – 150 thousand
Growth rate	1.9-9.0%

Typology	Clustered Cities in Economic Development Areas
Main characterises	Medium sized cities strongly interconnected to create economic development areas to support and be supported by the capital city, providing a range of services and opportunities for employment within the urban population and the surrounding rural areas.
Functional complexity	<ul style="list-style-type: none"> - City-scale access to Electricity, Water management services - National and District road transportation and communication. Effective local and city-level transport system. - Basic levels of government institutions, judiciary and security services - Presence of a mix of local, medium sized and larger businesses serving local, and regional markets. - Wide ranges of Primary and Secondary education facilities and Vocational Training Centres - Government District Hospital - City level range of cultural and sports centres
Number/names	Muhanga, Ruhango, Nyanza, Rwamagana, Kayonza, Kabarore, Kibungo
Inhabitants	10 – 30 thousand
Growth rate	1.8-2.9%

Typology	Nodal towns
Main characterises	Small to Medium size urban centres strategically located at the cross-junctions of national and district roads, providing a range of services and opportunities for employment within the urban population and the surrounding rural sectors.
Functional complexity	<ul style="list-style-type: none"> - City-scale access to Electricity, Water management services - National and District road transportation and communication. Effective local and city-level transport system. - Basic levels of government institutions, judiciary and security services - Presence of a mix of local, medium sized and larger businesses serving local, and regional markets. - Wide ranges of Primary and Secondary education facilities and Vocational Training Centres

	- Government District Hospital
Number/names	8 Byumba, Karongi, Nyamagabe, Nyabihu, Gakenke, Nyamata, Nyamasheke, Gatsibo
Inhabitants	10 – 30 thousand
Growth rate	?

Typology	Rural settlements
Main characterises	Small Towns providing basic services and infrastructure to the rural population
Functional complexity	The main infrastructure and socio-economic functions cover Basic Services, Markets, basic Public Utilities and Facilities and Police.
Number/names	Many
Inhabitants	<10 thousand
Growth rate	?

* Country average is 2.74% p.a. in 2013, average urban growth rate is 4.32% p.a.

2. The urban rural – connection

Infrastructure and economic linkages

Given the global trend of economic growth in cities and towns, urban areas tend to draw the majority of domestic and international resources (public and private). This can have adverse effects on universal access to resources, services and opportunities, and warp the equitable distribution of economic and other benefits observed in the urbanisation process. Adequate public transportation networks and communication between urban and rural areas to allow universal benefit and access to quality public services, which tend to be concentrated in urban areas due to population density and economies of scale, seems to be a major need in Rwanda. Transport efficiency has major consequences for productivity, investment, supply chains, and the creation of decent jobs. (UN-Habitat- paper habitat III, 31 May 2015)

It is noticeable that those human settlements connected to the National Road network and with a well-structured transportation services tend to increase the range of Commercial Establishments, Industrial activities and Public recreational and Cultural Facilities. The central location and best transportation infrastructure in Kigali appear to be the main assets in which the network of socio-economic activities relies on. In the other human settlements, although road connection is good, less transportation services are available, which leads to fewer commercial establishments and industrial and cultural facilities.

	Central City	Secondary City	Clustered cities	Nodal Town	Rural towns
Road Connection	Green	Green	Green	Green	Orange
Transportation Services	Green	Green	Light Green	Yellow	Red
Commercial Establishments	Green	Green	Light Green	Yellow	Orange
Industries and manufacturing	Green	Light Green	Yellow	Orange	Red
Public Cultural Facilities	Green	Yellow	Orange	Orange	Red

Table 1: Relation between accessibility and economic activities by type of city (the greener the better).

Source: UN-Habitat

Education and labour market linkage

Employment and decent work are central to the achievement of inclusive, sustainable development. Stronger targeting of urban areas in terms of investments and subsidies is needed in order to generate more and better jobs and to address decent work deficits. An enabling environment for urban job creation through investment in education and skills linked to labour market demand is needed in Rwanda. (UN-Habitat- paper habitat III, 31 May 2015)

In the current situation Kigali concentrates the highest levels of education institutions thus more types of private professional and business are available. If properly addressed, the presence of industries in Secondary cities and Clustered cities offer the opportunity to enhance and adapt the curricula of the existing Vocational trainings centres and Technical schools to provide the skilled people needed.

	Central City	Secondary City	Clustered cities	Nodal Town	Rural towns
Primary and Secondary education	Green	Green	Green	Green	Green
Universities	Green	Light Green	Yellow	Orange	Red
Vocational/Technical centres	Green	Yellow	Yellow	Light Green	Orange
Research centres	Green	Orange	Red	Red	Red
Health Professionals	Green	Light Green	Yellow	Yellow	Red
Private Professionals	Green	Light Green	Yellow	Orange	Red
Commercial Establishments	Green	Green	Light Green	Yellow	Orange
Industries and manufacturing	Green	Light Green	Yellow	Orange	Orange

Table 2: Relation between education facilities and labour market by type of city (the greener the better). Source: UN-Habitat

Urban agriculture avant la lettre

All urban areas, even Kigali, have a strong connection with the wetlands surrounding or crossing the city. Kigali, for example, could be characterized as a group of 'urban islands' within the wetlands. Connecting these island is challenging, as the wetlands are protected and also within the city an important source of agriculture income. Many smaller cities are situated on ridges or a crossing of ridges and surrounded, penetrated or divided by wetlands. Having the wetlands in the city may complicate the connectivity within a city, the upside, however, is that food is produced very close to where people live. Further do the green areas capture stormwater and chill the cities.

3. Urban growth

3 types of new urban dwellers

As said, Rwanda's available land is limited. Younger people normally receive land at birth and/or when marrying (*umumani*). The transfer of land from parents to sons and daughters is

changing. Pieces of land are small (the median size of land is 0,33 Hectare) and further splitting often makes the lands too small to make a living out of it. Instead of land, more and more parents give their children money to pay for their studies. This stimulates a move to the city.

A second group of urban dwellers are (mainly) the younger people (62% of the country's population is below 25 years) of which a large group is more interested in working in the city than on the land.

The third group are the people (mainly men) who come from the countryside that find a job in the city, but whose family stays in the countryside. As the country is relatively small, most of these commute in the weekends.

Urban population trend

Urban population in Rwanda increased from 4.6% in 1978, to 5.5% in 1991, 16.9% in 2002 and 16.5% in 2012. At country level the East is growing faster than the west, mainly due to high rates of returnees and availability of land.

In 2002 the "urban population" was mainly concentrated in the centre and the southern parts of the country, in particular Kigali city followed by Muhanga and Huye. In 2012 City of Kigali concentrated the highest proportion of urban dwellers, but a noticeable urban population growth registered in the northern cities of Rubavu and Musanze.

Between 2002 and 2012 the highest urban growth registered is actually due to the emergence of new settlements with population sizes below 30,000 inhabitants. While in 2002 the urban population was distributed in 15 main settlements, of which only 20% had less than 30,000 inhabitants, in 2012 the urban population was distributed in 64 settlements of which 90,00% had less than 30,000 inhabitants.

But also an increase rural population

Despite this pull of the cities and the high amount of growth in the urban areas (4.32% p.a.), the absolute number of rural dwellers is projected to grow with 0,9 million (whilst urban population will grow with 0,7 million people) between 2014 and 2020. This means that despite the pull of the cities, the pressure on the rural land will increase further.

Typology	Urban population	Census 2002		Census 2012 ⁽¹⁾	
		Urban Settlements	%	Urban Settlements	%
Capital City	> 200,000	1	7%	1	1,50%
Secondary Cities/Clustered cities	100,000 – 200,000	0	0%	2	2,80%
	50,000 – 100,000	9	60%	2	2,80%
	30,000 – 50,000	2	13%	1	1,50%
Nodal Towns/ Clustered cities	10,000 – 30,000	2	13%	16	25,00%
Rural Settlements	< 10,000	1	7%	42	65,00%
	Total	15		64	

Table 3: Evolution of urban settlements between 2002 and 2012 based on their population. Source: UN-Habitat

Although the absolute growth of population is still the highest in the capital, the percentage growth is highest in the nodal towns and clustered cities. Also the absolute number of small clustered rural settlements that in potential grow to 10,000 inhabitants and above (and are then considered urban)

Despite the urban growth in clustered cities and nodal towns the range of private professionals and socio-economic activities available is still weak.

	Central City	Secondary City	Clustered cities	Nodal Town	Rural towns
Health Professionals	Green	Light Green	Yellow	Yellow	Red
Private Professionals	Green	Light Green	Yellow	Orange	Red
Commercial Establishments	Green	Green	Light Green	Yellow	Orange
Industries and manufacturing	Green	Light Green	Yellow	Orange	Orange
Public Cultural Facilities	Green	Yellow	Orange	Orange	Red

Table 4: Relation between labour force and socio-economic activities by type of city (the greener the better). Source: UN-Habitat

4. Not sufficient land available to continue developing cities like is being done

Room to extend cities is limited

The peculiar topographic conditions of Rwanda, in which less than 60% of its territory is suitable for urbanisation⁽²⁾, heavily determine the most suitable locations for urban development and urban extensions.

Wetlands consists of 860 marshlands that cover a total area of 278,536 ha, 101 lakes, which cover an area of 149,487 ha and 861 rivers with a combined length of 6,462 km. These areas play an important role in the functioning of ecosystems and are vital to the health of humans and wildlife⁽³⁾. Despite their strict legal protection, these areas continue to be occupied by unplanned activities (i.e. fish-farming, human settlement, agriculture, industries), which can have a harmful environmental impact if not properly managed.

Considering that slopes with steepness lower than 20-30% are required for developing urban areas, it is estimated that approximately 20% of the country is unsuitable for urbanisation. This challenging topography coupled with two rainy seasons determines the high vulnerability of the land to landslides and erosion, particularly important in areas where settlements and buildings have been constructed on steep slopes and where drainage has been poorly developed.

Despite the limited available land, cities and towns are still very wide spread. Newly issued plots in cities often have non urban dimensions, making the investment costs for basic infrastructure too high to facilitate all in the cities.

Market towns that are located along the national roads have a lot of potential, but at the same time also need an urgent solution. Economic activities that occur along these roads slow down traffic and cause dangerous situations (trucks, trade, school kids all use the same road)

The administrative system sets limits to growth

Rwanda is divided in 5 provinces (Kigali City, Northern, Southern, Eastern and Western), 30 Districts and 416 Sectors. From an urban development perspective the national government and districts are the most important entities. Besides this 'vertical relation', the relation between adjacent districts hardly exists. This results in situations where the same types of facilities are to be found in very close proximity because these are in two different districts. In the current context of limited funds available these situations should (and can be) avoided.

5. How to set up a polycentric system that leverages economic growth

Rwanda's biggest advantage, compared to its surrounding countries, is the high population density. If people and facilities are well connected, the advantages of proximity and lower costs per capita should give the country an economic boost. Currently most (private) investments and human capital are concentrated in Kigali.

To enhance the country's potential, the spatial system should be further defined and boundaries should be set to developments in order to leverage investments. A **polycentric system of medium size cities** seems most suitable, looking at the existing configuration of human settlements and their physical and financial development limitations. Feasible measurements that will contribute to a better and more balanced spatial-economic system are:

A. Increase density in the existing major cities

Although the population density countrywide is high, the density in the cities and towns is low compared to other medium size cities worldwide (the population is scattered all over the country). This fact, together with the limited buildable area and the need to feed the growing population can only conclude that current cities and settlements should be used more efficiently: more dense urban settlements will have more people benefit from available facilities and will connect the population better to the economic potential.

B. Develop a system of polycentric medium size cities

Based upon where the actual population growth occurs, the government strategy based on the rapid development of existing major cities, should also include the surrounding smaller human settlements to achieve the targeted urbanisation growth. Looking at the limitations of growth (wetlands, hills, areas prone to natural disasters) few areas seem suited for large urban developments. Therefore improving the connections between settlements to share facilities is a key strategy to lower costs and increase attractiveness.

C. Promote a well-structured system of cities

Each city has a role in the network according to its location, potential, traditions etcetera. The current development strategies all target the same economic sectors (trade, tourism, agro-processing) whilst diversification would be recommended (based upon local and regional potential). Complementarity of functions and an efficient network of (formal and informal) transport among the human settlement should be promoted to lower the overall amount of investments in new facilities.

D. Define economic development targets beyond the usual

As mentioned under 'C' there is room for other economic activities, starting with production industries for export. This often doesn't require high educated labour force, but requires a good location to have access to resources (electricity, water) and the export products.

E. Improve the administrative system and foster dialogue between adjacent districts

A polycentric system requires local decision makers and entrepreneurs working together. To promote continuous dialogue between the districts and in the future between the cities and towns would be the first step. This dialogue should lead to complementarity, joint investments and prevent adjacent districts from competing with one another. Further it will support decision makers at local level to join forces and ease communication with the national government. It should be noted that the existing intermediate administrative body, the provinces, currently don't fulfil this role, partly because their limited human resources, partly because the provincial borders don't coincide with potential economic regions.

F. Use digital means to increase accessibility to facilities and stimulate economic activities

Another benefit of high population density are the relatively low costs per capita to develop (free) Internet access to many people, not only in the urban areas, but also in the rural areas. Banking is done already by many people through mobile devices (mainly using text messages systems). Education, administrative procedures, trade of goods and many other things could be done through Internet applications. As Rwanda's population is young (70% of the population is below 35 years old) getting used to a digital environment might be easy.

G. Avoid the development of new settlements but make existing settlements compact

Bringing a long term perspective to local planning in order to include external socio-economic opportunities in the physical planning (city wide strategies). Starting point should be the existing configuration. Stronger enforcement of regulations (where to build and where not to) is needed to avoid new sprawl. When developing for increased population and economic activities, decision makers and planners should try to follow a decision making ladder that could look like this:

- Does (a function) already exist within a reasonable distance and if so, is connection possible
- If non existing, can surrounding settlements also benefit from development (and share costs)
- Is any land vacant or to be made vacant within the existing built-up area
- Is connection to a public transport hub possible?
- If no land is available in the existing built-up area, extension is needed. A good location for extension:
 - Doesn't conflict with agriculture
 - Is an area not prone to natural hazards
 - Is preferable located on or close to an existing road
 - Is directed towards a neighbouring settlement to increase interaction

Specific attention is needed for the spatial development of corridors and the market towns in these corridors. As mentioned earlier these currently cause dangerous situations and delay transports which will only increase if no interventions will be made.

6. Pro's and cons of promoting the development of polycentric cities

During the recent years in Rwanda various experts have promoted various ideas about where to concentrate investments. Some mean all efforts should be concentrated on Kigali to grow the city to 3-4 million inhabitants giving it sufficient critical mass to develop a decent public transport system, facilities and being an attractive place for (inter)national investors and high educated labour force.

Other experts have been promoting to slow down the population growth of the capital city and concentrate investments in the existing other intermediate cities to make these stronger economic centres.

In practice one can see the attractiveness of the capital city is unabated and will probably continue to be so. Intermediate cities that have (potential) business opportunities with surrounding countries are growing as well, but in a slower pace and without involving the smaller settlements, which are mushrooming around these cities. It is especially in these areas where agriculture and urban development occur simultaneously and often conflict. Without intervention, the agricultural lands are most likely to be further degraded by urban and rural sprawl, leading to less production (in a country with a growing population).

To maintain the relation between rural and urban – maintain the uniqueness of Rwanda's wetlands and ensure there will be sufficient room for agriculture to feed the population – it is critical to focus on the development of the connections of these cities and to set the building boundaries. Well-designed linkages between rural and urban should preserve the vulnerable arable lands while transferring from a mainly agricultural based economy towards an economy based on (agro) industry and services. This doesn't mean that a reform in agriculture is not necessary: as the population is growing and is expected to double on the long run, the efficiency should increase significantly.

If Rwanda manages to create these connections the facilities in the medium size cities and small towns can be used by more people, making these cities more attractive places to live. This might slow down the pull of the capital, although it of course will depend as well on the ability to develop different job typologies.

The management of medium size cities is less complex than cities like Kigali, although the administrative system will need to change into a system where responsibilities are shared with other districts. In Europe often larger (medium) size cities set up a formal cooperation with their surrounding towns and villages. Larger municipalities 'sell' their services to smaller towns or towns jointly hire experts. As for Rwanda it is now challenging to find well-qualified expertise for urban development (each district has their own experts) sharing not only facilities but also expertise might be a solution to lower costs and increase quality.

The financial resources needed to boost rapid urbanisation are insufficient, therefore out of the box solutions – combining urban planning, legal measurements and financing - are needed to implement the plans developed

Institutional capacity is a condition sine qua non when promoting local/regional economic growth through spatial interventions. Through training the understanding of local technicians and politicians increased, however short term political goals often hinder long-term developments.

7. What can other countries learn from the case of Rwanda and vice versa?

Sharing of functions is an actual theme in many European countries as well, albeit in different circumstances: in many rural areas the population is decreasing and concentrating in the cities. Young people often move away to places with more job opportunities: the cities. Leaving (mostly) older people behind in a shrinking socio-economic constellation. The shrinking population causes a decrease in the availability of facilities: shops close and public facilities getting centralised. Nowadays the extensive possibilities of a digital environment offer more options for people to stay in the rural areas. Municipalities have become more creative in sharing human capital and new services have been created or merged (super market becomes a post office, people develop their own library based upon trust, busses can be called or texted et cetera).

A well-organised polycentric urban system seems only possible if the dialogue between municipalities or districts is facilitated and/or formalized. Leadership is required as well as the willingness of local decision makers to share responsibilities.

As agriculture and human settlements are well integrated in Rwanda, the distance of food is low as long as people accept to consume mainly regional products. For Europeans this might be difficult to accept.

Rwanda will benefit from being a young population with a high ability to adjust and use digital means.

* * *

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Region integration research based on the industrialization of cultural resources

——Taking Huai-salt industrial district in China as example

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1. Preface

“It is very convenient for people in southeast of China, especially those in both south and north banks of Huaihe River, to boil sea-water to salt.” As a result, there is a proverb saying “It is because of the large amount of salt produced in Huainan-Huaibei that people in the whole country has enough salt to eat.” The salt of south and north banks of Huaihe River has the largest production and market. It is produced in coastal saltworks of Jiangsu, being distributed to Yangzhou, Taizhou and Chuzhou and then sold in 6 provinces, which include Henan, Jiangsu, Anhui, Jiangxi, Hubei and Hunan. Meanwhile, the salt has a long history that can be dated from Han Dynasty, always being the economic artery of feudal societies. Thus, as the foundation of an undertaking in Chinese feudal society, the salt plays a vital role in the development of both substantial space and nonmaterial space in the Chinese history.

Though people have already known cities like Yangzhou and Taizhou which are famous for the culture of their Huai salt, they scarcely focus on the origin of Huai salt like Lianyungang, Yancheng and especially Nantong. At the same time, the economy of once prosperous Huai salt District is in a recession because of the declination of salt production, by 2014, the 2014th GDP of six cities in Huai salt District ranked behind in 13 cities in Jiangsu province except for antong. The percentages of tertiary industry are only 40 to 42%, far behind China's average of 48.2%; the primary industry of Huaian, Lianyungang, Yancheng are at the higher level of more than 13%.

Table 1: The economic situation of six cities in Huai salt District

	City	2014th GDP	Ranking in Jiangsu province	The proportion of three industries
1	Lianyungang	1965.89	12	14.1:45.3:40.6
2	Yancheng	3835.62	7	13.5:46.5:40.0
3	Nantong	5652.69	4	6.5:50.8:42.7
4	Huaian	2455.39	11	15.96:41.1:42.94
5	Taizhou	3370.89	9	6.4:51.3:42.3
6	Yangzhou	3697.89	8	6.5:51.0:42.5

Thus, this paper is devoted to discuss these 3 questions in the aspect combined with city planning:

(1) With the coasts changing, what is the relation between the emergence of Huai salt production areas saltworks and the space of its development?

(2) Many cities and towns arise and flourish owing to producing salt, but also decay because of salt. In which perspectives that the correlation between salt industry and urban system mainly appears?

(3) As six cities in Huai salt District are facing an economic crisis, what measures should be taken to improve the core competitiveness of the city of Huai salt District?

2. Concept and Scope Definition

2.1 Concept definition

Huai salt District, named by its origin, is produced in northern coastal districts of the present Jiangsu province. The producing area of south Huai salt and north Huai salt located in the two sides of Huaihe River is one of four biggest producing areas of sea salt in ancient China.

2.2 Research Scope definition

Nowadays, as the range of Huai salt District is usually described by mere words like coastal districts of north Jiangsu, the description of its locations is still quite unclear. In this article, the research range of Huai salt District is refined to places mainly of coastal basin which chiefly includes Lianyungang, Yancheng and Nantong cities in south and north of Huaihe River as well as Taizhou, Huaian and Yangzhou.

If those areas mentioned above are divided into producing area, transiting area and distributing area, then coastal districts of Lianyungang, yancheng and Nantong mainly belong to the former; Huaian and Taizhou the middle (though Taizhou was also a primary salt-producing area in Han Dynasty); Yangzhou the distributing area sending salt to the whole country through crisscross rivers such as Yangtze River and the Great Cannel built in Sui Dynasty. If the range of producing area is refined, it centers on Lianyungang’s urban district, Ganyu county and Guannan county as well as Dafeng county, Dongtai country, Xiangshui country, Binhai country and Sheyang county of Yancheng, in addition, all places of Nantong.

Table 2: The huai salt District distribution

	City	County
producing area	Lianyungang	Ganyu
		Guanyun
		Downtown
		Guannan
	Yancheng	Dafeng
		Dongtai
		Xiangshui
		Binhai
		Sheyang
	Nantong	Tongzhou
		Rugao
		Rudong
		Haimen
		Qidong
		Haian
transiting area	Huaian	
	Taizhou	
distributing area	Yangzhou	

3. The Development of Huai Saltworks and the Transition of Urban System

Huai salt, can be originated from the stage of King Bi Liu of Wu, that is the beginning of Han Dynasty, flourishing in the middle of Tang Dynasty owing to Diwuqi and Yan Liu, getting popular in two Song Dynasties, Yuan and Min Dynasty, then reaching its golden age in Qing Dynasty, and finally declined in the republic of China.

Two major reasons why salt is produced around Huaihe River are its lush grass and thickness of salt in sea water. The producing area should neither be too close to sea nor too far away from sea, in case of the inconvenience of spreading out and filtering as well as the shortage of raw material of salt. As a result, there is a direct relation between the product of Huai salt and the change of coastline. In the past time, the locations of saltworks usually mean the locations of town. This paper tries to discuss the distribution location of saltworks along with the change of coastline and then comes to know that the changes of Huai saltworks and urban system, which are as follow:

3.1 The early stage of Huai saltworks' development—Han and Tang Dynasty

Before the Yellow River deprives Huaihe River of its channel, Huaihe River's coastline is quite steady. In Han Dynasty, Huai salt started its history and small-scale nest-like settlements inhabited by salt-boiling people appeared in some places. The earliest county of Jiangsu was founded in Ganyu. Guangling in Yangzhou, Hailing in Taizhou, of which location is unclear, and Yandu, that is, Yancheng, all of them became counties, bringing about the first prosperity for Huai salt districts as shown in figure 1. In Sui and Tang Dynasties, Yangzhou became the most important port city. And the Hailing county belonging to Yangzhou, owing to its quite close location to sea, was the major salt-producing area at that time. Then Huai salt was transported to Yangzhou and sold around the country.

The salt production is unbalanced between North and South as the former produced more than the latter did, however, this situation didn't completely change until the end of Tang Dynasty. The transportation modes are mainly land transportation and artificial water systems including Hangou canal and Tongyang canal.

Huai salt industry just began at this time and the urban system was not built up yet. Since it has been a long time from Han and Tang Dynasty to now and the relevant documents are not comprehensive enough, the knowledge about the location of Huai saltworks is quite rare. But according to the historical data and custom maps, **it could be deduced that it is Yangzhou and Taizhou areas that gather Huai salt's main producing areas and distributing center in integral whole region.**

3.2 The Initial Stage of Huai saltworks' Development—Song and Yuan Dynasty

At the beginning of Song Dynasty, both the occupation of Huaihe River's channel by the Yellow River and the Yangtze River's entering into sea brought a mass of sediment. The northern coastline was relatively steady, while the southern changed a lot, influencing severely on the production of south Huai salt. Therefore, the construction of Fangong Dyke made a big difference on the stabilization of southern Huai salt's production. Many saltworks were built and formed along with Fangong Dyke, spread over the west Fangong Dyke as the figure 2 shows.

In the Song and Yuan Dynasty, multiple riverways for transporting salt were dug. The salt was mainly transported by water, giving rise to the decrease of cost and increase of output. With the output of south Huai salt improved, the scale of north Huai salt was far less than that of south Huai salt and output of the former is only one tenth of the latter's.

As the Huai salt's status in the whole country rose, urban system was fundamentally shaped, driving the development of religion and trade. Some villages also turned into towns with the number of their population rising and the scale enlarging. **The major pattern that Chuzhou, Tongzhou and Taizhou in southern Huaihe River administer together the villages at the Fangong Dyke's west side was formed basically.**

3.3 The Heyday of Salt Industry's development—Ming and Qing Dynasty

In 1495, the Yellow River fully took up the channel of the Huaihe River, bringing a lot of sediment and accelerating the speed of coastline's removal, which restrained the development of south Huai saltworks. In the late Ming period, the distance between Fangong Dyke and coastline has reached tens of miles. For the reasons that, on the one hand, they were impacted not seriously, on the other hand, new technology of beaching and solarization appeared, north Huai saltworks developed quite fast; however, south Huai saltworks were restrained with the rapid change of coastline.

But thanks to the importance attached by Ming government to the development of coastline areas at two sides of Huaihe River, the event of "driving people from Jiangnan region to Jiangsu" initiated by Yuanzhang Zhu added the number of salt-boiling people in Huaihe River

district and kept the salt industry in south Huaihe river going on. At the end of Qing Dynasty, saltworks in Tongzhou was impacted relatively less by the occupation of Huaihe River's channel by the Yellow River. However, the Fangong Dyke in Yancheng was more than 70 miles far away from coastline leading to the thinner brine. Then many saltworks were merged and moved to the eastern side of Fangong Dyke. As the figure 3 shows, south Huaihe salt industry developed swiftly and violently. The production of Jinan saltworks took up 70% of the salt output in the Huaihe River's saltworks and its salt taxes were one third of the Huaihe River's. Because of those reasons, some new villages in north Huaihe River showed up, such as Haizhou's promotion to the Zhili state and Chenjiagang's change into town because of the rising number of Jinan saltworks's output.

Meanwhile, the flourish of salt industry resulted in the massive prosperity of industry and commerce, while the decrease of salt output led to the large-scale development of agriculture and farming industry. Those 2 conditions combined together perfected the pattern of channel.

Urban system got further development on the base of Song and Yuan's outcome. Compared with the population before, it increased a great many. On the one hand, some new towns appeared in the north Huaihe River and eastern bleak areas of Fangong Dyke, on the other hand, the size of present towns were enlarged. **System of administering is more completed as the pattern of Yangzhou, Taizhou and Huaian governing together villages around Fangong Dyke and north Huaihe River is formed.**



Figure 1: Huai saltworks distribution in Han



Figure 2: Huai saltworks distribution in Song

3.4 Decadence Period of Salt industry—the Republic of China

Qing government first let out Wuyou and Xinxing 2 lands in the east of Fangong Dyke. From the early 20th century, agriculture for salt regions in Huaihe River district brought by Qian Zhang became the primary industrial modes in northern Jiangsu showed in figure 4. After liberation, many township enterprises began to rise and granaries were established. Because of the rising price of their lands, Lianyungang turned into a city and Yancheng as well as Nantong became counties.

Salt industry declined; however, the development of agriculture lifted the status of salt-producing areas. **Instead of being attached to Yangzhou, Taizhou or Chuzhou, salt-producing areas around coastlines also became cities and counties like them.**



Figure 3: Huai saltworks distribution in Qing



Figure 4: Huai saltworks distribution in 1960s

3.5 Conclusion

From the above mentioned, it can be found out that the development of urban system in Jiangsu's Huainan-Huaibei areas roughly goes through 4 following stages with the rise and decline of Huai salt:

The first stage: City and town cluster centering on Yangzhou and Taizhou; The second stage: Chuzhou, Tongzhou and Taizhou governing together the villages and towns at the west side of Fangong Dyke; The third stage: Yangzhou, Taizhou and Huaian governing together the villages at two sides of Fangong Dyke and Huaibei district; Stage four: cities and counties founded in an independent way.

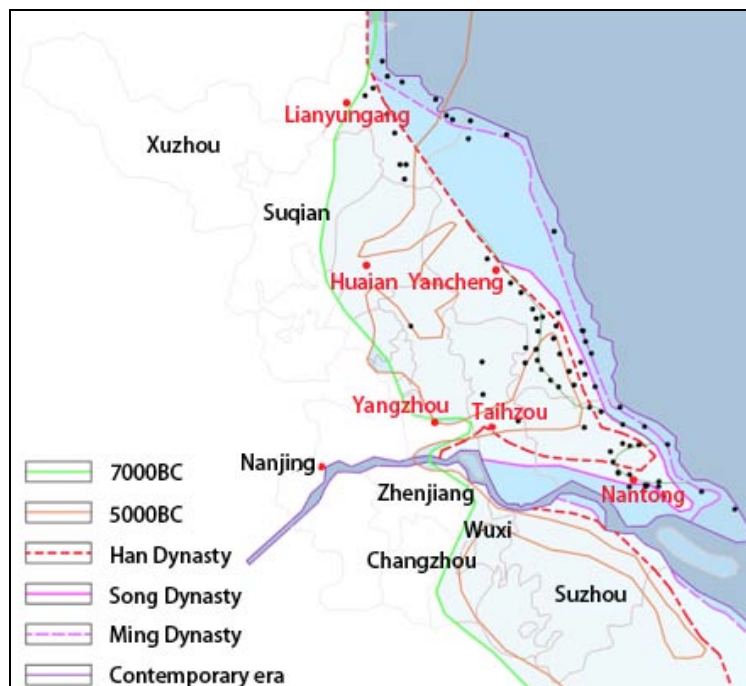


Figure 5: The congruence of Huai saltworks distribution in different times

4. The Influence on Research of spatial formation in regions and Culture by Huai Salt

The development of Huai salt does not only bring about the great change to space, but also speed up the advance of culture.

4.1 Promoting the formation of Landform—Heavy Trace of the Man-made

Different from other places in China, the south of Huai district and the north of Huai district have their own distinct history and the trace of artificialization. There are basically the plains with relatively short time of forming and loose soil. After analyzation of the terrain and landform of Jiangsu's coastline districts, it can be easily found that more or less there exist traces of artificilization in its coastlines and crisscross riverways.

(1) The Analyzation of Coastlines' Forming Reasons after Han Dynasty

It can be known from the analyzation and reference of coastline's historical data that forming reasons mainly falls into several aspects showed as following:

- The Yellow River's taking up Huaihe River's channels leads to dramatic change of coastline;
- The huge amounts of sediment brought by Yangtze River continuously in thousands years result in great change of estuary;
- The construction of Fangong Dyke in Song Dynasty leaves the coastlines in north Jiangsu changing quite little in nearly a thousand years from Song Dynasty to early Ming Dynasty;
- The defending seawall was built in Wanli Era of Ming Dynasty and rebuilt by the head of Nanhui county in Emperor Yongzheng's 11th year of Qing Dynasty, named as Qingong Embankment, which is roughly the coastline of present.

From the foregoing, on one hand, it is the natural reason to the coastline's formation—mainland's huge numbers of sediment brought by the Yellow River and Yangtze River leads to the coastline's dramatic change in only 1000 years after Han Dynasty. On the other hand, it is the man-made causes—the Fangong Dyke built by Zhongyan Fan and the local people as well as the embankment rebuilt in Ming and Qing Dynasty slow down the changing speed of the east coastlines from Lvsi to Funing. The region distribution of cities and villages are chiefly next to the distribution of coastlines and embankment. As a result, in places where the coastlines change a little exist dense distribution of saltworks and on the contrary, exist sparsely.

(2) Genetic Analysis of River System

Since the first canal built by Pi Liu in Han Dynasty, the need for transporting Huai salt generates many new canals. Nearly every saltworks has its own canal. In general, new canal has quite straight riverway, connecting sea and major canals. With the modification of coastlines, its estuary also moves eastwards.

Known from history, Zaohe River is the lifeblood of people living around it. The manufacture of salt depends on it to get brined and sunburnt. Large amounts of manufactured salt are transported to Fangong Dyke by it and then sent out from Chuanchanghe River to places around the world.

Meanwhile, with the outcome of Huai salt decreasing, agriculture starts to become the major industry, which increases the demand of diluting and irrigating saline-alkali soil. From the late Qing Dynasty to liberation, another batch of canals for irrigation were dug and many new small straight waterways were formed at the surround of present canals. Therefore, crisscross waterways in many places are basically all man-made, resulting in the existing shape and structure of terrain with the unique characteristics of north Jiangsu.

Table3: The main river system list

Space	River name	Property	Time	Function	
Ya nch eng	Dongtai	Sancang	Artificial	Tang and song dynasty	Saltworks transport
		Laoliangduo	Artificial	Tang and song dynasty	Saltworks transport
		Dongtai	Artificial	Tang and song dynasty	Saltworks transport
		Shibali	Artificial	Tang and song dynasty	Saltworks transport
		Heduo	Artificial	Tang and song dynasty	Saltworks transport
	Dafeng	Doulonggang	Nature	—	—
		Chuanchang	Artificial	Song dynasty	Saltworks transport
		Wanggang	Artificial	Song dynasty	Saltworks transport
		Jiangjie	Artificial	1950s	Agricultural irrigation
	Sheyang	Sheyang	Nature	—	—
Lia nyu ngan g	Guanyun	Yanhe	Artificial	Tang dynasty	Saltworks transport
		Guboshanhou	Artificial	1952s	Agricultural irrigation
		Xinyi	Artificial	1949s	Agricultural irrigation
	Guannan	Guanhe	Nature	—	—
		Old huanghe	Nature	—	—
		Zhongshan	Artificial	1934s	Flood drainage
Downtown	Huaishuxin	Artificial	1958s	Agricultural irrigation	
Tai zho u	Downtown	Taidong	Nature	Han dynasty	Saltworks transport
	Xinghua	Tongyang canal	Artificial	Han dynasty	Saltworks transport
		New tongyang canal canal	Artificial	1958s	irrigation & Flood drainage
		Bengyan	Nature	—	—
Na nto ng	Rudong	Jiuyugang	Artificial	1960s	Flood drainage
		Bencha canal	Artificial	Song dynasty	Saltworks transport
	Tongzhou	Tongqi canal	Artificial	1960s	Agricultural irrigation
		Tongyu canal	Artificial	1958s	Agricultural irrigation
		Tonglv canal	Artificial	Chunqiu period	Saltworks transport

4.2 Promoting the Cultural progress in the South of Yangtze River

The management of Huai saltworks attracts a great number of salt-boiling people and businessmen to be here. Salters are usually very wealthy, which produce lots of literary works owing to this appropriate atmosphere. The grandfather of Xueqin Cao was the wealthiest salter in Qing Dynasty, so that Xueqin Cao can depict the spaciousness, brightness and exquisiteness of Rong Mansion and Dagan Gardens.

The thought of making a living on the sea renders people living beside sea to pin their hope on gods. Hence, religion rises dramatically, leaving this area populated. It then turns into small villages and even cities and towns which brings unique characteristics for this place.

The working process of Huai salt itself is an intangible cultural heritage worth researching. Before the Western Han Dynasty, the way of manufacturing Huai salt was boiling; in Tang

Dynasty, a new boiling means was developed and outcome was increased massively as the production technology of Huai salt was enhanced; then in Ming Dynasty, even more advanced production technologies were developed as the salt was mainly produced by fried in mass in Huainan area and by beaching-solarization in Huaibei. The pictures of boiling seawater by Chenchun of Yong Le Da Dian in Si Ku Quan Shu records the manufacture process of Huainan salt in Yuan Dynasty in detail.

Most names of coastal villages in Jiangsu are related to the salt-manufacturing process of frying and solarization, such as: oven, weir, ridge, granary, ball, plate, dyke, beach, battlements and swing. There are many titles in Dongtai with the trace of sea salt like: First Oven, Fourth Oven, South Shen Oven and Third Ganary which are all deep impression left by Huai salt to this place.

5. Preliminary summary

5.1 The Direct Relation between the Urban System's Structure and Division of Function with the Management Demand of Salt Industry

Nowadays, most counties and towns are founded depending on the original management demand of salt industry. In Tang Dynasty, there were saltworks in Rugao of Nantong city. In Song Dynasty, Hailing's imperial office was moved to Rugao to govern eight biggest saltworks including Fengli, Jiaoxie, Dongtai and etc. In Qing Dynasty, Rugao was upgraded to a Zhili county. And now, it has become a county-level city as a famous city Jiangsu province for its history and culture. Meanwhile, the townships formed by saltworks were responsible for managing the specific production of Huai salt, while Taizhou, Huaian and Tongzhou, these 3 cities were responsible for the higher administration in Qing Dynasty. These cities with the same attributes fundamentally possess same space characteristics.

5.2 the Obvious Subordinate Relation between Transiting Cities and Salt-Producing Cities

In the heyday of Huai salt, salt-producing cities generally subordinated to transiting cities, while they also governed the inferior saltworks of town level. For example, in Han and Tang Dynasty, Taizhou was the major salt-producing district which subordinated to Yangzhou; however, in the period from Song and Yuan Dynasties to Ming and Qing Dynasties, its status rose and it became the transiting district of Huai salt administrating salt-producing counties like Hailing and Rugao. Similarly, Yandu County, that is Yancheng, subjects to Chuzhou in most time of history, also named as Huaian.

5.3 The Commonplace of "Era fault" between Villages

Owing to the impact of natural elements like the Yellow River, Huai saltworks were changing, too. Their construction, emergence and removal led to the establishment of new villages and towns in new areas by original saltworks. At the same time, old addresses were also reserved as the number of population probably falls down, leaving the old and the young. Yet the surrounding areas were mainly fields with salt and grass without many buildings. Old places were usually in possession of some architectural features and culture of the old days, while new ones were usually some buildings under construction. But the surrounding areas basically didn't have any historical interest. For instance, the original place of Grass Weir saltworks can dates back to Song Dynasty, nevertheless, Xituan, the latter site of Grass Weir saltworks with a rich cultural history didn't start until the end of Ming Dynasty. The fault on time basically exists in this area which is presented as: the closer to sea it is, the less of historical events it has and the much shorter of cities and towns' history.

5.4 "Inertia" Turns "Salt-Boiling People" into "Farmers"

In the late Qing Dynasty, the outcome of Huai salt declined with the change of coastlines. The ban of cultivating salty field met by salt-boiling people was a larger problem to them. However, the residents living here for centuries have already been used to the life here,

which explained why their living standard fell down, but only a few of the residents migrated. Qian zhang' salty agricultural areas turned a large number of salt-boiling people into farmers, which brought the new life as well as the development of agriculture. The plantation of cotton and the production of coarse fabric became the new industry here, and then brought about the evolution of industry and commerce. Granaries, food administration and factories all began to appear.

5.5 Huai Salt Forced the Formation of Present Urban System and Structure

Since ancient time to now, productive relation plays the decisive role in the form of matter. The history of Huainan-Huaibei originates from Han Dynasty and Huai salt began to flourish in Han. The production of Huai salt directly led to the increase of population in Huainan-Huaibei districts of Jiangsu and the appearance of villages and towns there. So, the formation of urban system in the research range is related closely to Huai salt. The management of hierarchal relationships in Huainan-Huaibei areas gave rise to that the superior management districts became the present main urban or county areas in the progress of history. Huai salt's productive relationships led immediately to saltworks' turning into cities and towns, while the decline of Huai salt made the original close productive relationship invalid. Then agriculture thrived and each district had their own administration so that the present urban system and spatial form took shape.

5.6 Nowadays the development bottleneck

Huai salt plays a crucial role for Huainan-Huaibei areas' development as primary productivity. However, Huai salt District is no longer what one was.

The Huai salt production technology is gradually lost and the history elements of the traditional elements are not protected. Meanwhile, spatial footprint of Huai salt in the east part of Jiangsu province is also constantly eroded by the modern city landscape.

The transformation from the huai salt industry to the agricultural production in the 1960 s cannot fundamentally reverse the recession phenomenon in Huai salt District, the economic data in 2014 has been fully proved this. Which is similar to the ruhr industrial area in the 1980s.

Hence, Huai salt district is facing two crucial problems: decadent space in Huai salt district and the decay of culture.

6. Expectation

Focusing on these two major economic and cultural problems, the traditional space is proposed to contain new industrial function: firstly, traditional production mode, which is offshore production and then inland transport, will be reversed. New industrial function will be implanted in. New logistic system from the inland to the sea will be established. Then, space system will be promoted to rebirth. Secondly, development of the theme tourism system of Huai salt, deeply digging traditional culture, promoting tourism by culture, all these measures will finally lead to the development of urban economy and culture.

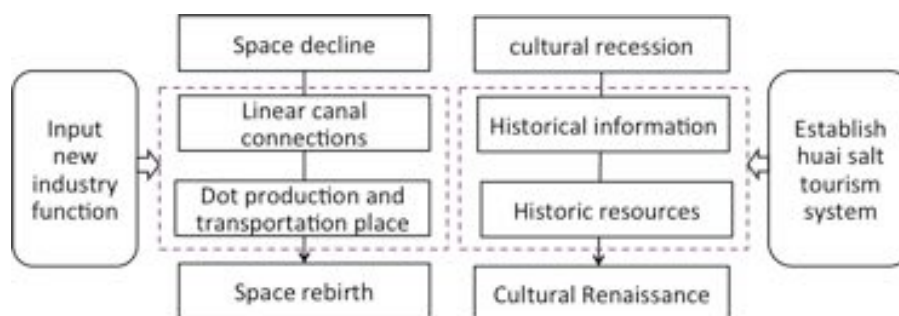


Figure 6: The utilization patterns of Regional culture in Huai salt District

6.1 Recover inner and inter city’s connection by utilizing traditional existed traffic

Traditionally, production was in the seaside. Then, using drainage to Taizhou and Huaian for transit, products got together in Yangzhou to spread all over via Beijing-Hangzhou Grand Canal and the Yangtze River. Currently, except main canal, the whole water traffic system cannot be used as a transport channel because of direpairing.

In the process of modernization, six cities in Huai salt District have different traffic advantages according to their own locations. The specific functions of transportation hub cities (Huaian, Yangzhou, Taizhou) and port cities (Lianyungang, Nantong and Yancheng) are further defined by ‘Urban System Planning of Jiangsu Province (2012-2013)’:

- (1) Huaian – Key hub city. Huaian is considered as one of regional center cities. As convenient railway, road and water transportation, Huaian will become the logistics distribution center.
- (2) Taizhou – Location of national secondary railway station and junction of coastal and the Yangtze River ‘T’-shape industrial belt.
- (3) Yangzhou - One of the four Grand Canal cities in China; Key city in Yangtze River economic belt with the linkage development of south part of Jiangsu.
- (4) Lianyungang - One of the ten top port cities in China; The highway important node.
- (5) Nantong - One of the ten top port cities in China; The hub in Yangtze River, which can transport nonstop or secondary transportation.
- (6) Yancheng – A city with both first-class open airport and seaport.

Table4: The Transportation Strength of six cities

	City	Transportation Strength
1	Lianyungang	Seaport\ Highway hub
2	Yancheng	Seaport\ Airport
3	Nantong	Seaport\ Yangtze River port
4	Huaian	Highway hub\ Airport\ Railway
5	Taizhou	Railway\ Yangtze River port
6	Yangzhou	Yangtze River port

However, external transport’s situation each does things in its own way. Transport links is not close to each other. Cities in Huai district make full use of traditional Huai salt transport corridor and inherit the traditional spatial form of Huai salt industry pattern. Strengthen industry linkage development of transportation together with seaport.

Accordingly, reverse recovery traditional transportation mode by using traditional Huai salt transport corridor. As an important component of a variety of regional link traffic, combined with many kinds of transportation, it will reinforce the competitiveness of the city development. Water transport is the lowest cost one of the big four-freight transportation mode with the largest capacity. And it can share the transportation resource inter-cities and make contribution to create a seaport, highway hub, airport, railway balanced transportation hub in north Jiangsu Huai salt District.

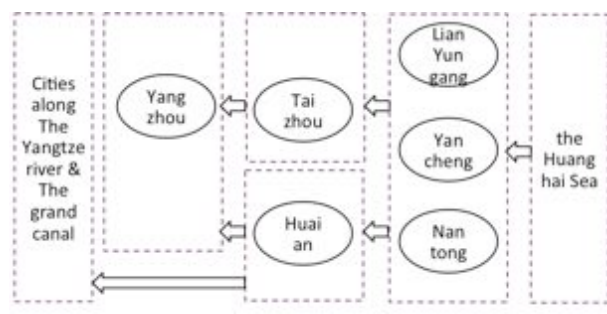


Figure 7: The transportation mode in the past

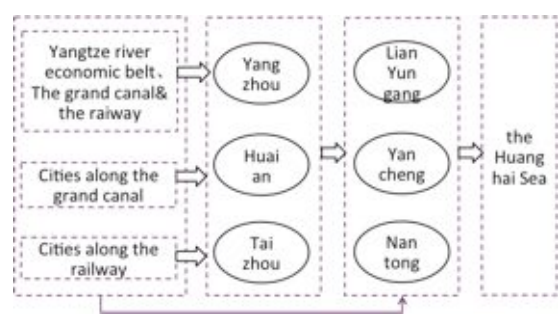


Figure 8: The transportation mode in the future

6.2 Inject new industrial function, Forming Networked ‘big dispersion, small concentration’ industrial spatial structure

(1) Drive the industry linkage development

Firstly, according to the different industrial development of the six cities, looking for the same Dominating urban industry relevance.

Secondly, Using the convenient transportation system between the six cities, driving the development of industry cluster together, in order to strengthen regional competitiveness in the future.

Table5: The Dominating urban industry of six cities in Huai salt District

	City	Dominating urban industry
1	Lianyungang	New material, new medicine, petrochemical, metallurgy
2	Yancheng	Automobile manufacture, machinery, textile, chemical industry
3	Nantong	textile, building, ships
4	Huaian	Salt chemical industry, electronic information, new materials, food manufacture
5	Taizhou	Medicine, electrical and mechanical, Marine, chemical industry
6	Yangzhou	Car shipping, mechanical and electrical equipment, petrochemical industry

Thirdly, concatenated township level logistics group or new industry group in the important industrial coupling axis, to realize the industrial linkage development of traffic axis.



Figure 9: The new transportation and industries distribution in Huai salt District

(2) Establish a "Huai salt theme" of tourism system

The correlation of Huai salt's industry results in the strong similarity in its spatial form. As a result, the author classifies and arranges the urban relations and representative places of Huai salt, hoping to form the "ancient Huai salt" a district pattern with punctate development, zonal connection and networks.

Huai saltworks are distributed intensively and there are canals connecting saltworks and seaside as well as the saltworks and Huaian and Taizhou. Huaian and Taizhou are linked with Yangzhou through canals and natural riverways. Then Yangzhou sends Huai salt to places around the country by Yangtze River and the great canal. Relevant sites like salters' parks and guild halls are mostly located in Yangzhou and Taizhou; salt-frying areas mainly next to saltworks; docks and ports chiefly along with riverways and canals. According to all features mentioned above, the author connects punctate special sites through present canals and rivers, then stresses the consistency of the area and forms a networked cultural district of Huai salt.

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Problems of Outer Mega Region in the Mature Period

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1. Introduction

Mega-City Regions⁽¹⁾ are aggregations of smaller constituent city regions that are functionally connected by transportation networks, telecommunications technologies, and other infrastructure. (P. Hall and K. Pain 2006)¹⁾ Mega regions (MRs), which are defined as agglomerations that have more than 10 million people, have various urban forms which are comprised of the conurbation extended from region core and spatially divided form looks like mega-city region and so on. (Y. Uchida and A. Okabe 2012)²⁾ In this paper, we would like to treat with MRs as the spatial concept including mega-city region.

MRs that can reallocate capital and creative labor generally experience population growth and have competitive global economic forces. (R. Florida 2007)³⁾ However, they will experience key challenges in the coming decades, including: rapid population growth, expansion of suburban landscapes, aging infrastructure, equity, strained ecosystem, and uneven and inequitable inter- and intra-regional growth patterns. To cope with these problems and promote the growth of MRs, multi-jurisdictional efforts crossing traditional jurisdictional boundaries are required.

Worldwide, there were 28 urban agglomerations with more than 10 million inhabitants in 2010, and 41 urban agglomerations will have over 10 million inhabitants by 2030. (UN 2014)⁴⁾ According to the United Nations, the population of almost all of these MRs will increase between 2010 and 2030; only Tokyo MR and Osaka MR will decrease during this period. With a stable or declining population, there is a zero-sum situation: population increases in one area entail necessary decreases elsewhere. As a result, uneven and inequitable inter- and intra-regional growth patterns will occur. When there is too great a difference in population increases and decreases between local municipalities, this may become a barrier to cooperation across jurisdictional boundaries. The larger the difference, the more likely that economic disparities will result in social and political tensions, with a high likelihood of urban unrest in unequal cities.

Y. Uchida and A. Okabe classified 48 global MRs with more than 10 million inhabitants within a 50 km radius into 10 categories by analyzing the diversity of their distributions in terms of population density ranges and two-dimensional distribution patterns. Tokyo and Osaka MRs belong to a typology with “population concentrated in the central of the main urban area, and their urban forms not very diffuse.” (Y. Uchida and A. Okabe 2012)²⁾

Both Tokyo and Osaka MRs, which are estimated to see population declines in the near future, are currently experiencing low-level population growth. This paper considers these two MRs in their mature period (i.e., with a stable population) and analyzes demographic movements to shed additional light onto the uneven and inequitable inter- and intra-regional growth patterns experienced in MRs. The next section will discuss the methodology and data, including the study areas. Sections 3-5 present results, while Section 6 concludes the paper..

2. Methodology

2.1 Tokyo and Osaka MRs

According to Y. Uchida and A. Okabe²⁾, Tokyo and Osaka are MRs in which the urban zone has conurbated. According to the national census of Japan, population in the Tokyo MR increased by 4.2% between 2005 through 2010⁵⁾, whereas population in the Osaka MR increased by only 0.6%. According to the population predictions of the United Nations (2014)⁴⁾, population will decrease by about 1.3% and 2.1% in the Tokyo and Osaka MRs,

respectively, between 2015 and 2030. In other words, the Tokyo MR is in the late growth period while the Osaka MR is approaching the mature period, and both will be in population decline in the near future.

2.2 Data

This paper uses 500m mesh population data for Osaka and Tokyo MRs from the national census' small-area statistics for 2000, 2005, and 2010⁶⁾. The distribution of population increase and decrease areas is analyzed for the urban area within the jurisdiction of each local municipalities, assumed to be within a 50 km radius of the former Tokyo city hall or the Osaka city hall.

2.3 Analysis Methods

This study carries out two analyses to understand the population increases and decreases and the changes in population density for the small-area units within each MR. First, rings are drawn at each 10 km radius from the center of the MR to capture the characteristics of each region of the urban area⁽²⁾. In this way, the dynamics of the population around the periphery (outer MR) can be compared with those of the central area (inner MR).

Then, to capture whether population increase in a specific district while population decreasing, population change in a specific district is also considered. Actually the uninterrupted area within a 500m radius of a main railroad station is defined as "a railway station sphere,"⁽³⁾ and the possibility that population gathers within these spheres is examined.

3. Area Structure Based on the Urban Zone

3.1 Tokyo MR

Tokyo MR has a population of over 32 million. Within the 50 km zone, there are approximately 23,000 mesh blocks with a population greater than one. 1,000 people/mesh block is equivalent to 40 people/ha, a density which is considered to be "urban zone" by the national census of Japan. **Figure 1** highlights the areas with more than 1,000 people/mesh. Tokyo MR has a conurbated area structure in which the urban zone expands out from the center in every direction.

For the whole Tokyo MR, the number of mesh blocks with more than 1,000 people/mesh block increased by 2.3% over the five year period between 2005 and 2010. In other words, the urban zone of the Tokyo MR has tended to enlarge.

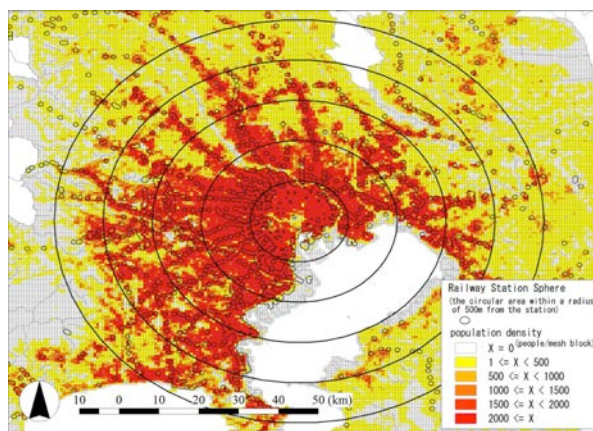


Figure 1. Population Density of the Tokyo MR (2010)

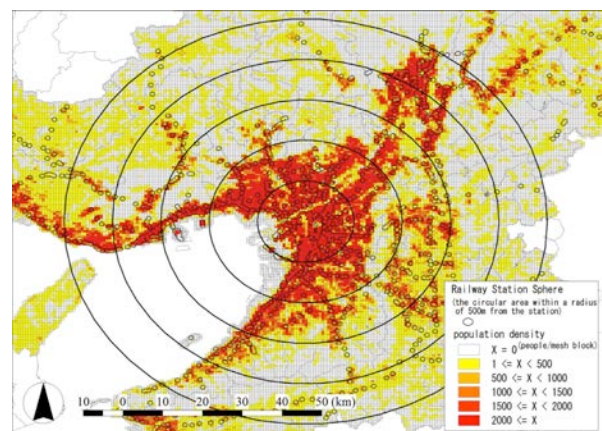


Figure 2. Population Density of the Osaka MR (2010)

3.2 Osaka MR

The Osaka MR has a population of over 16 million. Within the 50 km zone, there are approximately 17,000 mesh blocks with a population greater than one; 5,709 of these have more than 1,000 people/mesh block, as illustrated in **Figure 2**. Osaka MR has a conurbated structure with the urban zone expanding out from the center to the northeastern, western, and southwestern directions.

In the full Osaka MR, the number of mesh blocks with more than 1,000 people/mesh block increased by around 1% between 2005 and 2010. This slight change shows that there has been little expansion of the urban zone in Osaka MR over these five years. One could say that the city is almost in its mature period which almost none of urban zones enlarge.

4. Population Dynamics within the Inner and Outer Regions

Within the 50 km radius zones of the Tokyo and Osaka MRs, population dynamics are examined for five zones, ring-shaped one at every 10 km from the center.

4.1 Tokyo MR

When comparing the total population between 2005 and 2010, a 4.2% increase was shown in the whole Tokyo MR (**Table 1**). Considering each zone separately, zones within the 30 km saw an increase of 5.1% - 7.2% over these five years, a high rate of increase. However, the growth rate fell to 1.4% - 2.5% for the zones beyond 40 km. In the region outside of the 40 km zone, the population growth rate decreased further. In other words, a tendency for people to return to the city center was seen for each zone nearest to the center of the region, whereas a slower population growth tendency was seen from the 40 km zone outward.

Comparing the area within the 30 km radius circle with that outside the 40 km radius thus showed different distributions of urban zones and rates of population change. Therefore, we divide the Tokyo MR into an outer region (from the 40 km radius out) and an inner region (inside of the 30 km radius).

Table 1. Population Change in the Tokyo MR

		2005	2010	Rate of Change
10 km Zone	Pop	3,203,224	3,433,286	7.2%
	Dens.	3,897	4,146	6.4%
	UZ	702	713	1.6%
20 km Zone	Pop	8,565,421	9,004,811	5.1%
	Dens.	3,191	3,300	3.4%
	UZ	2,375	2,404	1.2%
30 km Zone	Pop	7,834,523	8,233,253	5.1%
	Dens.	1,729	1,789	3.5%
	UZ	2,810	2,912	3.6%
40 km Zone	Pop	7,591,936	7,779,663	2.5%
	Dens.	953	968	1.6%
	UZ	2,856	2,925	2.4%
50 km Zone	Pop	4,242,335	4,300,963	1.4%
	Dens.	575	581	1.0%
	UZ	1,591	1,621	1.9%
Total	Pop	31,437,439	32,751,976	4.2%
	Dens.	1,344	1,388	3.3%
	UZ	10,334	10,575	2.3%

UZ: Urban Zone, the number of mesh blocks with more than 1,000 persons/mesh block

Pop: Total population (people), Dens.: Average density (people/mesh block)

4.2 Osaka MR

Within the 50 km zone of the Osaka MR, the total population increased by 0.6%, but decreased from the 40 km zone outwards. Considering population density, inside of the 30 km zone the area with more than 1,000 people/mesh block (= 40 people/ha) grew over this

period. The mean population density of the urban zone of the Osaka MR was 2,551 people/mesh block (**Table 2**), and the urban zone was most concentrated inside of the 20 km zone, in particular. However, population density suddenly decreased from there outwards into the 40 km zone, because these zones have more areas with density lower than 1,000 people/mesh block.

Similarly in the Osaka MR, comparing inside of the 30 km zone with outside of the 40 km zone reveals different urban zone distributions and population changes. As such, the area from 40 km outwards is called the outer region, and that inside of the 30 km zone is called the inner region.

Table 2. Population Change in the Osaka MR

		2005	2010	Rate of Change
10 km Zone	Pop	3,680,436	3,706,296	0.7%
	Dens.	3,159	3,179	0.6%
	UZ	985	984	0.0%
20 km Zone	Pop	4,336,660	4,383,371	1.1%
	Dens.	1,799	1,788	-0.6%
	UZ	1,528	1,546	1.2%
30 km Zone	Pop	2,798,406	2,841,322	1.5%
	Dens.	1,103	1,108	0.5%
	UZ	1,053	1,077	2.3%
40 km Zone	Pop	3,250,997	3,235,234	-0.5%
	Dens.	649	640	-1.4%
	UZ	1,220	1,233	1.1%
50 km Zone	Pop	2,627,857	2,626,176	-0.1%
	Dens.	420	419	-0.2%
	UZ	851	869	2.1%
Total	Pop	16,694,356	16,792,399	0.6%
	Dens.	961	959	-0.2%
	UZ	5,637	5,709	1.3%

UZ: Urban Zone, the number of mesh blocks with more than 1,000 persons/mesh block

Pop: Total population (people), Dens.: Average density (people/mesh block)

5. Area Structure in Terms of the Distribution of Areas with Population Increase and Decrease

In this section, the distribution of areas with population increase and population decrease is analyzed in the Tokyo MR during the late growth period and in the Osaka MR for the mature period. Furthermore, the degree of agglomeration (Area Agglomeration Rates) of the population increase and population decrease areas is analyzed.

5.1 Inner MR and Outer MR

(1) Tokyo MR

After calculating differences in population growth from 2000 to 2005 and from 2005 to 2010 for each mesh block, areas of the Tokyo MR with population increases of more than 100 people (red) and population decreases of more than 100 people (blue) are shown in **Figure 3**. Comparing between 2000-2005 (left figure) and 2005-2010 (right figure), the number and portion of mesh blocks that had increased or decreased by more than 100 persons were less in 2005-2010 than in 2000-2005. Because population has increased in the Tokyo MR, the number of mesh blocks with decreasing population fell by about half.

Turning to the comparison of population dynamics in the inner and outer MRs, the number and portion of mesh blocks that had increased by more than 100 persons rose in the inner MR (**Table 3**). This is because the population increase was concentrated in the inner MR. In addition, in the outer MR, the number and the ratio of areas with population increase and decrease was much lower, showing that population is stagnant in the outer Tokyo MR.

To summarize, in the Tokyo MR during the late growth period, the area of population increase spreads throughout the inner MR, in which population growth continues. On the other hand, in the outer MR population growth is stagnant, and the number of areas with notable population change decreases.

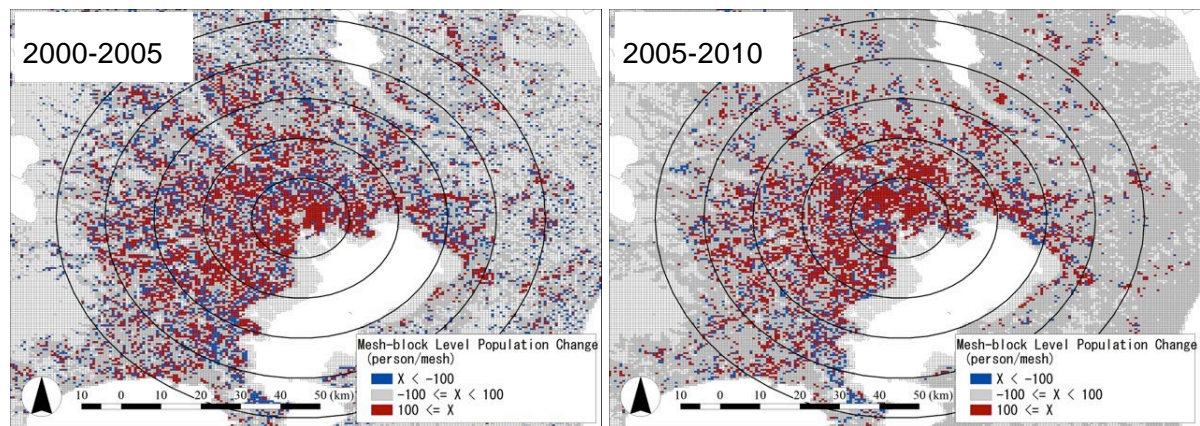


Figure 3. Distribution of Population Change in the Tokyo MR

Table 3. Mesh Block-level Population Change in the Tokyo MR

2000-2005	Population Change (persons/mesh block)						Total
	~-100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Inner MR	1,318 16.9%	732 9.4%	1,193 15.3%	1,036 13.3%	776 9.9%	2,755 35.3%	7,810 100%
Outer MR	2,025 16.1%	1,878 15.0%	3,040 24.2%	2,391 19.1%	1,162 9.3%	2,046 16.3%	12,542 100%
Total	3,343 16.4%	2,610 12.8%	4,233 20.8%	3,427 16.8%	1,938 9.5%	4,801 23.6%	20,352 100%

2005-2010	Population Change (persons/mesh block)						Total
	~-100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Inner MR	795 9.9%	580 7.3%	1,529 19.1%	1,377 17.2%	801 10.0%	2,916 36.5%	7,998 100%
Outer MR	912 6.0%	1,100 7.2%	6,674 44.0%	3,899 25.7%	988 6.5%	1,604 10.6%	15,177 100%
Total	1,707 7.4%	1,680 7.2%	8,203 35.4%	5,276 22.8%	1,789 7.7%	4,520 19.5%	23,175 100%

Note: Table cells show the changes in population in both the number of mesh blocks and the percentage of the overall area.

Based on a distribution map of mesh blocks that had increased or decreased in population by more than 100 persons, the agglomeration rates⁽⁴⁾ are calculated to quantitatively capture the degree to which increasing population mesh blocks and decreasing population mesh blocks are clustered. **Table 4** thus compares the agglomeration rates of mesh blocks with population growth and population decline for the Tokyo MR. The portion of mesh blocks with population increases is high in the inner MR, but there is no difference across the two areas for population decrease.

When comparing the overall agglomeration rates between 2005-2010 and 2000-2005 for the whole region, the agglomeration rate for areas with increasing population grows from 40.3% to 42.2%, but the agglomeration rate for mesh blocks with decreasing population almost does not change. This tendency is common to both the inner and outer MR.

In other words, in the Tokyo MR during the late growth period, the population growth districts tends to cluster, but the population decline districts are not clustered but instead spread across the whole region. The Tokyo MR continues to enjoy population growth; as a result,

the population growth districts spread and overlap with the existing urban zone. However, the population growth districts may not continue to cluster if the population declines in the future.

Table 4. Area Agglomeration Rates in the Tokyo MR

	2000-2005		2005-2010	
	Increased Mesh Blocks (+100~)	Decreased Mesh Blocks (~-100)	Increased Mesh Blocks (+100~)	Decreased Mesh Blocks (~-100)
Inner MR	46.7%	20.4%	49.3%	19.9%
Outer MR	27.9%	18.7%	29.5%	17.8%
Total	40.3%	19.6%	42.3%	18.8%

(2) Osaka MR

Using the same methods that were applied to the Tokyo MR for the Osaka MR results in **Figure 4**; mesh blocks where the population increased by more than 100 persons are shown in red and those where the population decreased by more than 100 persons are shown in blue. Comparing between 2005-2010 (right figure) and 2000-2005 (left figure), fewer mesh blocks, both in number and percentage, increased or decreased by more than 100 persons in 2005-2010 than in 2000-2005. This indicates that both districts experiencing population growth (via development) and population decline (due to depopulation) decreased for the region as a whole. In other words, it suggests that Osaka MR is in its mature period.

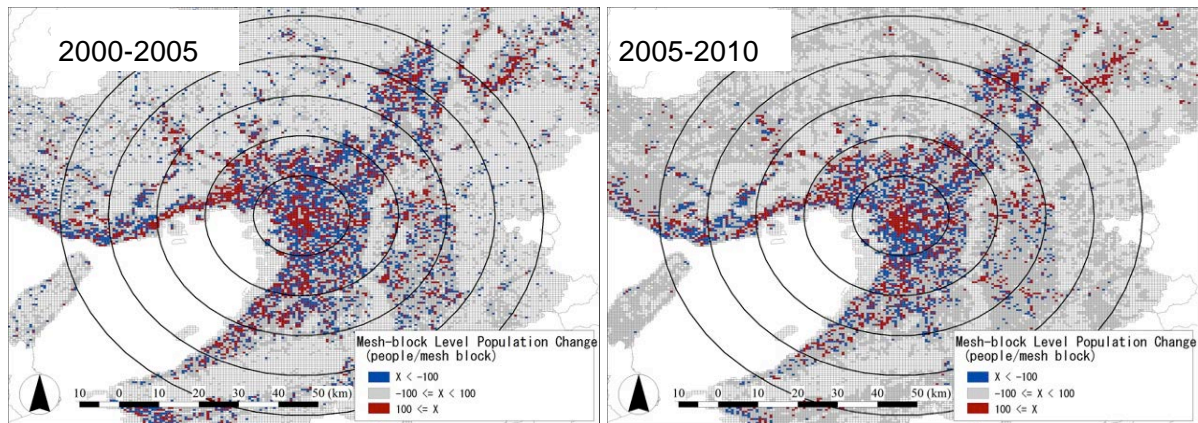


Figure 4. Distribution of Population Change in the Osaka MR

Next, population dynamics are compared between the inner MR and outer MR. Comparing 2005-2010 with 2000-2005 in the Osaka MR, the number and percentage of mesh blocks in which population increased or decreased by more than 100 persons decreased in both areas (**Table 5**). Further, the number and percentage of mesh blocks with only slight population changes (less than a +/-50 person change) increased. This tendency is particularly remarkable in the outer MR, where the portion of mesh blocks that increased or decreased by more than 100 people was halved.

Therefore, in the Osaka MR population hardly increased at all over these five years; the phenomena of population migration within the region, such as suburbanization and re-urbanization, were not confirmed. If this trend continues in the future, changes in the overall population distribution for the whole region will disappear and population will gradually trend towards lower density.

Table 6 compares the agglomeration rates between the inner MR and outer MR of Osaka MR. The higher agglomeration rate of population increase mesh blocks and population decrease mesh blocks in the inner MR indicates that, in the area with high population density, there is a tendency for population increase and decrease districts to be clustered together. When comparing the agglomeration rate between 2000-2005 and 2005-2010, the agglomeration rate of the increasing population mesh blocks drops from 32.8% to 28.9% for

the region as a whole. On the other hand, the agglomeration rate for decreasing population mesh blocks is almost unchanged.

Furthermore, in the inner MR, the agglomeration rate falls for both increasing population mesh blocks and decreasing population mesh blocks. In addition, in the outer MR, the agglomeration rates do not change for either type of mesh block. In other words, in Osaka MR in the mature period, the number of districts experiencing population growth decreases and tends to become less clustered in the inner MR. If this trend continues, within both the central and peripheral parts of the region, increasing and decreasing population areas will not be gathered together; this may result in an urban structure in which population density is equalized.

Table 5. Mesh Block-level Population Change in the Osaka MR

2000-2005	Population Change (persons/mesh block)						Total
	~ -100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Inner MR	1,507 26.2%	648 11.3%	1,014 17.7%	798 13.9%	455 7.9%	1,320 23.0%	5,742 100%
Outer MR	1,372 17.1%	1,252 15.6%	2,457 30.6%	1,455 18.1%	582 7.3%	905 11.3%	8,023 100%
Total	2,879 20.9%	1,900 13.8%	3,471 25.2%	2,253 16.4%	1,037 7.5%	2,225 16.2%	13,765 100%

2005-2010	Population Change (persons/mesh block)						Total
	~ -100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Inner MR	1,273 21.1%	620 10.3%	1,476 24.5%	1,088 18.1%	451 7.5%	1,117 18.5%	6,025 100%
Outer MR	775 7.1%	735 6.7%	5,633 51.4%	2,720 24.8%	449 4.1%	657 6.0%	10,969 100%
Total	2,048 12.1%	1,355 8.0%	7,109 41.8%	3,808 22.4%	900 5.3%	1,774 10.4%	16,994 100%

Note: Table cells show the changes in population in both the number of mesh blocks and the percentage of the overall area.

Table 6. Area Agglomeration Rates in the Osaka MR

	2000-2005		2005-2010	
	Increased Mesh Blocks (+100~)	Decreased Mesh Blocks (~-100)	Increased Mesh Blocks (+100~)	Decreased Mesh Blocks (~-100)
Inner MR	35.9%	35.2%	31.9%	32.7%
Outer MR	23.1%	25.2%	23.8%	26.6%
Total	32.8%	29.7%	28.9%	30.4%

5.2 Railway Station Spheres

(1) Tokyo MR

The area within a 500 m radius of a railroad station could be defined as a railway station sphere, and the dynamics of population within these areas were analyzed. In the inner MR of the Tokyo MR, the entire 10 km zone are covered by the railway station sphere. In addition, the railway station spheres touch along the traffic artery because the distances between stations are short within the 30 km zone. In the outer MR, the railway station sphere disperses.

Considering population change from 2005 through 2010, the rate of population increase in the railway station sphere is higher than that outside the railway station sphere (**Table 7**). This characteristic is particularly strong within the range of the 30 km zone. Similarly, the values for population density and rate of growth in population density are higher within the railway station sphere.

The 2010 population density within the railway station sphere of the Tokyo MR was 2,946 people/mesh block. This is similar to the 2,802 people/mesh block value for the population density of the whole conurbated area (1,000 people/mesh block). In addition, when comparing with Table 1, this value is approximately equivalent to the population density of the 20-30 km zone.

Table 7. Population Change in the Railway Station Sphere of the Tokyo MR

		2005	2010	Rate of Change
Railway Station Sphere	Pop	10,421,704	11,011,045	5.7%
	Dens.	2,808	2,946	4.9%
Outside Railway Station Sphere	Pop	21,015,735	21,740,931	3.5%
	Dens.	1,068	1,095	2.5%
Total	Pop	31,437,439	32,751,976	4.2%
	Dens.	1,344	1,388	3.2%

Pop: Total population (people), Dens.: Average density (people/mesh block)

The distributions of increasing population and decreasing population mesh blocks within the railway station sphere are shown in **Figure 5**. As mentioned above, blocks in which population grew by more than 100 people are in red; those where it decreased by more than 100 persons mesh are shown in blue.

In the Tokyo MR, the mesh blocks representing approximately 16% of the whole region become the railway station sphere. Using the data from 2005-2010, the portion of mesh blocks with increasing population in the railway station sphere is 41.7%. Conversely, the portion of mesh blocks with decreasing population is 11.6%, lower than that with increasing population. In other words, population is generally becoming more concentrated in the railway station sphere.

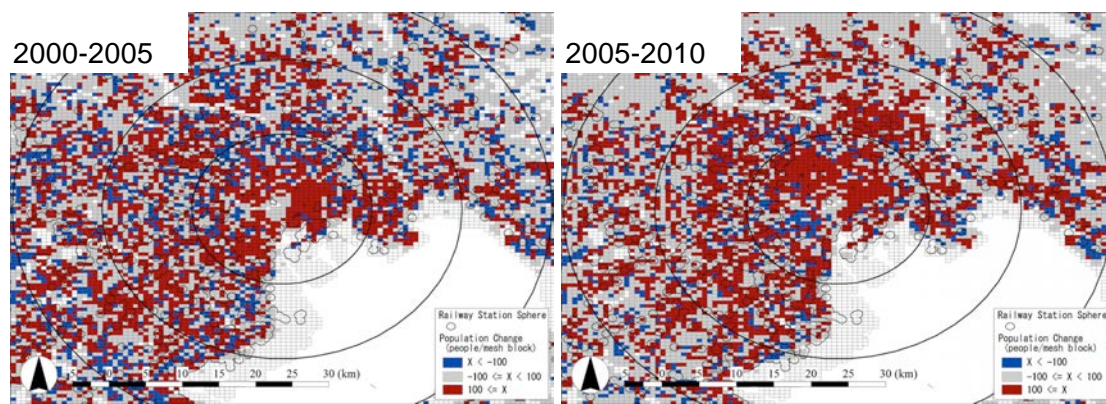


Figure 5. Mesh block-level Population Change in the Tokyo MR Railway Station Sphere

When comparing the data for the railway station sphere between 2000-2005 and 2005-2010 (**Table 8**), the number of mesh blocks with increasing population grows from 1,461 to 1,542, and the percentage grows from 40.4% to 41.7%. Furthermore, the number of mesh blocks with population decreases falls from 654 to 428, and the percentage falls from 17.9% to 11.6%.

On the other hand, outside of the railway station sphere, the number and the percentage of increasing population mesh blocks falls, as do the number and percentage of those with decreasing population. In other words, in the Tokyo MR in the late growth period, population concentration continues in the railway station sphere after 2000, showing a trend towards re-urbanization. However, areas with decreasing population do not increase outside the railway station sphere. As a result, while the Tokyo MR as a whole sees population growth, the population concentrates within the railway station sphere. However, Tokyo MR could become

a region where the population is not concentrated within the railway station sphere during the mature period, when the population will be decreasing.

Table 8. Mesh Block-level Population Change in the Tokyo MR Railway Station Sphere

2000-2005	Population Change (people/mesh block)						Total
	~ -100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Railway Station Sphere	654 17.9%	335 9.2%	456 12.5%	389 10.6%	358 9.8%	1,461 40.0%	3,653 100%
Outside Railway Station Sphere	2,689 16.1%	2,275 13.6%	3,777 22.6%	3,038 18.2%	1,580 9.5%	3,340 20.0%	16,699 100%
Total	3,343 16.4%	2,610 12.8%	4,233 20.8%	3,427 16.8%	1,938 9.5%	4,801 23.6%	20,352 100%

2005-2010	Population Change (people/mesh block)						Total
	~ -100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Railway Station Sphere	428 11.6%	295 8.0%	560 15.1%	488 13.2%	389 10.5%	1,542 41.7%	3,702 100%
Outside Railway Station Sphere	1,279 6.6%	1,385 7.1%	7,643 39.2%	4,788 24.6%	1,400 7.2%	2,978 15.3%	19,473 100%
Total	1,707 7.4%	1,680 7.2%	8,203 35.4%	5,276 22.8%	1,789 7.7%	4,520 19.5%	23,175 100%

Note: Table cells show the changes in population in both the number of mesh blocks and the percentage of the overall area.

(2) Osaka MR

About half of the 10 km zone in the Osaka MR belongs the railway station sphere, which also touch along the traffic artery because the distance between stations is short into the 20 km zone, where there are subway lines. However, these become less continuous in the 30 km zone. Overall approximately 15% of the mesh blocks in the region belong to the railway station sphere.

Considering population change between 2005 and 2010, the rate of population increase within the railway station sphere is higher than that outside the railway station sphere (**Table 9**). This is particularly noticeable within the 30 km zone. Similarly, the values for population density and its growth rate are higher within the railway station sphere. The 2010 population density in the railway station sphere of Osaka MR was 2,226 people/mesh block. This is at about the same level as the population density of the entire conurbated area: 2,551 people/mesh block. When comparing with Table 2, the value for the railway station sphere is approximately equivalent to the population density of the 10-20 km zone. Like the Tokyo MR, the railway station sphere is an area with high population density, particularly in the conurbated area.

Table 9. Population Change within the Railway Station Sphere of the Osaka MR

		2005	2010	Rate of Change
Railway Station Sphere	Pop	5,681,986	5,791,796	1.9%
	Dens.	2,196	2,226	1.3%
Outside Railway Station Sphere	Pop	11,012,370	11,000,603	-0.1%
	Dens.	745	738	-0.9%
Total	Pop	16,694,356	16,792,399	0.6%
	Dens.	961	959	-0.2%

Pop: Total population (people), Dens.: Average density (people/mesh block)

Figure 6 shows the characteristics of the distribution of mesh blocks with increasing and decreasing population within the railway station sphere; areas with population growth of more than 100 people are in red and those with decreases of more than 100 people are shown in

blue. When comparing the area inside the railway station sphere with that outside it, the portions of mesh blocks with increasing or decreasing population is higher within the railway station sphere than outside the railway station sphere. In other words, districts with population increases and decreases tend to concentrate within the area around the railway stations.

Using the data from 2005-2010, the portion of mesh blocks in the railway station sphere with increasing population was 23.9%, a fairly high value when compared to the whole region. The portion of mesh blocks with decreasing population is 22.6%. Although the railway station sphere is the area within which public transport use is the most convenient, the population increase districts do not necessarily cluster together.

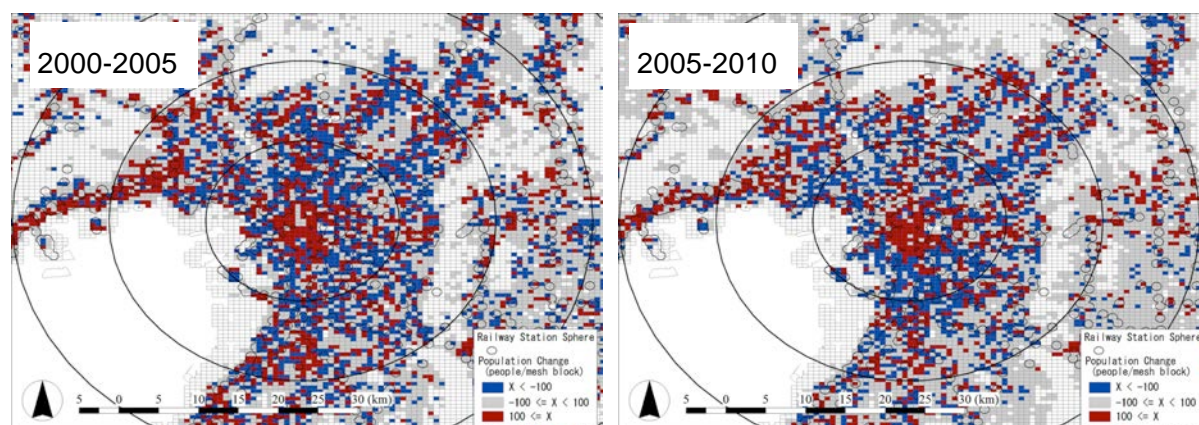


Figure 6. Mesh block-level Population Change in the Osaka MR Railway Station Sphere

When comparing the data between 2000-2005 and 2005-2010 (Table 10), the number and portion of mesh blocks with increasing population decline both within and outside of the railway station sphere. Furthermore, the number and the ratio of mesh blocks with decreasing population also declines. In other words, in the Osaka MR in the mature period, population in the region as a whole tends not to be concentrated. Even within the railway station sphere, population is not necessarily clustered. This tendency becomes more pronounced as the maturity of the city progresses.

Table 10. Mesh Block-level Population Change in the Osaka MR Railway Station Sphere

2000-2005	Population Change (people/mesh block)						Total
	~-100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Railway Station Sphere	700 27.6%	257 10.1%	343 13.5%	305 12.0%	201 7.9%	730 28.8%	2,536 100%
Outside Railway Station Sphere	2,179 19.4%	1,643 14.6%	3,128 27.9%	1,948 17.3%	836 7.4%	1,495 13.3%	11,229 100%
Total	2,879 20.9%	1,900 13.8%	3,471 25.2%	2,253 16.4%	1,037 7.5%	2,225 16.2%	13,765 100%

2005-2010	Population Change (people/mesh block)						Total
	~-100	-100 ~ -50	-50 ~ 0	0 ~ +50	+50 ~ +100	+100 ~	
Railway Station Sphere	582 22.6%	299 11.6%	501 19.4%	367 14.2%	212 8.2%	617 23.9%	2,578 100%
Outside Railway Station Sphere	1,466 10.2%	1,056 7.3%	6,608 45.8%	3,441 23.9%	688 4.8%	1,157 8.0%	14,416 100%
Total	2,048 12.1%	1,355 8.0%	7,109 41.8%	3,808 22.4%	900 5.3%	1,774 10.4%	16,994 100%

6. Conclusion

(1) The Difference between MRs in the Mature and Late Growth Periods

In Osaka MR in the mature period, when regional population has already begun to decrease, the expansion of the conurbated area with high population density has stopped, and the population has not increased. As a result, population density has begun to decrease and the number of areas with population increases or decreases has fallen.

In Tokyo MR in the late growth period, when the regional population is still increasing, population continues to increase in the central area, but population stagnation has already begun in the peripheral area. Meanwhile, the area of increasing population continues to spread within the city center, but the areas of population decrease have reduced throughout the whole region.

In other words, in a region transitioning from the late growth period to the mature period, the areas of population increase tend to change depending on population dynamics, but the areas of population decrease tend to decline equally. If the area of population decline does not spread and concentrate in the mature period, the conurbated area will not be reduced. If this trend continues, the result will be a regional structure in which population density is scattered and low.

(2) The Difference between the Inner MR and Outer MR

In the analysis, it was confirmed that in an outer MR in the mature period, population dynamics change from late growth period stagnation to decreasing population. Furthermore, the area with declining population tended to decrease in both regions, regardless of current population dynamics. A reduction in the area of increasing population was also confirmed in the outer MR. Population decrease and a reduction in the areas of population increase and decrease are not experienced equally throughout the whole region; the difference between the inner and outer regions will likely enlarge in the future.

(3) The Agglomeration of Population Increase and Decrease Areas

The agglomeration rate was calculated to confirm whether population increase and decrease areas are concentrated together. The results indicate that the agglomeration rate is high for increasing population areas during the population increase phase, but it is low in the population stagnation or decrease phase. This tendency is particularly noticeable in the inner MR.

In the outer MR, the change in the agglomeration rate is small in both population increase and decrease areas, regardless of the population dynamics. Considering the railway station sphere as the core area of population concentration, the portion of mesh blocks experiencing increasing population is high, and population growth areas tends to be concentrated in the railway station sphere in the late growth period. In the mature period, however, even within the railway station sphere, the portion of areas experiencing increasing population is not very high and the increasing population areas are not concentrated.

Based on these results, it is suggested that a hypodense urban zone without increasing population may be formed throughout the whole region if the local authorities do not act to control areas, centralize population, and draw the population into the regional core.

Acknowledgment

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Notes

- (1) Peter Hall describes the urban form of an Mega-City Region (MCR) as a series of anything between 20 and 50 cities and towns, physically separate but functionally networked, clustered around one or more larger central cities, and drawing economic strength from a new functional division of labor. In the POLYNET study, MCRs were defined as “aggregations of smaller constituent city regions: Functional Urban Regions, or

FUR. These comprise a core defined in terms of employment size and density, and a ring defined in terms of regular daily journeys (commuting) to the core" (P. Hall 2009).⁷⁾

- (2) The zone of the local government, to distinguish it from the site of the city hall.
- (3) Any mesh block with a center within a 500m radius of the railroad station is chosen.
- (4) The agglomeration rate is the ratio of the number of mesh blocks around a given mesh that are similar divided by the total number of neighboring mesh blocks.

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Urban Transformation of Deprived Neighborhoods in Metropolitan Regions: The Cases of Greater Manchester and the Ruhr Metropolitan Region

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Synopsis: Urban transformation is a complex process influenced by different challenges specifically in metropolitan regions facing structural change. Regeneration efforts in the wake of economic slowdown, highly dependent on financial means, present another challenging issue. This comparative study aims at exploring the mechanism that enabled successful urban transformation of deprived neighborhood.

1. Introduction

Urban transformation of deprived neighborhoods in metropolitan regions facing structural change is a complex process influenced by different forces and challenges. Displacing industrial production has positive impacts on the environment in regard to air, water and soil quality and consequently on the residents' health; nevertheless deprived living environments still remain as well as socio-economic and demographic challenges that can have a significant influence on the quality of life. In many cases these challenges are regarded as multiple deprivation indicators, which in some countries present the starting point for initiating a regeneration process.

Throughout the last century urban regeneration has undergone different phases, from the post-war reconstruction to 'holistic' approaches and urban renaissance at the end of the 20th century. In recent years new tendencies have strived towards the integration of regeneration policies and sustainable urban development focusing on an integrated approach in planning and implementation phase. The Leipzig Charter on Sustainable European Cities (European Commission 2007) with special attention to deprived neighborhoods emphasizes the importance of integrated urban development, economic stabilization and education. Focus is also on upgrading the physical environment, improvement of public open spaces, compact structure for energy-efficiency and improved urban transport in and between cities. In addition, the report *Cities of Tomorrow* (European Commission 2011) highlights the importance of compact urban form and quality of urban environments as well as flexible urban governance and strong metropolitan regions that enable good accessibility to services.

As argued by Cochrane (2007) and Tallon (2013), urban regeneration is multi-dimensional and can assume different approaches in different contexts. Although a global phenomenon (Leary and McCarthy 2013), it is framed with specific urban policies, which differ for growing and stagnating or shrinking cities. Two case studies presented here from the United Kingdom (UK) and Germany, are located in former heavy industrial cities undergoing structural change and facing different stages of shrinkage and stagnation.

In both countries, the United Kingdom (UK) and Germany, regeneration projects in deprived areas are identified as important issues. However, since improvements in the built environment are mostly related to investments that are profit oriented, deprived areas outside the inner city largely lack financial means because private sectors see no opportunity for profit. Adair *et al.* (2003) argue that deprived neighborhoods' lack in private investment is due to high uncertainty and risk of investment. Local and national governments, which are struggling with austerity measures due to the economic crisis in 2008/09, have limited sources to support improvements in urban fabric in the neighborhoods outside the inner city. This is especially emphasized in secondary cities due to their less important role in the national and global economy.

Adair *et al.* (2003) further emphasize the important role of the public sector in providing adequate policies to attract the investors and developers while at the same time balancing social and environmental aspects in vulnerable regeneration areas. Other authors (Squires *et al.* 2015, Karadimitriou *et al.* 2013) argue that innovative financing schemes are necessary to overcome effects of economic crisis, but also emphasize the importance of the public sector as an actor to ensure better security of investment and to enable non-market housing delivery.

The importance of non-market housing delivery is reflected in the issues of social justice, which is closely related to deprived neighborhoods and urban regeneration. In many cases regeneration and improved neighborhoods lead to increase of land and property values, which are considered as positive from an economic perspective. However, increase in value leads to gentrification; thus, the improvements in the built environment, which were aimed to, or should have been aimed to improve the quality of life of vulnerable population groups, are not reached. As argued by Leeds (2008) urban renaissance and other similar terms are conveniently used by policy makers to mask gentrification. Social mix, which is widely used when talking about improvements of deprived neighborhoods (*ibid.*), could also be considered as an initial phase of a gentrification process. Although it may have been intended to improve the socio-economic situation of the neighborhood in order to assure better access to goods and services, as well as to prevent social segregation (*ibid.*), it can also result in the increase of properties' values and unaffordable housing for the existing low-income population groups. Furthermore, effects of social mix are hard to measure and it is not clear what kind of social mix can assure benefits for the existing population (*ibid.*).

2. Challenges of deprived neighborhoods

The state of the living environment is one aspect that is taken into account when measuring the level of deprivation. Level of deprivation in the UK is measured by the Deprivation Index compounded of seven main indicators including income, employment, health, education, housing and services, crime and living environment (CLG 2011). English indices of deprivation are used to identify the most deprived areas and allocate means from the Neighborhood Renewal Fund as well as to initiate regeneration processes through the Neighborhood Management Pathfinders (McLennan n.d.).

In Germany deprived neighborhoods are identified according to the above average level of unemployment and socio-economic segregation. Most of those identified areas take part in a program "Districts with special development needs - the Socially Integrated City" ("Stadtteile mit besonderem Entwicklungsbedarf - Die soziale Stadt") and are characterized with

'above-average long-term and/or youth unemployment, large sections of the population relying on government transfer payments, the decline of local economies, increased migration away from the area of more affluent sectors of the population, structural and urban development deficits, vacant properties, disinvestment, tensions between social and/or ethnic groups, individual psychosocial problems such as resignation and substance abuse.'

BMVBS/BBR 2007, p.63

Governments in the UK and Germany have recognized that disadvantaged socio-economic groups in deprived neighborhoods are characterized by lower life expectancy compared to other neighborhoods (HC 2008, RKI 2005). Many factors influencing these differences could be related to economic and geographical accessibility as well as to the built and social environment (CSDH 2008). Lower life expectancy due to low levels of education and income, a high level of unemployment, as well as limited accessibility to and quality of services (Lopez 2012; Dannenberg, Frumkin and Jackson 2011) increase the gap between different population groups, contribute to the isolation of deprived neighborhoods and their possible further decline.

Köcker and Hornberg (2012, p. 84) argue that people in certain areas are considered vulnerable due to lack of individual and collective skills to cope adequately with certain challenges or to mitigate them. Limited political power and access to decision-making prevent these disadvantaged groups to influence policies and plans that could improve their living environments (CSDH 2008) and provide access to better education and employment opportunities. As a result these vulnerable population groups have to bear a greater environmental burden of disease than the total population (Köcker and Hornberg 2012).

Unlike other population groups, people with lower income have fewer opportunities to move away from their deprived living environment, although it may have negative influence on their health (Grant *et al.* 2012).

Regeneration efforts, although crucial for vulnerable population groups, are highly dependent on financial means, which in the wake of economic slowdown presents challenging issue. This is especially emphasized in those deprived neighborhoods, which still carry the burden of exploitation by the industrial development. Transforming these areas and enabling sustainable development while at the same time preserving the existing population and avoiding gentrification processes presents another challenging issue.

3. Methodology

The purpose of this study is to explore social, economic and environmental factors that may have contributed to the successful urban transformation of the deprived neighborhoods in the metropolitan regions. Success of urban transformation is reflected in the improvements of both, the physical and social environment of deprived neighborhoods. Therefore, two most-similar cases of neighborhoods in the cities of Salford in Greater Manchester in the UK and Gelsenkirchen in the Ruhr Metropolitan Region in Germany were chosen for comparison. Both cities have undertaken industrial expansion and are currently in the process of structural change, however differ in terms of regeneration outcome of deprived neighborhoods.

Case selection

Gelsenkirchen with the lowest life expectancy and the highest level of unemployment in the State of Nord-Rhein Westphalia (Izg.nrw n.d.) was identified as a most vulnerable city in the Ruhr Metropolitan Region. Bulmke-Hüllen, a deprived neighborhood in Gelsenkirchen, is taking part in the initiative "Districts with special development needs - the Socially Integrated City" - City renewal "South-East" and was selected as a neighborhood with the poorest accessibility and connectivity to other parts of the metropolis.

Based on the typology of the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR 2011) seven metropolitan regions were identified as similar to the Ruhr Metropolitan Region; however Greater Manchester and West Midland Conurbation were selected as the most relevant. Different regeneration projects in these metropolitan regions were identified and selection was narrowed down to only few of them located outside of the city centers.

New Broughton Village regeneration project in Lower Broughton in Salford was selected among six others as a successful case of urban regeneration. A main goal was to identify and understand mechanisms that lead to an improved physical and social environment as an important condition for reduction of environmental inequalities.

Research method

A qualitative approach was selected to explore the process of transformation and to understand the context necessary for its successful planning and implementation resulting in improved living and social environment as well as possible reduction of environmental inequalities. Main indicators for evaluating the regeneration process were selected from the Leipzig Charter on Sustainable European Cities (European Commission 2007) and narrowed down to: the state of the built environment, access to quality open spaces, and access to public transport and connectivity of the neighborhood to other parts of the city and metropolis. Main methods for the assessment of the built environment such as reconnaissance, observation, photo documentation, and mapping were combined with semi-structured interviews with main stakeholders in the regeneration process as well as residents.

Selected case studies are part of the dissertation which is still in progress. Descriptions of the case studies in this paper are based on preliminary analysis of the data obtained during the field work including interviews and own observations.

4. Case studies

New Broughton Village, Salford, Greater Manchester, UK

New Broughton Village regeneration project is located in Lower Broughton, Broughton Ward, East Salford district which is 1.5 km to the northwest of Manchester's City core and bounded on the west and south by the River Irwell. From the period of industrialization and rapid urbanization until the 1950 the Lower Broughton was densely populated. An industrial suburb, characterized by Victorian 'terraced' housing with only few amenities. The situation changed during the 1970s and 1980s when most of the terraced housing was demolished and replaced with low density housing (City of Salford 2004).

Constant population loss due to deindustrialization led to a sharp population decline. Drop in population and the high level of unemployment (Table 1) consequently led to a lower supply demand, which was coupled with lower purchasing power. Low level of education (Table 1) was a significant barrier to access the labor market and had influenced further the unemployment level. These conditions created an unsustainable environment for local services and retail as well as recreational and community facilities leading to their closure or abandonment. High levels of abandoned land and properties as well as increase in crime and anti-social behavior created a downward spiral and thus making the Lower Broughton neighborhood a place to be avoided.

Deprivation level in Broughton Ward in the year 2001 was significantly below the city level (Table 1). One of the indicators that is strongly related to deprivation, life expectancy, was the lowest in Broughton for women from 1999-2003 and one of the lowest (after Pendelton) for men in Salford (Salford NHS 2010, p.14).

Variable/Indicator	Broughton	Salford	England
2001 Population number	7,784 ¹	216,103 ¹	49,138,831 ¹
People aged 16-74 with no formal qualifications (%)	47.02 ¹	35.52 ¹	28.85 ¹
People aged 16-74: Economically active: Unemployed (%)	5.31 ¹	3.81 ¹	3.35 ¹
Level of deprivation (%)	67.17 ²	50.9 ³	

Table 1: Population in Broughton in 2001 with levels of education, unemployment and deprivation

¹ *Neighborhood Statistics 2001 – Office for National Statistics (ONS 2001)*

² *Neighborhood Statistics 2000 - Office for National Statistics (ONS 2000) – experimental data*

³ *Health Profile 2006, value for period 2001 (NHS 2006)*

High deprivation level was a main indicator for initiating the regeneration process in Lower Broughton.

Planning urban regeneration

Local authority has recognized the challenges of Lower Broughton and in the year 2000 appointed consultants Taylor Young to estimate the regeneration potentials of the area. Although the study was conducted in 2001, lack of financial means prevented the initiation of the urban regeneration. However, in 2003 the national government set up nine Housing Market Pathfinders - one of them being Manchester-Salford. Lower Broughton was one of the areas selected for improvement due to multiple indices of deprivation and convenient location in the proximity of Manchester City.

In 2004 public-private development agreement was formed between the Salford City Council and Countryside Properties, a private developer of new housing. Urban Vision, a public-private Joint Venture Partnership, was responsible for legal issues and overarching structure for the development as well as support to the City Council and Countryside Properties throughout community consultation and information about the overall progress.

During one year of consultation period with the local community and all other stakeholders, different themed workshops, steering group meetings and a study trip were organized to engage the existing community. The consultation activity provided information that was integrated into the strategic vision for the regeneration of the area in a form of *Supplementary Planning Document (SPD): Lower Broughton Design Code*, which was adopted in January 2006. Strategic vision was focused on the improvement of the quality of life and sustainable development of the area by tackling economic, social and environmental issues (Salford City Council, 2006). An action plan, developed to address issues related to Housing, Environment, Consultation and Community, Crime, Anti-Social Behaviour, Traffic and Transport, was led by six teams compounded of different experts.

The vision was shaped into a 'New Broughton Village' regeneration project for Lower Broughton. A new name for the project and the area, *New Broughton Village* was significant in order to change the perception of the area and provide it with a new identity.

Improvements in the built environment

Key element of the regeneration, as stated in the SPD, was to reverse the population loss and to attract new residents into the area in order to increase the number of inhabitants from 3,200 (in 2005) to 7.500-10.000 over the period of 10 to 12 years (Salford City Council, 2006). Population growth was seen as an important precondition to sustain a range of services and support the local economy. Significant improvements in the built environment are visible in Figure 1 by comparing the housing conditions and street layout in 2003 (right photograph) with a new housing development (left photograph). Mix of property types was envisioned to create vibrant and diverse community (Salford City Council, 2006). Market and non-market housing were designed in the same row or block and therefore, not differentiable from the outside (Figure 1, left).



Figure 1: Lower Broughton in Salford in 2003 on the left (source: Urban Vision) and new development on the left, May 2015 (source: author)

Implementation of the planned regeneration was divided into eight phases. In May 2015 Phase 6 (Figure 2) was still under construction, while Phases 5, 7 and 8 were in the initial

phase of site preparation. Starting with relatively unoccupied land in Phase 1 (Figure 2) gave chance to plan and build new homes prior to clearance of the old ones. This was a favorable situation for the existing residents of council housing because they were able to engage to a certain extent in planning their new homes, as well as in selecting their future neighbors, which may have contributed in preserving a strong community feeling in the area.

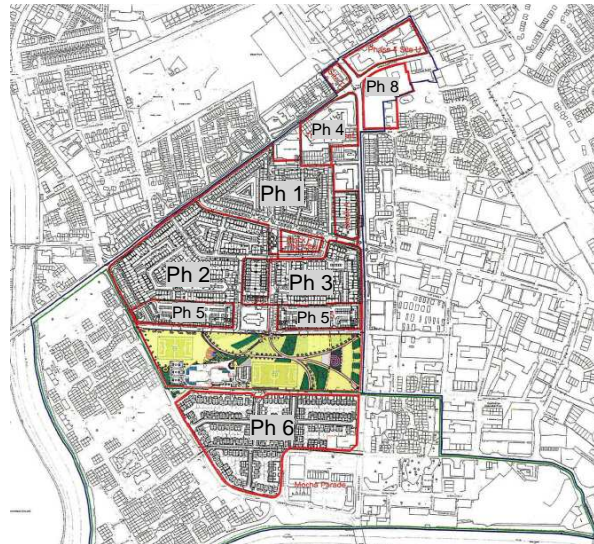


Figure 2: A part of the New Broughton Village implementation plan with phases (source: Urban Vision)

One Phase followed the other, based on the same principle it enabled that residents had to move only once. This was of great significance because the most of the residents were from the lower-income and vulnerable population groups, living in council housing.

However, the regeneration process is still not completed and it was interrupted and delayed due to the economic crisis in 2008/09. Some of the great challenges for the private developer were buffered by government support, which prevented further delays. Government funding to support affordable and social housing provided means for the developer to continue the regeneration process independent from selling the market properties. Furthermore, unfavorable location on the River Irwell's flooding area (a 100 year flood), meant that housing should be elevated, which added extra costs of the construction; however, all the costs related to flooding were taken over by the UK Environmental Agency.

Access to quality open spaces

Green Grosvenor Park, a new public open space in Lower Broughton, is located on a site of the century old Grosvenor Square Park, which was a center of local community. The Park was developed in an early phase of the regeneration process due to its role as a flooding basin with channels intended to conduit the water away from the settlement. This was introduced as one of the flood mitigation measures. Additionally, early development of the park was important for the provision of a new social infrastructure. A primary school "River View", which aimed to attract new residents, was built on the east side of the park. Many of its possible outdoor activities are extended to other parts of the park. The Park accommodates different activities and it is equipped with an outdoor gym and children's playground.

Albert Park, an existing park on the northern border of the regeneration area was significantly improved by the mechanism of Section 106 (S106) planning obligations agreement of the Town and Country Planning Act 1990. Planning obligations are aimed at supporting the development of sustainable communities (ODPM 2005) and help to assume different improvements in the neighborhood as a compensation for the newly developed area. In the case of the public open spaces:

Planning obligations should be used as a means to remedy local deficiencies in the quantity or quality of open space, sports and recreational provision. Local authorities will be justified in seeking planning obligations where the quantity or quality of provision is inadequate or under threat, or where new development increases local needs.

DCLG n.d., p. 13

Before the improvements took place, Albert Park was underused due to crime and safety concerns. One of the first actions was placing special barriers on the entrances that enable trolleys and wheel-chairs to enter, but prevent motorcycles, which were the main concern for the visitors due to their high speeds and theft.

In 2006, a voluntary group “Friends of Albert Park” started working together with the Neighborhood Management team on the improvements of the parks and supervision of its state and maintenance. They are still eligible for the various funding options for the further park improvements. Equipment for picnic area as well as table tennis area was financed from government funds. In addition to football pitch, bowling green and pavilion, as well as fitness area with equipment, new tennis terrains are planned to respond to diverse users demands. Besides areas for different sport activities, there are assigned locations for young children, which are fenced due to safety reasons. In the case of Albert Park, Urban Vision has developed a Master Plan, which was a starting point for the voluntary group to apply for funding and the improvements.

The voluntary group is meeting regularly and discussing a range of issues such as safety and maintenance but also appearance and future activities for the residents. They are cooperating with the police in regard to safety issues. Furthermore, Salford Community Leisure supports them in regard to the organization of activities and events. Additionally, the Neighborhood Manager networks them with various sectors that may be relevant in certain occasions, and their issues are reported on the regular Community Committee meetings.

Access to public transport and connectivity of the neighborhood

According to the SPD, enhancing accessibility in terms of better connectivity of the area with other parts of the city was one of the design principles (Salford City Council, 2006). Streets are designed to accommodate different modes of transport; however, there are no separate bike lanes. The emphasis was on the improvement of existing pedestrian routes as well as creating new pedestrian friendly routes (Figure 3) with slow traffic speeds (20km/h), while preserving the existing highway network. Although there are significant improvements in the street layout and street network, car use is still predominant in the area.

Private providers of bus services as a part of Transport for Greater Manchester are operating in the area on the two main corridors, Lower Broughton Road and Great Clowes Street. Public transport stops are located in comfortable walking distances of housing and are

universally accessible; however, evening and night timetables, as well as long waiting times at some points during the day are not responding to residents' needs, which reinforces car use.

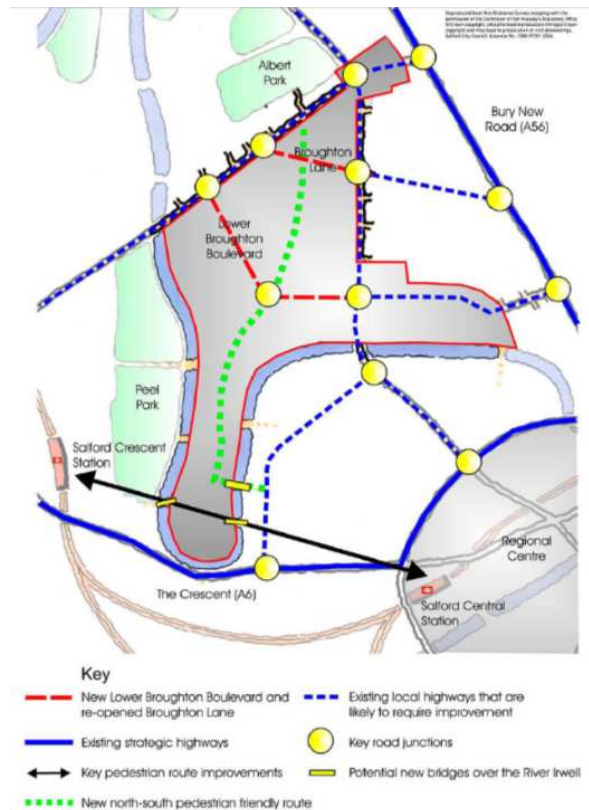


Figure 3: Key accessibility/connectivity improvements in the Lower Broughton redevelopment
 Source: SPD: Lower Broughton Design Code 2006, p. 32

Although the area has very good connections to Manchester City, the regional center and its traditional retail locations lacks direct lines to the west of Salford where new employment centers are developed. These and other issues related to transport are reported on Community Committee meetings and further stated on the Transport Advisory Group meetings in order to improve public transport in the area.

Evaluation of the urban regeneration

Regeneration process, which is still uncompleted, have already shown some positive trends in the area, such as the number of households in East Salford district which has increased by 10.8% from 2001-2011, while the amount of households with no adults in employment has decreased by 9.1% in the same period (Salford City Council 2015). Population number in Broughton ward has almost doubled in 2011 comparing to 2001 (Table 2), which is a positive trend. Although there is an improvement in education level it is still below the city average and England's average level (Table 2). Unemployment has increased in 2011 compared to 2001; however, that is a general trend which can be observed in Salford and England (Table 2).

Variable/Indicator	Broughton	Salford	England
2001 Population number	7,784	216,103	49,138,831
2011 Population number	13,869	233,933	53,012,456
People aged 16-74 with no formal qualifications (%) in 2001	47.02	35.52	28.85
People aged 16-74 with no formal qualifications (%) in 2011	38.90	27.10	22.50
People aged 16-74: Economically active: Unemployed (%) in 2001	5.31	3.81	3.35
People aged 16-74: Economically active: Unemployed (%) in 2011	7.30	5.20	4.40

Table 2: Population in Broughton in 2001 and 2011 with levels of education and unemployment

Source: ONS 2001 (values for 2001) and ONS 2011 (values for 2011)

Indices of deprivation have been changed several times since the year 2000, and they are not comparable due to changes in geographical units, domains and subdomains (Office of the Deputy Prime Minister 2004).

Although life expectancy at birth has improved in the Broughton Ward from 2008-2012 it is still low (70,4 years for men and 76,7 women) when compared to the city of Salford (75,5 years for men and 80,1 years for women) and lower than the national level (78,9 for men and 82,8 for women) (Public Health England 2013, p. 17). However, the time period from 2006 when the changes in the built and social environment were first initiated until today is too short to be reflected in the increase of life expectancy in a population.

It is important to understand the regeneration area in larger context to identify other factors that may have also influenced the improvements and positive trends in the area. Lower Broughton regeneration cannot be regarded as an isolated project and its initiation may be related to other events, such as Salford Quays regeneration in the western part of the city of Salford, which was labeled as successful. Additionally, British Broadcasting Corporation (BBC) announced in 2004 that they plan to move some of their production to Salford or Manchester (Breen 2004) and eventually selected Salford and its newly developed “Media City” on Salford Quays in 2006 (Deans 2006). This probably has had some influence on other regeneration projects including Lower Broughton.

Furthermore, other urban regeneration initiatives in East Salford district, such as the government initiative “New Deal for Communities in Charlestown and Lower Kersal” have helped to improve the perception of the area. Due to their experience in community engagement they were able to transfer their knowledge to Lower Broughton.

Bulmke-Hüllen, Gelsenkirchen, Ruhr Metropolitan Region, Germany

Bulmke-Hüllen is part of the administrative district Gelsenkirchen-Mitte located next to the city center with nearly 23,500 inhabitants (Stadt Gelsenkirchen 2010). On the south of the area there is a large brownfield site “Schalker Verein”. Bulmke-Hüllen was created from the

scratch during the industrialization period and it was densely populated; however, the situation has changed after the closure of the industrial plants, when structural change was initiated.

As a result of structural change, dramatic loss of population, as well as high levels of unemployment in Bulmke-Hüllen compared to the whole city of Gelsenkirchen (Stadt Gelsenkirchen 2011) created an unsustainable environment for local services and its further decline. In the year 2011 unemployment rate had reached 18,62% in the area (Stadt Gelsenkirchen 2011), which is 3,72% more than on city level. Life expectancy at birth in Gelsenkirchen in 2010-2012 was 74,62 years for men and 80,19 years for women (Izg.nrw n.d.), which is 3,1 years less for men and 2,61 years less for women than the national average (Statistische Bundesamt 2014). According to the Census 2011, the proportion of the population leaving school without qualifications was 13,4 in Gelsenkirchen (Izg.nrw n.d.a), which was higher comparing to 3,8 on the national level (Statistisches Bundesamt 2015).

In 2011, disposable income of household in Gelsenkirchen was with 79,4% compared to national average (100%) the lowest in the State of North Rhine-Westphalia (Izg.nrw n.d.b).

The difficult socio-economic situation was tackled through the national program "Districts with special development needs - the Socially Integrated City" ("Stadtteile mit besonderem Entwicklungsbedarf - Die soziale Stadt"). It was a part of the urban development policy as a government's response to the increasing amount of districts with special problems which were caused around 1970 by a deindustrialisation and growing socio-spatial segregation in urban areas (Krummacher *et al* 2003). As a part of the "District Program Gelsenkirchen South-East" („Stadtteilprogramm Gelsenkirchen Süd-Ost“) Bulmke-Hüllen has been taking part in this program since 2002 (Stadt Gelsenkirchen n.d.).

The urban renewal program has four main work fields:

- Improvement of housing, residential environment, traffic situation and urban ecology
- Strengthening of local economy, creation jobs and qualification opportunities
- Social work within the districts for a better social cohesion
- Participation and activation of the residents

Stadt Gelsenkirchen n.d.

This incorporates an interdisciplinary approach and horizontal cooperation between different departments on the municipal level, as well as inclusion of all stakeholders and active participation of residents aimed at improving local conditions holistically (MWEBWV 2011). Projects are funded from the European, national and state funds as well as from municipal funds for a limited time period (*ibid.*).

Improvements in the built environment

Improvements in the built environment are only one aspect of the renewal program in Bülmke-Hüllen, which has very strong emphasis on social integration. Housing improvement is focused on the enhancement of the existing housing stock, rather than new housing development. The most important project in this area is the conversion of the 100 ha brownfield "Schalker Verein" into a commercial area (Soziale Stadt NRW 2015). This former steelwork industrial plant, which has operated until 2004, is now equipped with solar panels for energy production; nevertheless, no other improvements took place so far (Figure 4).



Figure 4: One of the abandon buildings on the site of Schalker Verein. View from the Kesselstr., June 2014 (source: author)

In the north of the “Socially Integrated City” program area “South-East” (“Südost”), a large multi-story residential building “Tossehof” was built up in the 1970’s. It was deconstructed and restored in the period from 2005 - 2012 in order to improve the appearance and functionality; moreover, social struggles in the neighborhood were also reduced. Limited access to retail was one of the challenges, which was tackled by opening the alternative supermarket “Carekauf” in 2009. Carekauf was envisioned as an integrative supermarket supported by the big supermarket chain REWE and charitable organization Caritas to offer affordable prices to the vulnerable population groups in Tossenhof (Stockmann 2009). Its social dimension of employing disabled and long-term unemployed people was coupled with a special home delivery service for elderly (*ibid.*). However, purchasing power of residents was very low, and although highly supported from different actors it was unsustainable for the supermarket to operate, which led to its closure in 2012 (WAZ 2012).

Access to quality open spaces

There is a relatively high amount of green spaces, 14,8%, in Bulmke-Hüllen compared to the city level of 11,5% (Stadt Gelsenkirchen 2010). Area is characterized with many allotment gardens as well as parks and open places. One of the initiatives of the urban renewal was the refurbishment of the playground in one of the biggest parks in the area, Bulmker Park. Park is highly used by local residents during the daytime, while underused during the night due to bad lighting and security issues.

In the north-west of the old industrial site “Schalker Verein”, public open space “Garden for Residents Orange Square” (“Bürgergarten Orangeplatz”) was renewed as a part of the initiative “Socially Integrated City” and reopened in 2006 (Stadt Gelsenkirchen 2007). Although planned in cooperation with local residents, the park is marked as a place which is rarely used due to safety concerns.

Access to public transport and connectivity of the neighborhood

The bus stop network is on a walkable distance of 400m, universally accessible; however there is a lack in frequent timetables, which is for most of the residents a reason to use the

car. Although many of them, 18,62% are unemployed (Stadt Gelsenkirchen 2011) or on low-income, they opt for car use due to inefficient public transport, which is additional burden for these vulnerable population groups.

A street network with a high number of dead ends makes the area less attractive for walking and biking. Furthermore, barriers such as a fenced open sewer canal *Sellmannsbach*, a part of the River Emscher's system, prevents direct routes from the east of the neighborhood to the city center. The canal's transformation is planned by 2017/18 (Emschergenossenschaft 2015), which could improve the situation regarding the connectivity of the neighborhood.

5. Cases comparison

In this paper Lower Broughton urban regeneration is evaluated as successful and certain aspects are compared with the urban regeneration in Bulmke-Hüllen in Gelsenkirchen, which has showed only modest improvements. Urban regeneration strategies in both areas aimed to improve built and social environment of deprived neighborhoods. It was recognized that only a holistic and integrated approach can overall improve the situation.

Different levels of government and governance were employed to reach the goals. In the case of Salford six teams were formed to tackle the issues identified as the most important in Lower Broughton. Cooperation of different actors and experts in improving those aspects as well as meaningful citizens' involvement has proven to be crucial for the success of the project. Community Committee meetings where residents including vulnerable population groups could present and discuss important issues in their neighborhood gave them a chance to influence the situation in their living environment. Since an important aspect of the urban regeneration is not only to improve the physical environment, but also to create sustainable communities and improve the social environment, direct involvement of residents plays an important role in achieving that goal.

In Bulmke-Hüllen the greater emphasis was on the social integration, rather than on the improvements in the built environment. Except for the high-rise residential buildings in Tossenhof, there were only very limited improvements of certain parks, playgrounds and school yards compared to the new development in Lower Broughton. It can be assumed that new residential buildings, high quality open spaces and the new school had significantly increased the population of Lower Broughton.

The new developments have also enabled an improved street network and direct street connectivity instead of cul-de-sacs, which was the case before the regeneration in Lower Broughton. A better street network, as well as cooperation with the police and the Neighborhood Management Team created a safer environment. Similar mechanism was employed for the Albert Park, where Friends of Albert Park group is working together with Neighborhood Management Team and other sectors to sustain the park and make it a central point for local residents. This approach of direct engagement of local residents in sustaining the park has benefits not only for the visible changes in the park but also for the social cohesion and for strengthening the community.

Although "Orange Square" in Bulmke-Hüllen was improved according to residents' suggestions in the planning phase, it is still underused, meaning that some important aspects

such as safety, were not completely solved. The example of Alfred Park and direct involvement of residents would probably have the beneficial effects in the case of Orange Square as well.

6. Conclusions

Besides the visible improvements of the built environment, factors contributing to the successful urban transformation and reduction of environmental inequalities in Lower Broughton are related to the access of vulnerable population groups to decision-making as well as to better education and employment opportunities. Furthermore, success of the urban regeneration was highly dependent on meaningful and active community involvement, as well as cooperation of different sectors and stakeholders. In Bulmke-Hüllen cooperation of different sectors was planned, however horizontal collaboration was developed only to a certain level which gave modest results.

In the case of Salford, proximity to Manchester plays an important role in regenerating Lower Broughton, however initiating the regeneration process was highly dependent on national government support. Furthermore, regeneration efforts and private developer were highly supported by both local and national government. A significant event, such as moving BBC offices to Salford, was an important signal for developers to invest in the city.

Although, different external factors may have influenced the urban regeneration it is of great significance that local community is not only playing a passive role in the regeneration, but rather being an active stakeholder involved in the regeneration process from its very beginning to the end and furthermore. It is the local government that made provisions for the local community to be a part of the regeneration process. Involvement and maintenance after the completed project is crucial to reinforce sustainability.

Maintenance and park improvements can be provided by using different means and ways of financing and organization, such as in the case of Lower Broughton. Albert Park was underused before the regeneration due to safety concerns, which is a case in many deprived neighborhoods. Thus, a simple provision of a green area without meaningful improvements is insufficient. A good quality and maintenance are keys to frequent use that benefits residents and decreases inequalities. In addition, involvement of voluntary groups in park improvements not only results in better quality of the park that responds to residents' needs, but also provides a sense of pride, which is crucial especially in deprived neighborhoods. Local identity, an important factor for the existing residents, was preserved in the case of Green Grosvenor Park, which was built on a site of the century old Grosvenor Square Park.

Urban regeneration driven locally, as a combination of top-down with bottom-up approach, and different interventions that range from temporary to permanent have enabled the improvement of the urban environment in a deprived neighborhood in Broughton. Aspects such as cooperation between the public, private and civil sector as well as different models of financing were identified as the main enabling factors, which have facilitated improvements in the built environment and better access to facilities and services. In that sense non-market housing delivery besides better security of investment provides important stability of housing supply for vulnerable groups. Good proportion of non-market housing delivery in the

regeneration of deprived areas, as well as meaningful involvement of local community, is significant for preventing gentrification process.

Unlike neighborhoods that have undergone urban regeneration and then faced gentrification, this approach allowed for preserving to a great extent the existing population, especially vulnerable groups and enabling them to benefit from these interventions that were designed for them and with them in the first place.

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“Imbalance” of Regional Industrial Spatial Development of Small Towns in the Context of Urban-Rural Integration--A Study Based on the Case of Anshun City, Guizhou Province, China

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Abstract: In recent years, the regional internal differentiation and imbalanced state in the development of China's small towns are more and more obvious. Based on the results of the studies on the “imbalance” of the industrial space of small towns in and outside China and in view of the changes in China's development strategies in the new era, the author studies the industries in the small towns of Anshun City from the perspectives of overall development strategies and the spatial layout: first, the author studies strategies from the establishment of the industrial system, the selection of the industrial transformation and upgrading path and the determination of the development priorities, and on this basis, the author proposes the guidelines for the division and collaboration in the integrated development of urban and rural areas of small towns; second, the author proposes to plan the industrial spatial layout in the urban and rural areas of small towns through the division of economic zones, the linkage of industrial chains and the development of industrial bases.

Keywords: urban-rural integration, small towns, regional industrial space, imbalanced development

1. Introduction

1.1 Research Background

In China, a small town, which is different from a large or medium city and a rural village, means an inhabit area for non-agricultural population. There are generally four types of scope definitions: (1) Small town=small city^①+ administrative town^②+ market town^③; (2) small town=small city + administrative town; (3) small town=administrative town; (4) small town=administrative town + market town. The first scope definition is adopted in this paper.

In 1984, Mr. Xiaotong FEI indicated in his *Small Town, Big Problem*: The emergence of small towns, which can link cities with the countryside, is an important channel to boost the rural economy and industry, transfer surplus rural labor forces, and find solutions to the large population. He proposed functions and roles of small towns in regional development. Since over 30 years of reform and opening up in China, the development of small towns has made clear that small towns generally saw good development, not only interpreting their roles and functions but also boosting their strength and improving their status. The development of small towns was important content and key part of urbanization in China.

However, small towns in China divided into different layers in regional space development due to variance in their own conditions and external infrastructure. Driven by the booming of

development cores like important metropolitan areas/groups, some small towns actively received industry and population transfer as well as delivered basic resources upward, providing a firm pivot and foundation to expand town development structure. It is noteworthy that, however, quite a lot basic small towns with a major function to facilitate rural development saw a gradually relegated status in their regions. In other words, the development of small towns has been generally in an obviously diversified and unbalanced development state from the perspective of inclusive development and from the level of regional space.

Currently, the central and local governments provide small towns with comparatively equal development opportunities and conditions under the development philosophy of paying attention to social justice. Problems of small town development, such as fragmented development in own ways, vicious competition, low quality mediocrity, and industrial structure convergence, are increasingly prominent. There are two major reasons for it. Firstly, most small towns unilaterally measure their development level via indexes such as GDP and urbanization rate while blindly setting well developed counterparts as examples. On the other hand, there has been a lack of research on development characteristics, hierarchy, diversified development conditions in the regions of small towns, as well as on the development space and directions of small towns. These problems have been seriously influenced small towns' healthy development as well as scientific, positive and collaborative development in regional space.

During over 30 years after the adoption of the reform and opening up policy, a new national development strategy has been gradually established in China, with upholding the scientific development outlook and comprehensively promoting the socialist modernization with Chinese characteristics. Especially after the 18th CPC National Congress in 2012, the state adjusted the overall development threads to the strategic layout of synchronous development in "Agricultural Modernization, New Industrialization, New Urbanization, and Informatization" (hereinafter referred to as the Four Modernizations) and the development concept of promoting "economic, political, cultural, social, and ecological progress" (hereinafter referred to as the Five-in-One Principle). As an important part in new urbanization, small towns should actively make relevant adjustment and planning in terms of adjusting their economic development modes, seeking joint development with regional towns, and coordinating urban and rural integration to embrace the overall development concept change.

1.2 Research Targets

In a new period of development, the Chinese government has been pushing spatial transference of economic growth focus from the east to the west. To embrace this trend, this paper selects Anshun, which represents prioritized development cities in western China, as its research region. Firstly, Anshun is one of the pilot cities in the New Urbanization and also the "hinged joint" between regional plates such as the central-Guizhou city cluster and central-Guizhou economic zone allocated in the New Urbanization, ASEAN FTA, and the Yunnan-Guizhou-Guangxi economic circle. In addition, Anshun has its core competitive advantage in high class and rich natural and humanistic resources represented by Huangguoshu Waterfall and Tunpu cultural villages. On the other hand, Anshun is in the same development zone as Guiyang, the capital of Guizhou, in a distance of only 90km. There is a fierce competition between the two cities. In such a development environment, Anshun apparently has both salient advantages and potential competition threats. The meaning of the research in this paper is to find a solution to utilize numerous but scattered small towns, establish a positive competition and cooperation relationship between small towns and downtown as well as the region as a whole, and enhance Anshun's development competitiveness in regional plate, while focusing on the development of downtown and abiding by national strategic requirements. Meanwhile, industrial development is a basic issue and important support to urban construction and development. It is also a critical topic

of the urban and rural system planning. Thus, this paper select small towns in Anshun as its research objects and develop its research from the spatial development of regional industries, proposing that the research on spatial development of small town industries should be integrated into the big picture of regional urban-rural integration. Besides, research should focus on the relationship between industrial division and cooperation from the overall perspective of regional space and small town groups, in order to realize a disequilibrium pattern with healthy development of small towns themselves as well as overall efficient and joint development of the region. According to this proposition, this paper focuses on the adjustment ideas for economic development approaches of regional small towns, as well as planning tactics for joint spatial development of regional urban and rural industries.

2. Literature Review

The study on “unbalanced” regional spatial development in the western academia was way earlier than China. Western scholars focus their study on regional spatial development at the theoretical level while their Chinese counterparts focus on the case study.

Starting with town aggregation, western scholars analyzed and explained the mechanism for the emergence of unbalanced, and then proposed an unbalanced regional spatial development model. For example, economist Krumme (1950) put forward the gradient relation between disequilibrium regions and explained the internal mechanism for the flow of factors between regions. John Friedmann (1966) proposed the spatial model “core-periphery model” (CPM) with considerations of economic and geographic factors and analyzed the evolution of unbalanced development space between regions. Meanwhile, the central place theory by Walter Christaller (1930), the poles of growth theory by Francois Perroux (1950), and the pole-axis theory by Piotr Zaremba (1970) and Bolestam Malisz (1970) proposed the spatial models of regional unbalanced development from perspectives of urban function, economic growth, etc. Recently, there were empirical researches on cross regional unbalanced spatial development. Michael R. Murray and William J. V. Neill (2011) analyzed cross-nation scale spatial strategy planning in the EU as well as attempted analysis and restructuring of the spatial structure of regional town distribution. European Spatial Planning Observatory Network (Epson, 2006) paid attention to the development of small towns in the network of cities and gave an overall evaluation of their role definition.

In China, the trend of typical regional spatial development proved that the emergence of small towns, from independence and disorder to groups was a necessary tendency of regional development. Xiaofei CHEN, Luocheng ZHANG, and Shimou YAO (2015) indicated that the spatial development of city groups was not uniform but a more concentrated, shorter distance, and more integrated process. Chong PENG (2012) indicated in his research on spatial pattern of and policy response to unbalanced growth in Huabei province that: At this stage, Huabei province must continue the unbalanced development strategy to grow key cities and enhance their pole leading roles of key cities. Meanwhile, speed up the construction of city groups to promote regional development. Moreover, promote county economic development to control the expansion of gaps between regions as well as enhance the connection between small towns and large/medium cities to coordinate economic development between regions. Qianhu CHEN and Jun ZHOU (2008), taking the Yangtze River Delta as an example, reviewed the multi center economic and geographic spatial phenomenon from the perspective of institutional economics, with a prototype of standard western regional spatial structure theory. After theoretical logical inference, they established a regional spatial analysis model based on the system transformation period in China.

3. Methodology

3.1 Selection of Research Objects

Guizhou province, in the southeastern part of China's southwestern plate, consists of six prefecture level cities and three autonomous prefectures. The capital city is Guiyang city. Guizhou is in the west of Hunan, north of Guangxi, east of Yunnan, and south of Sichuan and Chongqing. Anshun is, as one of Guizhou's six prefecture level cities, in the mid-western part of Guizhou. As the third largest city in Guizhou, it has been known as "the belly of Guizhou, the throat of Yunnan, the lips and teeth of Guangdong and Sichuan". The size of Anshun is 9267.0 square meters. The population in 2014 was 2,856,000 of which 39% are minor ethnic groups. The urbanization rate of permanent residents is 41.3%. Under Anshun, there are two districts, four counties, and three administrative committees, composing of 77 villages and towns (45 towns and 32 townships). The 77 small towns in Anshun are the research objects of this paper.

The urbanization rate of permanent residents is 41.3%, lower than the national 54.77% in the same period. Besides, there are problems such as poorly developed economy and unreasonable industrial structure. However, it is also noteworthy that Anshun is the only national pilot zone for the reform "Deepening reform, promoting joint booming of various economic sectors, and accelerating development". Anshun is also a hi-tech industrial base for civil aviation. Besides, Anshun is a preferred destination for world Karst landscape tourism, one of the six national golden tourism routes, and the centre of tourism in western Guizhou. In addition, the GDP, with an average GDP growth rate in the past two years was 14.8%, surged to 52.006 billion RMB in 2014. There has been a strong economic growth in the past years. The contribution to economic growth from small towns could not be underestimated. The economic aggregate of the four counties overtook that of the development zone in downtown in four consecutive years.

Above all, Anshun, as a typical representative of key development cities in western China, and its small towns not only have common problems in the development of western China cities, but also possess unique resource endowment and development conditions. Thus, small towns in this region have been selected as research objects in this paper.

3.2 Analysis of Existing Problems

According to the current regional economic development status in China, Anshun is generally in the underdeveloped western middle part of China. This region saw rapid economic growth in the past few years. However, the overall economic aggregate is still small. Industrialization level is still low. Economic tie between regions is not close enough. Also, the economic structure is to be optimized. After detailed analysis of the above mentioned problems from the perspective of overall industrial spatial development of all small towns in Anshun, we have the following findings:

(1) The overall development in Anshun below average with large gaps between towns.

In terms of industrialization, the GDP per capita in 2014 was 22569 RMB, about 3635.86 USD. According to theorists and international criteria, Anshun is generally in the period of moving from early industrialization to midterm industrialization and accelerated urbanization. Through Anshun saw rapid economic growth and strong county economy in the past two years. Well developed towns were generally in the dense city belt along the Guiyang-Huangguoshu railway. Other districts, especially southern minority inhabit districts, are still rather underdeveloped. Till November 2014, there were still 53 key poor villages and towns, making up 61.63% of the total number. There has been an extremely uneven development.

(2) The spatial distribution of the second industry is "small, scattered, and weak", with low industrial level and regional competitiveness.

Industrial parks in Anshun are generally in small towns. However, these parks are small and scattered due to limitations of the Karst topography. There is no emergence of industrial clusters, industrial systems, or industrial chains. Industrial development relies heavily on resources and energy due to the high ratio of mid-low level and traditional polluting industries. Low level processing industries saw rapid growth but industries with high added value or high scientific and technological content are still at slow growth rate. There is still a lack of self innovation capability. All these problems together resulted in low overall industrial quality and low intrinsic quality of economic growth. Products are not competitive enough in the market.

(3) There is a lack of industrial interaction, production city fusion, and balanced urban/rural development in small towns.

Though there are numerous industrial parks in small towns, small towns, as a link between cities and countryside, failed to balance urban and rural development from the perspective of industrial and spatial development. Firstly, small towns failed to integrate the development of the three industries, resulting in disconnection between agricultural development and the second/third industries. The link with modernized industry and the service industry is not strong enough. The quality of surplus rural labor forces is low. Secondly, small towns failed to balance industries and town development. There was a lack of scientific spatial planning in industrial and town land resource coordination. There was no mutual promotion or integrated development between the two. Finally, small towns failed to balance urban-rural relationship using industrial development. Due to the disadvantages of small towns in three industry interaction and production city interaction, there were no combined efforts in urban/rural industrial and spatial development but fragmented development. The interaction with urbanization was inconspicuous. This development situation is a far cry from “the Four Modernizations” national development requirements.

3.3 Analysis of National Policies

As mentioned above, the central government has been promoting the intension development after the 18th CPC National Congress in 2012, emphasizing balanced regional economic development and urban-rural integration. Actively promote deeper integration of informatization and industrialization, positive interaction between industrialization and urbanization , as well as collaboration between urbanization and rural modernization. Promote the unity of urban system development with industrial support, employment transfer, and population agglomeration. Promote equal exchange of urban and rural elements as well as the balanced configuration of public resources. Establish a new industrial/agricultural/urban/rural pattern of promoting agriculture by industry and rural by urban, industry-agriculture reciprocity, and urban-rural integration. In addition, pay more and more attention to ecological civilization construction and make relevant policies continuously. A series of national macro policies and transformed development strategies will be an important guide to Anshun in a long period. Anshun city must review its development at a high level and definitely carry out those policies and strategies in the development of towns at all levels.

(1) Balanced Urban and Rural Development Strategy drives urban-rural integration.

As one of the Five Balances in the scientific development outlook, balanced urban and rural development is a key strategic idea by CPC. It reflects the central government’s extra attention to regional balancing and rural development. For a long time, different urban and rural economic and social development levels have resulted in an expanding gap between cities and countryside. Issues of agriculture, farmer and rural area as well as the urban-rural dual structure became more and more prominent. To fundamentally resolve issues of agriculture, farmer and rural area and close the dual structure gap, there must be a balanced urban and rural economic and social development to fully utilize the drive of cities to the

countryside and the back-up of the countryside to cities. Then urban-rural integration can be realized. In the new era, Anshun saw rapid development in city construction and economic development. The national strategy of balanced urban and rural development facilitated the urban-rural integration in Anshun by adopting various modes according to local situations, and promoting classification urban-rural balancing. Jointly construct and share urban and rural infrastructure. Build dual-type livable villages. Promote balanced and integrated urban and rural development via promoting agriculture by industry and rural by urban.

(2) Relevant national planning supports the development of Anshun.

National Plan on New Urbanization (2014-2020) proposes the Three Horizontal Two Longitudinal urbanization strategic pattern. According to the pattern, there will be two horizontal axes, the land bridge channel and the Yangtze River channel. There will also be three longitudinal axes, the coastal channel, the Beijing-Harbin & Beijing-Guangzhou channel, and the Baotou-Kunming channel. Large, medium and small cities and small towns along the Three Horizontal Two Longitudinal will have balanced development with support of city clusters and node cities on the axes and other urbanized regions as important parts. The central-Guizhou city cluster of Anshun is just on the Baotou-Kunming longitudinal axis. As a critical supporting point in the ten national newly planned town clusters, the regional node function of Anshun will become more and more important.

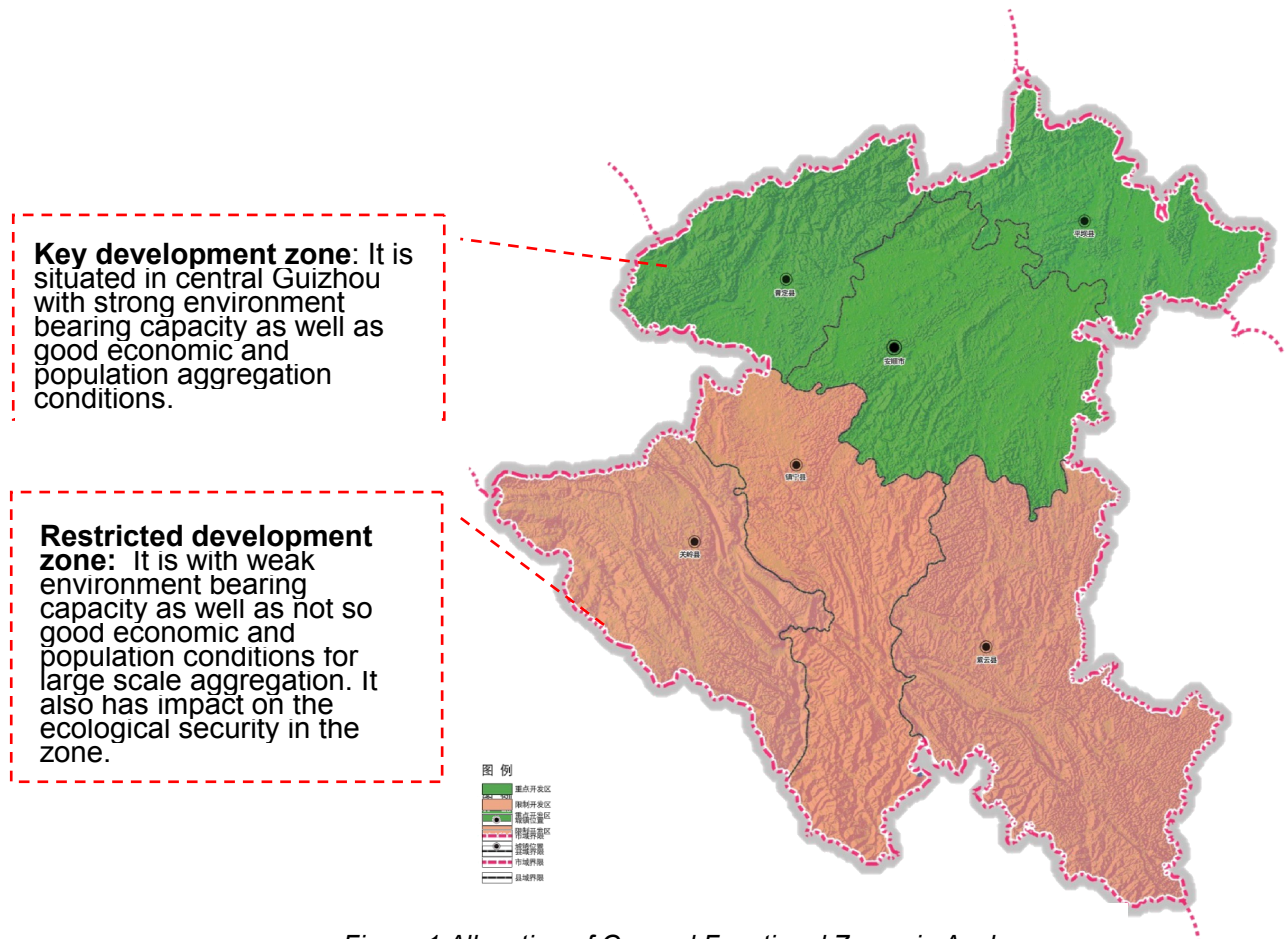


Figure 1 Allocation of General Functional Zones in Anshun

National Plan for Developing Functional Zones divided national land resources into four types: preferred development zones, key development zones, restricted development zones, and prohibited development zones according to development methods and gave definite requirements for the development and construction in different regions. Anshun is among state-level key development zones. According to the plan, Anshun will be constructed as a

national demonstration zone for open economy and the most dynamic pole of growth in central Guizhou. Actively develop the service industry with a focus on tourism. Establish equipment manufacture base with the focus on aviation, automobile, and parts as well as the green light industry base. Meanwhile, divide Anshun into north and south plates, the key development zone in the north and the restricted development zone in the south (See Figure 1), according to resource endowment and ecological conservation requirements. Therefore, immediate adjustment is required for municipal industrial development model and spatial distribution.

(3) The regional development strategy brings opportunities but also challenges to economic development in Anshun.

In 2000, the central government put forward the Western Development Strategy. The launch of numerous support policies and various state-level infrastructure projects was a powerful push to the development of the west where Anshun belongs to. In 2012, Document [2009] No. 2 issued by the State Council made 119 break-through policies from seven perspectives of taxation, investment, finance, industry, land resources, talent, and partner assistance to accelerate the development of Guizhou. The document defined that differentiated industrial policies should be executed in Guizhou. This is definitely an important opportunity of development for Anshun and Guizhou. In the same year, the Guiyang-Anshun New Development Zone covering a portion of both Guiyang and Anshun was approved in the Document [2009] No. 2 issued by the State Council. The 2011-2015 Five-year Plan for Western Development set the new zone as the demonstration zone for inland open economy to promote integrated economic development of both Guiyang and Anshun as well as establish a dynamic pole of growth in the central Guizhou economic region. Currently, key projects such as the Guiyang-Anshun Express Way, the Second Guiyang-Anshun Freeway, and the central Guizhou irrigation system have been completed or partly completed by the central government. There will be substantial effect of various state level support policies on integrated development of Guiyang and Anshun. All above will no doubt bring significant development opportunities and challenges to Anshun.

(4) Attention of the central government to the development of small towns ensures overall healthy development of Anshun.

Since reform and opening up, the status of small towns has been consolidated continuously thanks to their important functions in urbanization and the link role between cities and countryside. Their construction and development have drawn more and more attention of the central government. (See Table 1) The development of small towns in Anshun surged along with national support policies. In recent years, the central government paid more attention to the ecological issues in the development of small towns as they adjusted strategic thinking as well as demanded green and low carbon development of key small towns. In 2012, Guizhou province became the first province nationwide to establish local criteria to ensure sustainable development of small towns according to its own ecological and resource endowment characteristics.

Ecological and humanistic resources are the core competence in the development of Anshun. There are respectively two national 5A, 4A, and 3A scenic spots in Anshun. The area of scenic spots in Anshun makes up 11.80% of the total size, far higher than the national 1% and the provincial 4.2%. They become the very core competence of Anshun together with other national and world top natural and humanistic tourism resources such as the Tunpu cultural villages. Coincidentally, most of these resources are distributed in small towns of Anshun. According to the above mentioned resource and industrial development characteristics, three provincial pilot green small towns have been approved. They are respectively Jiuzhou, Xiayun, and Baiyan. There are also 10 municipal pilot green small towns: Jiaozishan, Qianqiao, Tianlong, Maguan, Jianglong, Yongning, Shuitang, Yaopu,

Daxiqiao, and Dashan. With guarantee and normalization by national and local policies, Anshun will adjust industrial development ideas and focuses for small town development in time, in order to better utilize the functions of small towns in regional role definition.

Table 1 Table of Representative National and Local Policies and Regulations on Small Town Development

Year	Issued by	Name	Key content
1979	CPC Central Committee	Decision of the CPC Central Committee on Major Issues Pertaining to Accelerating Rural Development	Developing Small Towns in a Planned Way
1980	Annual National Planning Conference	Conference Report	Propose the guideline of “Control the size of large cities, reasonable develop medium cities, and actively develop small cities” . It is the spring for the development of small towns.
1996	The Standing Committee of the NPC	Law of the PRC on Township Enterprises	Integrate the development of township enterprises and the construction of small towns. Lead and promoted proper centralized development of township enterprises. Gradually strengthen the construction of infrastructure and service facilities to accelerate the development of small towns.
1998	The 3rd Plenary Session of the 15th Central Committee	Decision of the CPC Central Committee on Major Issues Pertaining to Agriculture and Rural Area	Put forward that it is a grand strategy to drive rural economic and social development with small town development. This further improves the status of small towns.
2002	16Th CPC National Congress	Report at the 16Th CPC National Congress	Proposes balanced development of large/medium cities and small towns. Adhere to the development ideas of urbanization with Chinese characteristics.
2011	MOHURD, Ministry of Finance, National Development and Reform Commission	Evaluation Indexes for the Construction of Green and Low Carbon Key Small Towns	Specify the first batch of national pilot towns. Fully spread the planning and execution in pilot towns.

3.4 Research on Strategies for Regional Industrial Development in Small Towns

(1) Overall positioning and strategies of regional industrial development

Specify strategic positioning: Establish a modernized industrial system led by industrialization and an integrated and interactive development of modern efficient ecological agriculture, advanced manufacturing, strategic emerging industries, and the service industry. **Build an important provincial equipment manufacturing base. Establish a domestic leading regional business and logistic center. Develop a nationally renowned demonstration site for the ecological tourism industry.**

Set priorities of development: Start with the First Industry. With the goal to develop “characteristic agriculture, tourism agriculture, ecological agriculture, fine agriculture, and high efficiency agriculture”, continue to execute the most strict farmland protection policy to stabilize grain production. Focus on “Seven Leading Agricultural Industries”: ecological

animal husbandry, vegetable, tea, Chinese herbal medicine, tobacco, high quality grain and oil, and quality fruits. **The second is to strengthen the Second Industry.** Strengthen equipment manufacturing. Grow backbone industries such as energy and chemical, food and beverage, pharmaceutical, and raw material production. Nurture emerging industries such as high-end equipment manufacturing, new material, biol-pharmaceutical, new energy, aerospace derivative, relevant industries, and environmental protection. **Finally, optimizing the Third Industry.** Develop derivative industries of high added value, such as model plane contest and exhibition, private jet training and maintenance, and consulting. Vigorously develop tourism service industries to establish a demonstration site for the integration of ecology, culture, and tourism. Build a domestic leading regional business and logistic center.

(2) Guide to work division and cooperation in urban-rural integration in small towns.

Select key development ones as the poles of growth among the 77 towns in Anshun to form a multi-center economic and geographic space and drive the development of all small towns and rural area. Guide to work division and cooperation in urban-rural integration is as follows:

Select the poles of growth for industrial development: Focus on the Second Industry in Maguan, Puding downtown, Leping, Xiayun, and Jiaozishan. Reconstruct and upgrade traditional industries. Focus on new energy and new material industries to build a cyclic economy industrial base with provincial and national reputation. Build equipment manufacturing parks focusing on the manufacturing of aerospace equipment, electric and electronic equipment, and their parts.

Select the poles of growth for the logistic industry: Focus on logistics in Yaopu Huangtong District of Puding County. Build important land way (railway and road) logistic hub in the central Guizhou economic zone. Establish a comprehensive logistic center with integrated logistic services to industries such as industrial logistics, manufacturing supplies and services, warehousing and distribution, transportation and distribution, trade and exhibition.

Select the poles of growth for tourism and service industries: Focus on tourism and service industries in Jiuzhou, Tianlong, Huangguoshu, and Longgong. Vigorously develop ecological tourism, tourism service, and cultural creativity industries with the support of rich tourism and cultural resources as well as the pleasant climate, to build demonstration sites for integrated development of ecology, culture, and tourism.

Other counties and small towns, supported by their downtowns, focus on general manufacturing industries, various labor extensive industries, and their support industries, in order to optimize basic life services and tourism services. Surrounding districts focus on unique and various agricultural, sideline, and specialty industries and ecological conservation zones. Follow the distribution of four agricultural zones for work division and development guidance of the First Industry in small towns.

3.5 Small Town Industrial Spatial Distribution in Anshun

Actively plan a “integration and network” urban system distribution to lead the optimization of regional industrial spatial distribution according to resource and environmental pattern analysis including natural and humanistic scenic spots, land use unit, and urban industrial distribution. In the general urban development planning, firstly restrict intensive development with incentives of land resources and tax in small towns outside urbanized regions, in order to end the small and scattered urban system pattern. On the other hand, prioritize the development of small towns around downtown to reasonably form poles of growth. Plan spatial distribution at three layers of dividing economic zones, linking industrial belts, and building industrial bases. Establish a spatial structure of “Two Zones, Four Belts, and Nine

Bases” in industrial arrangement. Take all small towns and villages in the city into account and make overall arrangements.

(1) Set two development zones with consideration of functional zone division requirements and industrial foundation.

① Central economic zone: it is the dense area of towns and main economic development belt in Anshun. By setting up seven industrial parks, select the following small towns as key development objects: Xiayun of Pingba, Leping, Qiyangqiao of Xixiu, Caiguan, Jiaozishan, Machang, Puding, Zhenning, Yaopu-Huangtong.

② Southern economic zone: It is the restricted development zone of Anshun. Focus on food industries and ecological agriculture. Considering the requirements of urban development and the Four Modernizations, set up two industrial parks in Guanling and Ziyuan to drive the development of the southern economic zone. (See Table 2)

Table 2 Distribution of Industrial Parks

No.	Name	Towns involved
1	Xixiu Industrial Park (One Zone Three Parks)	Qiyangqiao, Caiguan, and Jiaozishan
2	Pingba Leping unique equipment manufacturing parks	Tianlong and Leping
3	Pingba Xiayun modern manufacturing parks	Xiayun
4	Machang strategic emerging industrial parks	Machang
5	Puding Economic Development Zone	Puding County
6	Puding Yaopu-Huangtong industrial park	Huangtong district and Yaopu in Puding County
7	Zhenning Red Star Fine Chemical Park	Dingqi
8	Guanling Industrial Park	Guanling County
9	Ziyun Industrial Park	Maoguan and Songshan in Ziyun County

(2) Plan four development belts based on the primary conditions and core resources for regional development

① Guiyang-Huangguoshu Integrated Industrial Belt: Form a key industrial development belt of Anshun based on the central economic zone, the Guiyang-Huangguoshu Railway as a link, and integrating characteristic industries of the surrounding counties. Pingba, downtown, Zhenning, and Guanling are four nodes link the integrated industrial belt with the support of transportation and resources.

② Two characteristic agricultural belts: One is the Pingba-Downtown-Puding-Ziyuan development belt, which focuses on characteristic ecological agriculture and tourism agriculture such as vegetable, tea, characteristic grain and oil base, Chinese medicine, and animal husbandry. Based on convenient transportation, establish a deep processing base for agricultural and sideline products. Form famous-quality-characteristic eco-agricultural and processing industrial parks along Guiyang-Kunming traffic corridors. The other one is the Guanling-Zhenning development belt, which focuses on characteristic cash crops such as vegetable in counter season, spice, and economic fruit.

③ One ecological conservation belt: Form the Xingjiang River cultural ecological development belt consisting of the Huangguoshu Waterfall, the Dragon Palace, and the Tunpu cultural villages in Jiuzhou.

(3) Arrange nine industrial bases to form poles of growth for regional development:

The Second and Third Industry bases: Downtown---comprehensive service base focusing on tourism and production services; Puding Yaopu&Huangtong---regional logistic hub; Pingba Leping and Xiayun---equipment manufacturing bases; Zhenning-Huangguoshu---tourism service bases; Ziyun---characteristic husbandry processing base; Guanling---regional characteristic ecological economic center

The First Industry bases: Southeastern grain and oil bases---grain and oil production based of high quality and efficiency such as Ziyun Country and surrounding Houchang, Four Stockades, Daying, Shuitang, Bade of Guanling County, Dingyun, and Shangguan; northern grain and oil bases---northern large scale grain and oil production bases of high efficiency, such as 100-hectar dams in Xixiu Jiuzhou, Liuguan, Shuangbao, Huangna, Dongtun, Pingba Yangchang, Gaofeng, Machang, Baiyun, and Xiayun ; western grain and oil production bases---western grain and oil production bases represented by Puding Maguan, Huachu, Zhenning Machang, Dingqi, and Jianglong. Eight highly productive modern agricultural demonstration sites in Anshun are the examples to drive the development of municipal agricultural bases according to the distribution of farmlands and cultivated lands. See Table 3 for details.

Table 3 Provincial Highly Productive Modern Agricultural Demonstration Sites in Anshun City

No.	Project Name	Relevant Towns
1	Highly Productive Modern Agricultural Demonstration Site for Treatment of Stony Desertification in Guanling County	Guanling
2	Highly Productive Modern Agricultural Demonstration Sites in Pingba District	Pingba
3	Highly Productive Modern Vegetable Production Demonstration Sites in Xixiu District	Xixiu
4	Demonstration Site for Circular Agriculture in Puding County	Puding
5	Demonstration Site for Ecological Tourism of 100-Hector Quality Fruit in Beipanjiang River Valley of Zhenning	Zhenning
6	Highly Productive Modern Tea Production Demonstration Sites in Xixiu District	Xixiu
7	Demonstration Site for Early Vegetable Production in Low and Hot Valley of Ziyun County	Ziyun
8	Demonstration Site for Modern Tourism Agriculture in Huangguoshu Scenic Spot	Huangguoshu Waterfall

4. Discussion and Conclusion

People necessarily think about textbook-like Ruhr when talking about cases of global regional industrial spatial development. Ruhr had long been relying its development on its resource endowment (coal resources). Three obvious east-west industrial belts emerged due to the distribution of mines and the development of the mining. The overlapping of east-west geographic position and south-north geological condition set the multi-center and network spatial foundation in the region. (Ursula von Petz, 1997) Early in 1912, Robert Schmidt first introduced the planning concept of regional town to Ruhr and proposed a regional planning to “protect green space and improve regional transportation network”. Meanwhile, he indicated to create essential conditions for the regional economy to play a leading role in international competition by organizing industrial development along the River Rhine with transportation axes. As coal resources exhausted, traditional industries sank. Ruhr conducted overall regional and economic transformation: Economically, promoted the diversity of industrial structure and improved basic structures. Updated technologies in traditional backbone industries. Vigorously developed the Third Industry. Enhanced scientific

innovation and R&D (Dortmund was an example). At last, they realized regional revitalization. From the perspective of management, they protected resident interests and promoted regional collaboration through private-public collaboration. In terms of spatial planning, they had numerous positive efforts with the focus on characteristic spatial development. For example, KRV was responsible for reconstructing a refinery to an entertainment center and planting trees in slag heaps, contributing to sustainable regional development. Anshun, however, must learn from the experience of Ruhr to avoid repeating the problems such as fragmented development, high industry isomorphism, vicious competition, and development at the price of damaging the environment under the guidance of the Five-in-One Principle and the Four Modernizations, through Anshun is still in the transitional period from early industrialization to mid-term industrialization. In the current development stage, Anshun should pay attention to the development problems and characteristics of small town individuals and groups in the entire city, guide them to find their specific role definitions and development paths in regional coordination and planning based on their own endowment characteristics, development foundation and conditions. In addition, the local government of Anshun should also guide small towns to integrate themselves into overall development of city clusters and actively build links to the rural area, in order to receive industry transfer, back up the development of large cities, conserve the environment, and provide basic means of production. Therefore, small towns can integrate themselves into the grand regional pattern of urban-rural integration to realize the unbalanced pattern of their healthy development as well as regional urban-rural efficient and balanced development.

Notes:

^①Small town: a town with less than 500,000 permanent residents in downtown area. See *Notice of the State Council on Adjusting the Standards for Categorizing City Sizes* (2014) for details.

^②Town: an administrative area approved by the state to set up an organizational structure. According to the administrative divisions in China, town is the short term of an administrative town or designated town. A town may be the organizational structure where the country people's government resides or those below. (See *Standard for Basic Terminology of Urban Planning*, GB/T 50280-98)

^③Market town: the place where the township/minority town people's government resides and an non-administrative town, confirmed by the county people's government, evolving from a market to a non-administrative town with certain regional economic, cultural, and life service functions (See *Administrative Regulation on Village and Market Town Planning and Construction*, 1993)

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How to react when traditional industries move away?



The history and rebirth of an industrial city: the case of Izhevsk, Russia

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1. Abstract

The research is exploring the journey of Izhevsk, the plant city, from living for hundreds of years as a military closed city, where people's regional and national identities were ignored, to the introduction of contemporary Izhevsk as a cultural and creative hub. Izhevsk as a city and active society decided to be open up to the whole world, through a remarkable efforts to establish national and international open conversation. At the present time Izhevsk is a fertile field and an attractive subject for developing a bottom up planning approach.

The research uses several methods: The first method is literature analysis of cultural, historical and economic parameters of the city, and the potentials of its active society, using expert articles, journals, interviews, presentations, workshop events, reports and books. The second method used is SWOT-analysis of economic, social, cultural and historical dimensions of Izhevsk.

Finally, the third method applied is the analysis of illustrative and visual materials, plans and maps.

By analysis of different projects and proposals for urban regeneration, conservation and creation of a new identity for the city of Izhevsk, the research came to the result of identifying and formulating the main tools proposed by an active society to reinvent their city. Studying the model of Izhevsk as a postindustrial city led to identifying a set of ideas, which can contribute to reinventing other postindustrial cities around the world. This model proves that once closed industrial cities, which were developed and controlled by traditional centralized policies, can be recreated and reinvented by the efforts and thoughts of their active societies.

2. Research theory and hypothesis

Through the study, deductive reasoning was applied. Initially, the research theory was presented that the city of Izhevsk requires a new identity and brand to support its revitalization and rebirth process. Moreover, the hypothesis of research was cited that the plant city identity of Izhevsk has declined. In consequence, the urban, economic and socio-cultural features of the city are degrading. Then, facts and details about Izhevsk were demonstrated. Thereafter, this data was analyzed using SWOT matrix, which led to the conclusion that rebranding Izhevsk shall be the catalyst for urban, socio-cultural and economic upgrading. Finally, recommendations were brought about to formulate an action plan to achieve the goal of subediting a new identity and brand for Izhevsk.

3. Methodology

The case study of Izhevsk has been viewed by the research through various windows. It was assumed that data and information collected from diverse sources lead to tackling the research issue from different points of view, which in consequence, would help in constructing a holistic original view.

The aim of the research was to investigate particular keywords, which are generally the plant-city model with focus on the specific case of Izhevsk. Due to the fact that initial research issues were comprehensive, a wide range of data were gathered about historical background, current situation and community efforts to reinvent a new identity and branding of Izhevsk. The literature was selectively gathered for their academic value, practical nature and the close relation of the authors to plant cities as a whole and Izhevsk as a concrete case study, which insures that their works are originally built on deep, theoretical and empirical understanding.

The collected material is inherently qualitative. The major data congregation methods are; conducting focus groups, interviews and making observations together with reviewing those

within the framework of other research projects, along with engaging in several action researches to assist in upgrading and developing Izhevsk city and agglomeration.

The combination of methods used to explore information is built on their correlation, starting with a literature analysis method of socio-cultural, economic and historical factors. This method provides the research with essential facts and data necessary for establishing the SWOT matrix. Furthermore the inspection of illustrative and visual materials (plans, maps, photos, etc.) advocates the hypothesis and results of research.

4. Introduction

Izhevsk is the capital of Udmurt Republic (Figure.1), Russia. It is located in the western European part of Russia along the Izh River in the western Urals (Potrov et al, 2013). The territory of Izhevsk also exists between the rivers Vyatka and Kama. Izhevsk territory is on the junction of Ural and Volga regions. It is the nineteenth largest city in Russia. The city is a major hub of industry, commerce, politics, culture, and education in the Volga Region. It is famous for its defense, engineering, and metallurgy (metal works) industries. Izhevsk has the titles of the Armory Capital of Russia and the City of Labor Glory. Originally established as a plant city, Izhevsk, for more than 300 years had the identity and image of an industrial city. Izhevsk gained great importance for being a military closed city due to the weapons industry. Like many Russian and post-soviet cities, Izhevsk has been experiencing the hardship of the post-industrial period, the economic and social crises of the 1990s. Unfortunately, over the past couple of decades the city has not been able to find a new identity. Izhevsk now is in a state of transition to the post-industrial economy (Potrov et al, 2013).



Figure 1: The map of Russia, In yellow Udmurt Republic. Source: (Potrov et al, 2013).

5. Parameters of Izhevsk

5.1 Historical features

The Name of the city changed many times, starting as 1760-1918 – Izhevsk plant, 1918-1984 – Izhevsk, 1984-1987 – Ustinov (the city was renamed after the soviet marshal D. F. Ustinov Minister of Defense of the Soviet Union 1976-1984), 1987- current Izhevsk (Agafonov et al, 2014).

The official foundation date of Izhevsk is 1870 (the foundation date of the ironworks plant; Izhevsk plant). Izhevsk was built as one of the Urals plant cities (Agafonov et al, 2014).

Arms factory foundation: In 1800, Emperor Paul I ordered an arms factory to be built in the Urals considering mounting threat from Napoleonic France. The task of choosing a location was given to Andrew Deryabin, a mining engineer, chief of Goroblagodat, Perm, Kama and Bogoslov Plants. He saw several places in the Perm and Vyatka Governorates and drew a conclusion that the most suitable place for a plant foundation was Izh Zavod (Izhevsk plant). It occurred to him to turn the ironworks into the armory. Alexander I approved of Deryabin's project and arms factory building began on June 10, 1807. Thus 1807 is considered the year of Izhevsk's second birth (En.wikipedia, 2015). Plants as institutions significantly affected the urban planning and architecture of Izhevsk.

The Soviet period saw significant growth in the size and importance of Izhevsk. A new general plan was made for the city. Many old wooden houses were replaced by stone buildings. The monotonous typical housing quarters invaded the city.

It was believed that in a closed industrial city as Izhevsk, the most important was utilitarian functional needs and not aesthetic values (Agafonov et al, 2014).

The Postindustrial period witnessed the devaluation of the prestigious status of a plant worker. Many traditional plants and factories were closed and workers were dismissed. Postindustrial Izhevsk is confronted with serious problems such as high unemployment and vast ecological damage (Lintz, 2007). The mentality of people from old industrial cities is described in studies, "in regions where industry played an important role, many people cannot imagine other paths of development" (Ernits, 2002). Izhevsk is in the middle of a vicious circle of decline in industrial output, and loss of image and self-esteem among the population. This, in turn, has led to a considerable exodus of the highly qualified and young sections of the population, a group which is essential for the development of new economic structures 'from within' (Águeda, 2009).

5.2 Economic features

The main financial resource for the development of social and cultural life in Izhevsk has been provided by plants. The administration of the plants controlled the city's development (Agafonov et al, 2014). Military industry remained the core of the local economy even after World War II, leading to Izhevsk being designated a closed city, inaccessible to foreigners. The city's Izhmash factory began manufacturing the AK-47 automatic rifle in 1948 and continues to produce modern variants of the design to this day. The rifle's designer, Mikhail Kalashnikov lived in Izhevsk until his death in 2013. In 1966, Izhmash began manufacturing the Izh brand of automobiles (En.wikipedia, 2015); however, the main focus of Izhmash is still the manufacturing of weapons.

In the 1990s the influence of factories and their administration on the city's economy and development significantly decreased (Agafonov et al, 2014). Izhevsk was stricken by the same economic and political crises as the rest of the country.

As for unemployment, according to data for 2012, the Udmurt Republic (Its capital is Izhevsk) is 42nd in the unemployment rate, which amounted to 6.00%, while the Russian national average was 5.46%. Minimum level of unemployment 0.81% was recorded in the City of Moscow. It is important to note that the unemployment rate in the Udmurt Republic in 2000 was 9.68 % in comparison with 6 % in 2012, which may indicate that the economy is recovering (Удмуртская_республика, 2011). The average salary in Izhevsk is 22,774 rubles (\$456), which is considered low even in comparison with other regions in Russia (Potrov et al, 2013).

Concerning regional economy, Izhevsk is part of two agglomerations:

1- The Izhevsk agglomeration has a population of about 1 million residents. It includes Sarapul town, Votkinsk town, Zavyalovsky and Votkinsk urban settlements and Sarapul'skiy municipal district.

Sarapul town houses over 100 thousand people and rich of historical sites. Historically it was a major commercial center on the Kama River. The economy of the city depends on the Sarapul'skiy generator plant and the Sarapul Radio Plant. Sarapul faces problems such as low wages and immigration of qualified youth. The town is regarded as a place where there are almost no possibilities for new forms of business. Most of the population is economically inactive (Potrov, A. et al. 2013).

Votkinsk town has a population of nearly 100 thousand. The town's economy depends on industry (Potrov, A. et al. 2013).

2- The Investment agglomeration includes 13 Municipal entities of Udmurtia republic, Tatarstan republic and Perm region. The total number of Investment agglomeration residents is nearly 1.2 million.

5.3 Socio- cultural features:

The population of Izhevsk in 2013 was estimated to be 631,182 (UN data, 2014). Izhevsk's society consists of different ethnic groups. 16% of the population is Udmurt, 67.5% is Russian, 9% is Tatar and 7.5% is Ukrainian, Belarusian, Bashkiria, Azerbaijanis, Maritsian and Tchovashi (Potrov et al, 2013). Although of different ethnic groups and backgrounds citizens of Izhevsk like to call themselves Izhevchani. This is how they express their belonging to their city.

As the capital of the Udmurt republic Izhevsk houses institutions for reviving and conservation of cultural and national heritages. The city is considered a center for Udmurt and Tatar cultures. The socio-cultural combination of factory people is diverse and rich. Plant-city residents came from different regions in Russia to work and live there and sometimes even from other countries. In the 19th century after converting the iron works factory to a weapons industry a German community was founded in Izhevsk. (Potrov et al, 2013). It can be considered a unique type of society – a special lifestyle of factory workers and economic levels uniting people from different cultures and ethnic groups. These people came to Izhevsk with their traditions, mentalities and dialects.

There is a diverse rich mixture of:

- In the 18th and 19th centuries factory life (culture, knowledge and daily regime),
- Village socio-cultural reservoir which has been formed for centuries,
- In addition to 20th century Soviet life style, culture and mentality,
- Finally capitalist mindset and way of living, which has been emerging since 1990s.

These are the components of the socio-cultural features of Izhevsk (Suksunskymuseum of regional history, 2013).

6. Formation of the city of Izhevsk

Gorod- Zavod (Plant-City) is a unique type of human settlement established in the 18th century in Russia on the basis of water existence for operating plants. At that time metal gained prime importance and widespread use in industry and economy. That is the reason for the evolution of plant cities in Russia. These settlements were planned around factories for processing metal. They played a key role in the development and planning of industrial cities (Agafonov et al, 2014), (Suksunsky museum of Regional History, 2013).

Locations for building plant cities were determined by the presence of:

- 1- Reservoirs and water bodies needed for generating water energy to operate factories;
- 2- Lands suitable for constructing roads and connections between locations;
- 3- Forest zones and raw materials for processing and manufacturing.

In general plant-cities were built in territories between rivers (Bondarenko, 2013), (Suksunsky museum of regional history, 2013).

The typical urban composition of Plant-cities consists of:

Plant – artificial lake- the square in front of the plant with a church in the middle of this square. The territories of industrial institutions are located at the center of the Plant-city. The public center of Plant-cities had mixed functions (administrative, cultural, commercial and housing). The house of the head of the plant or his owner always located at the center. All these facilities at the Plant-city center were designed with their entrances direction to the



Figure 2: Plan of Izhevsk settlement 1764. Source: (Maps of Izhevsk and Udmurt republic (2014).

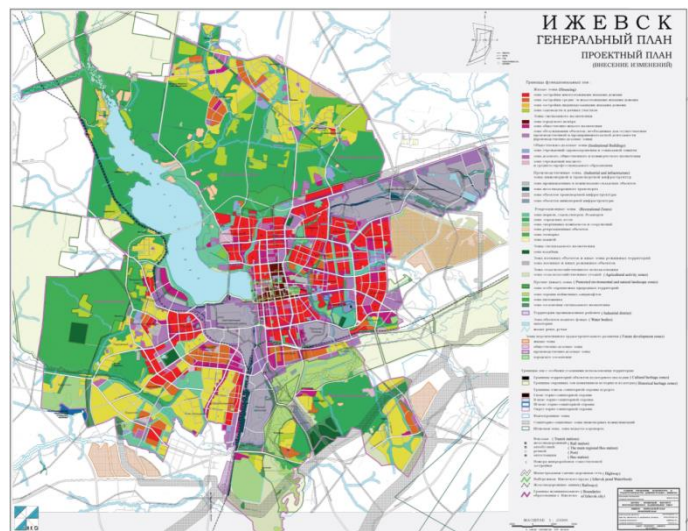


Figure 3: General plan of Izhevsk city, 2009. Source: (Izhevsk city council site, 2009), translated by author.

plant. They were located at the plants square (Agafonov et al, 2014). They now form the historical center of these cities.

In the middle of the 18th century deposits of magnetic iron ore were discovered at the location along the Izh River in the Western Urals, between the rivers Vyatka and Kama. These raw materials were needed at that time for military manufacturing needs. A factory for processing magnetic iron for military purposes was constructed. The town was founded and developed as a "City – factory / Plant-city".

In the early 19th century, the plant was redeveloped to manufacture weapons (Agafonov et al, 2014), (Potrov et al, 2013). The Plant-city requirements and parameters for hydraulic engineering constructions (dams) on the IzhRiver defined the geographical features of the future city.

At the beginning of the first urban settlement construction on the chosen location (Figure.2):

-Industrial buildings were built on the west bank of the river near the dam. This territory had lowlands. The houses of builders and factory workers were also built there.

-The house of the factory head was constructed on the highlands on the east bank.

The Izhevsk urban settlement had two main axes:

1- The educated middle and rich high class settled in the hills. (Foramen, merchants and managers).

2- The working class settled in the lowlands (Potrov et al, 2013).

The position of a person in the factory and nature of his work determined where he could live in 18th century Izhevsk.

During the Soviet Union period Izhevsk witnessed multiplication of its factories. More than 15 factories were built from 1932 to 1972. Residents of Izhevsk were evicted from the city during the revolution and were replaced by immigrants from rural areas (Potrov et al, 2013).

7. SWOT analysis of Izhevsk case study

A very useful methodology in strategic urban and regional planning is SWOT analysis. It studies strength and weakness points of a city, and identifies opportunities and threats. SWOT analysis defines internal and external factors affecting urban planning of a city. As a result allowing for strategic planning as a systematic development of urban and regional changes determining the future of a city (Khalifipour et al, 2012). The research uses SWOT-analysis of economic, social, cultural and historical dimensions of Izhevsk. This methodology to determine the needed strategic plan and actions to reinvent Izhevsk and finding way-out of the predefined historical stereotype .

<p>7.1 Strengths</p> <p>Geographical characteristics</p> <ul style="list-style-type: none"> -The presence of a huge number of springs in Udmurt republic. <p>Udmurt's area represents two-thirds the basin of Vyatka, the whole territory of the region is covered by a network of rivers (Figure.4).</p> <ul style="list-style-type: none"> - The proximity of groundwater - Izhevsk has a hilly relief and fertile arable land. - The Republic of Udmurt has reserves of oil, peat, coal and spring water. - Izhevsk lies on seven hills. Land elevation from 98 	<p>7.2 Weaknesses</p> <p>Geographical characteristics</p> <ul style="list-style-type: none"> - Izhevsk lake has high levels of pollution. - The petroleum industry was not developed over 10 years and is in state of production declining. <p>Urban planning</p> <ul style="list-style-type: none"> - In the city there is no defined clear center (the area that is called the center). Formally, the center is the building of the Izhevsk plant. There are old and new centers. The unofficial center is the intersection of Gorki and Soviet streets.
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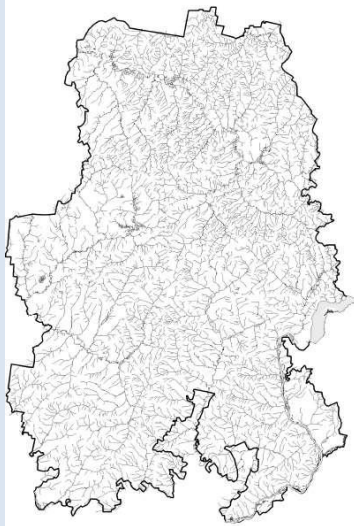


Figure 4: Rivers network in Udmurt republic territory, Izhevsk. Source: (Potrov, A. et al. 2013).

(the level of the water's edge Izhevsk lake) up to 208 m.

- Izhevsk has an artificial lake. It is one of the biggest artificial lakes in the Ural region.

Urban planning

The city is divided into 2 parts by the river and the lake.

Transportation:

More than 50% of Izhevsk's residents find public transportation is comfortable, satisfying.

Izhevchani use public buses, trams, trolleybuses, microbus services and taxis.

More than 65% of residents believe that using a private car is neither comfortable nor satisfying.

Ticket prices are low (.33 US dollars).

Maximum travelling time is 45 minutes per trip.

Izhevsk is directly connected by railways to Moscow, Perm, Kazan, Yekaterinburg, Adler, Novorossiysk, NovyUrengoy.

The airport is located 15 km from Izhevsk. Flights are currently performed by one airline. There are regular flights only to Moscow 2-3 times daily.

Economy:

Izhevsk is part of two agglomerations The

1- Izhevsk agglomeration,

2- Investment agglomeration.

Within the Izhevsk agglomeration is located the Sarapul port. It is 40 km to the south of Izhevsk, on the Kama river. The Sarapul port is a large river port which has access to the Baltic and Black Sea.

Culture:

There is cultural diversity in Izhevsk. The dominant cultures are Russian, Udmurt and Tatar.

The new center is Pushkinskaya street.
-It is hard to move from one part of the city to another part through the lake and river.

-There is a severe shortage of parks and green infrastructure. The existing ones are polluted.

- According to surveys, residents report the poor condition of sidewalks, grass, deficiency of plantings, unclear navigation marks and signs.

- Only 10% of residents promenade in the water front of the Izhevsk artificial lake. This is because of the bad condition of urban design and space organization.

- The network of streets is in bad condition. Only 13.7 % of residents are satisfied with the condition of the streets.

- The Izhevsk airport is inefficient (Potrov et al, 2013).

Economy:

The average salary is low in Izhevsk (\$456).

Surveys and massive protests show the dissatisfaction of residents with the standard of living in Izhevsk.

7.3 Opportunities

- Springs allow the city to develop the food industry, drinking water, and alcoholic beverages production.

- Land, relief and water availability allow uses such as urban agriculture and intensification of green areas.

- Topography of Izhevsk allows for creating a regional recreational center for skiing.

Urban planning

- Presence of lake and rivers through the city is a potential for planning entertainment, recreational areas and waterborne transit development.

- Existence of three places considered centers can be planned for the city to have different central places with different characters and activities.

More than 55% of residents would like to promenade in the Izhevsk lake waterfront, in case of redeveloping and renovating it.

Availability of comfortable public transportation is a potential for developing a sustainable life style, especially with the residents belief in the ineffectiveness of private car use.

The railways and airport are key elements in the development of Izhevsk and future urban and economic upgrading.

Economy:

Residents of towns and settlements in agglomerations serve as human resources for Izhevsk.

Immigration and commuting within agglomeration (cities, towns, villages and settlements) encourages improving transportation infrastructure on a regional scale.

The Sarapul port within the Izhevsk agglomeration can be used to increase and stimulate investment, importing and exporting on national and international scales.

Culture:

Cultural diversity is an element of sustainable society. This can be a chance for many cultural festivals that attract tourists and investment to the city.

Dissatisfaction with the standard of living stimulated the society to improve their city and exchange experiences, with other cities on national and international scales.

7.4 Threats

Geographical characteristics

- Waste of Petroleum industry, in consequence declining revenues.

Urban planning

- Not planning and using the river and lake potential leads to Isolation of the two parts of the city and disconnection.

- Shortages and degradation of parks and green infrastructure lead to population health deterioration and waste of already unused natural advantages.

- The poor condition of streets can lead to many accidents and daily traffic congestions.

The inefficiency of the airport leads to the loss of many investment opportunities.

Economy:

Low salaries lead to a loss of the qualified working force and a low standard of living. Dissatisfaction with the standard of living can lead to immigration from Izhevsk to other cities with a higher standard of living.

In general, a survey about the possibility of immigrating from the Udmurt republic to another region in Russia or another country shows that 34% of population is considering immigration.

Among the reasons:

39% low salaries and standard of living, 14% unsatisfying quality of education, 11% inability to find a job, and 10% the decline of the economic situation in the Udmurt republic.

8. Results and Discussion

Over the last few years, bottom up movements by the active society of Izhevsk made many important steps towards reinventing their city. These efforts were organized under the leadership of ARGO, a nongovernmental organization (Izhevsk association for city development), and the sponsorship of interested citizens and business men. Izhevsk's active community has set a goal of bringing innovative and sustainable development solutions. These solutions will contribute to the regeneration and rebirth of Izhevsk. Revitalization efforts by the city's active society and professionals are trying to regain attention and importance for the city on national and international scales.

8.1 All Russians forum of livable cities in Izhevsk(URBANFEST):

Through such events experts and professionals from different communities exchange national and international experiences and best practices. The main goal of this yearly event is to change Izhevsk to be a more livable city (All Russians forum of livable cities in Izhevsk: how it was achieved, 2015).URBANFEST is one of the initiatives of the bottom-up planning approaches in Izhevsk.

8.2 Izhevsk school of Urbanists:

It is a nongovernmental training program sponsored by active society members. The tasks of the program are to collect materials, develop ideas, introduce technologies and projects to improve the urban environment in Izhevsk. Its aim is to build public awareness and encourage professionals and citizens to work together in urban teams to form project proposals for urban reform and development. It also aims to train citizens and local government representatives to cooperate together in decision making and planning stages. Since 2014 the Izhevsk school of urbanists has carried out a program for Teenurbanists. This program aims to train teenagers to formulate their ideas and dreams as urban design projects for the city of Izhevsk, with the help of participants of Izhevsk school of Urbanists and professionals.

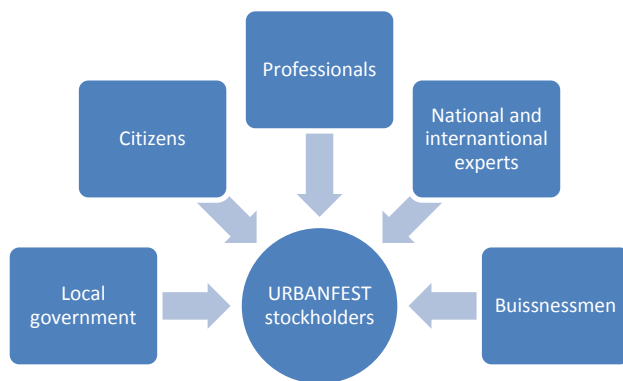


Figure 5: The stockholders of the URBANFEST forum, Izhevsk. Source: author.



Figure 6: Izhevsk's Teenurbanists urban teams, Izhevsk. Source: (Gavrilov, 2014).

The Izhevsk school of Urbanists is one of the bottom-up initiatives in Izhevsk.

8.3 Branding Izhevsk:

The community of Izhevsk believes in the importance of defining their identity and redrawing the image of the city. This will play a crucial role in promoting urban reform and upgrading projects, such as a museum quarter in Izhevsk. The goal of the project is to discover or reinvent a new identity for Izhevsk. It is an initiative by active citizens, professionals and the city council of Izhevsk to promote regeneration and rebirth of their city.

The main tasks of the initiative are:

- to search for a unique character and identity of Izhevsk, favored by Izhevchanis,
- to rediscover and retrieve what they are proud of and really value in their city,
- at the same time to work to develop and emphasize a brand that can be understandable, attractive and important for potential investors,

- to develop a branding plan and brand platform for Izhevsk,
- to form a communication strategy to achieve the city's new identity and introduce it to national and international societies.

The economic importance of branding Izhevsk is attracting investment and obtaining more revenue for the city. This revenue will help in urban upgrading and development to make the lives of citizens more healthy and comfortable. It will also help generate more jobs. Branding adds value to everything that is made or sold in Izhevsk. This will increase sales and the prices of goods and services produced by the city. Articulating a unique character for the city by branding will also promote the expansion of the sales channels on regional, national and international scales (Potrov, A. et al. 2013).

Possible Brands for Izhevsk:

The results of a survey made by the scientific journal "Iznakar", research project "mental map of Izhevsk", shows that the most popular and possible brands of Izhevsk from the Izhevchani's point of view are:

- The capital of Udmurtia 80.9%, The city of gunsmiths 71.5%, cosmopolitan city 45.2%, Major industrial center 32.1%, Educational Center 12.8%, The cultural capital of the Volga region 12.8%, Sports center 10.7%, The center of Izhevsk-Votkinsk rebellion 1918-1919, 2% (Potrov, A. et al. 2013).
- The Gate of the Urals (Vorota Urala): The urban activists in accordance with historians and geographers agree that Izhevsk should be branded as the Gate of the Urals (Vorota Urala). This term was formed due to the fact that Izhevsk is an important model for the typology of cities in the Ural region ("Gorod-Zavod"; City- Plant or Plant city). These cities were built within the framework of the development of the Ural metal works region (Bondarenko, 2013). In addition Izhevsk is the capital of the Udmurt republic (Agafonov et al, 2014), (Potrov et al, 2013).
- The city of Kalashnikov (Gorod Kalashnikov): Due to the fact that this popular brand is well-known both in Russia and internationally, some voices even suggest changing the name of the city from Izhevsk to the city of Kalashnikov. Unfortunately, according to an interview held by (Potrov, A. et al. 2013), this is already outdated and not a favored brand for citizens or the local market. It is also criticized for emphasizing military history and the politicization of the city identity.
- Russian capital of engineering is the suggestion of a research group of the branding of Izhevsk project based on surveys and interviews held by them. This is due to the long engineering history of the city. It is also related to Kalashnikov as a major international engineering achievement of the city. The presence of engineering education institutes in the city promotes this idea. The fact that the economy of Izhevsk mainly depends on engineering and industry supports this brand. Interviews with experts and regional engineering organizations strongly acknowledge this idea. This idea is very welcomed by Izhevchani (Potrov, A. et al. 2013).

8.4 A new cultural quarter for Izhevsk (the waterfront cultural quarter):

This is a proposal for a city museums complex and other potential cultural facilities in Izhevsk. This will be a cultural complex located on the east and south waterfront of the Izh Pond, and will include the General's House, the Ironworks factory, the Bodalev Brewery factory, Pump House, the former technical educational Institute for factory workers, and the public realm between and around the sites (Figure.7).



Figure 7: Izhevsk cultural quarter site, Izhevsk.
Source: (Generalcki dom museum, 2013)

The main goals of the project are:

- 1- Making the city more culturally competitive by creating world-class, extraordinary museums and venues,
- 2- Creating a sense of identity for the city of Izhevsk by increasing access to Izhevsk's history through storytelling and encouraging locals to contribute their stories,
- 3- Promoting creative industries in the city by providing spaces for idea generation,
- 3- Making a once closed city open, by improving communication and connections between people within the city and with those who have left.

The project started in 2013 by the planning and renovation of General's house and garden (Currently summer garden and Gorky park). The project should be completed in 7 years (The gallery exhibition center, 2013). The General's house is now a museum. The collection of the museum is the works of contemporary artists and architectural elements of old demolished houses, conserved and saved by active citizens of Izhevsk (Rupsova, 2014).

8.5 Revival of local identity, cultures and heritage:

In 1990, after the declaration of Udmurtia as a republic with Izhevsk its capital, a new constitution of the Udmurt republic was issued (Agafonov et al, 2014). National Udmurt politics and culture were revived. Original Udmurt traditions, values and language were actively widespread among the society. Other ethnic groups such as Tatar also revived their identity and culture. In the city there are Tatar and Udmurt cultural centers that organize events and meetings for their ethnic groups. Also national celebrations and feasts of both these ethnic groups are celebrated in Izhevsk. In the city there are different communities for youth of ethnic groups (e.g. The Union of Tatar Youth). Tatar language and traditions are taught to children and youth in educational centers in Mosques and also in the Tatar cultural center. Udmurt State University is considered one of the carriers and deliverers of Udmurt history, language and literature, through higher education in its faculties. The Udmurt nation also celebrates their culture through a famous musical group, the Udmurt international musical band Baranovichskie Babushki who participated in national and international concerts. Izhevsk is the main center for Udmurt culture as the capital of the republic.

8.6 Izhevsk participates in international venues:

Izhevsk activists and innovators seek international attention and support for their city, and of course investments through participating in venues such as:

6th edition of the World Forum "Communication on Top" in Davos. Participating at the forum, Izhevsk activists aim to mobilize local urban work in the city. This is part of the development and creation of an entire strategy for marketing and promoting Izhevsk. This public initiative arose from an awareness of the need for international support and interest in Izhevsk. The panel discussed the Izhevsk experience under the theme "How to attract the planet: investment and branding regions" two major reports: Barcelona and Izhevsk (Gordon, 2015). World exhibition of information technologies and telecommunications CeBIT 2015 Germany, Hannover (Smyslov, 2015). In this venue the Klabukov brothers represented Izhevsk (the founders of mobile application Hudway). It is notable to say that this new industry brings around 40 million rubles a year (\$800,000) to Izhevsk. The Klabukov brothers' initiative at the Hannover exhibition aimed to present Izhevsk as technological hub and center for the telecommunication industry. Their motto was "Izhevsk smart city with a soul".

9. Conclusion

9.1 Tools to reinvent Izhevsk

The research concluded the main tools used by active society to reinvent Izhevsk:

Exchanging experiences, ideas and practices with international activists and professionals, connecting, communicating and opening up to the world. This is achieved through events such as URBANFEST. This is an important initiative because it presents new ideas to develop the city. This also helps introduce Izhevsk to international society, which can help the economy and bring more foreign investments.

Educating society about contemporary urban planning, development approaches and planning workshops. This is an important strategy to build awareness of society, attract the

attention of citizens, changing the mentality and rebuilding self-esteem. Building urban knowledge is one of the first steps towards changing decision-making processes from top-down to bottom-up.

Branding the city. This tool works to reformulate the identity of Izhevsk and help citizens remember the importance and uniqueness of their city. It is important for attracting investors and generating more employment opportunities.

Conserving and retelling history, reusing and reinvesting Izhevsk's urban planning and architectural heritage. History and heritage are crucial identity elements. The historical part of Izhevsk represent sits glory, achievements and position among Russian industrial hubs. It is very important to conserve, reuse, tell the stories and provide opportunities to experience life activities in these buildings and public realms. This practice reinforces identity and retrieves lost self-esteem because of economic crises, as they are a proof and witness of a history full of glorious achievements.

The tool of revival of local identity, cultures and heritage is an effective way for introducing contemporary Izhevsk as a cultural creative hub with many rich, diverse cultural groups. For citizens it is important to identify their ethnicity, revive it and introduce it to other ethnic groups of the city to exchange experiences and cultures. It is a good idea for Izhevsk to be branded as the center of Udmurt international and cultural festivals.

The tool of participating in international venues is to tell their story to the world and get constructive and useful feedback. Exchanging experiences is a key factor in gaining a competitive position and evaluating the current stage of development. International venues work as a mine of ideas. Most of these ideas proved successful. Willingness and awareness of Izhevsk activists of this fact proves that they no longer live isolated from the rest of the world. These initiatives help Izhevsk integrate into the international system. These bottom-up efforts can make Izhevsk occupy a distinguished position among innovative cities in the future.

Cities are gold mines. Active citizens are the gold seekers. It is astonishing and would have been a shame for a city like Izhevsk to stay undiscovered. When a city find its own self, with the help of its citizens, people know how unique they are together with their city. As presented in the research paper, Izhevsk has many urban, historical, cultural, economic, natural and human opportunities. The research came to the conclusion that many steps have been made towards an innovative and sustainable future for Izhevsk. The most important steps are:

- 1- educating and growing urban awareness among Izhevchanis,
- 2- the active society's willingness to be integrated together with their city in international society.

Healthy livable cities can never be developed by top-down control. Only residents who understand their city can lead innovation and upgrading initiatives. That is why bottom-up development is a crucial strategy in the city's future.

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Liverpool: A Journey from a Giant of World Trade into a World City Where Giants Now Walk the Streets

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Synopsis

Liverpool was once a proud city at the center of world mercantile trade, but within the space of a 50 years the city underwent such catastrophic economic, social and physical collapse to the point at which it was suggested it should be placed into a state of managed decline. In the space of just 20 years the city and its economy have been transformed into the fastest growing city in the UK outside of London, and a city that has truly repositioned itself as a world city through reflection on and promotion of its cultural offer. Liverpool offers a unique perspective on how cities can react when traditional industries move away, and has strategies in place that could be applied to other cities that are facing similar challenges.

1. Introduction

The city of Liverpool has been on an economic rollercoaster like no other, a city that has been described by the United Nations Educational Scientific and Cultural Organization (UNESCO) as a supreme example of a commercial port at the time of Britain's greatest global influence, and yet, also a city synonymous with decline and riots on such a scale that they led to senior ministers in the government in the 1980s to suggest that Liverpool should be left in a state of managed decline. Today, Liverpool is the fastest growing city economy in the United Kingdom (UK) outside of London, investment and population numbers are increasing and the confidence of the city's residents and their pride for their city has never been higher. Liverpool's story, whilst unique, still has a number of transferable strategies that could be applied elsewhere in understanding of how cities can positively react when traditional industries move away.

This Paper examines Liverpool's story from being a city that was once a giant of world trade, and the mercantile heart of the British Empire, to being a city that underwent such catastrophic economic, social, and physical decline that it lost over half its citizens in just a few decades. This Paper goes on to examine how Liverpool's leaders and the public sector have sought to capitalize and harness the cultural spirit of the city, in a way that has transformed the overall economy from being one that was considered to be in perpetual decline, into a prosperous world city once again. By celebrating its cultural attributes the City of Liverpool was successful in securing European Capital of Culture status in 2008, and then bearing witness to giant marionettes walking it's streets in 2012 and 2014.

2. The Rise of Liverpool

The earliest records of Liverpool as settlement can be found in 1190 when there was a map entry for a 'Liuerpul' which related to a small hamlet around a tidal pool on the banks of the River Mersey in the North West of England. Liverpool was formally created by Royal Charter of King John in 1207, due to the settlement's position on a peninsula between the River

Mersey and the tidal 'pool' making it a convenient harbour for ships trading with Ireland across the Irish Sea.

The following centuries saw little mention of anything of historic merit taking place in Liverpool, and by 1548 the population had only grown to 600 residents. However, by 1555 Liverpool had 15 registered ships, with the first trade taking place with America in 1648, which was to mark the start of the transformation of the settlement into the great mercantile city it was destined to become. The great fire of London in the 1600s has also seen merchants displaced from London moving to Liverpool to continue trade with the 'new world' and the rapidly expanding international trade that was fuelling the emerging British Empire. By 1700 the population of Liverpool had reached 5,000 and saw in 1715 the construction of the world's first commercial enclosed wet dock by transforming the original 'pool' of Liverpool. This revolution in dock construction meant that ships coming to Liverpool were no longer at the mercy of the tides, as they could enter and leave the docks and load and unload without having to wait for changes in water levels. By 1740 Liverpool grew into a major commercial port when it played a crucial role in the trans-Atlantic slave trade. Manufactured goods from the UK were exported through Liverpool to West Africa and traded for enslaved Africans who were then trafficked to the West Indies in exchange for the cargoes of rum, sugar, tobacco and cotton.

By 1757 wealthy merchants in the city financed the construction of the Sankey Brook Canal, the nation's first major inland man-made navigation channel. In 1770 work started on the Leeds and Liverpool canal, which would eventually go onto connect the northern cities of the industrial revolution to the growing port of Liverpool. The next revolution in trade came in 1830 with the opening of the world's first commercial railway between the industrial cities of Manchester and Liverpool. Now goods, mail and people could travel between the cities at speeds that were unimaginable only decades before. With rapid growth came the familiar challenges faced by cities to this day, in the form of overcrowding, sanitation and the risk of disease. The rapid urbanization of the city saw thousands of small terrace homes as well as tenant blocks appear across former farmland, alongside the larger homes of the wealthy merchants that mirrored the Georgian housing styles of London. In response to outbreaks of disease and lack of potable water the Council passed the 1840 Sanitation Act for the city which saw the appointment of Dr Duncan. Dr Duncan was the country's first City Medical Officer who was also to deliver a pioneering sewer system in the city.

In the 19th century, Liverpool became a world mercantile center for general cargo and mass European emigration to the New World. It had major significance on world trade as one of the principal ports of the British Commonwealth. Its innovative techniques and types of dock, dock facilities and warehouse construction had worldwide influence. Merchants once again financed a pivotal piece of infrastructure that transformed the city's port activities. That was the construction of the Albert Dock out into the River Mersey. The complex of buildings around the Albert Dock were the first structures in the UK to be built from cast iron, brick and stone, with no structural wooden supports. As a result, the Albert Dock warehouses formed the first non-combustible warehouse system in the world. The expansion of the dock system created new land by reclaiming land from the River Mersey, leading to new construction methods and technologies to open and close sluices and gates to control water levels. New dock systems and new products required new building technologies to support them with new fire proof warehouses being constructed across the city's waterfront.

By 1850 Liverpool had 1,834 registered ships carrying 514,635 tons of cargo around the world. In the same year the population of the city reached 375,955. At this stage in the city's evolution the great wealth led to the creation of many of Liverpool's finest civic buildings which stand to this day as testament to the growth, optimism and self-understanding that the

city's forefathers had. Liverpool gave attention to the quality and innovation of its architecture and cultural activities and to its public spaces.

In 1880 Liverpool was granted city status by Royal Charter. The following decade saw the establishment of what is now the city's world famous football club, and the opening of the world's first electric overhead railway. Liverpool continued to play a pivotal role of pushing dock technologies that would go on to influence international mercantile systems throughout the British Commonwealth.

By the dawn of the 20th century Liverpool's population had swelled to 684,958. The coming decade saw the foundation stone for what would become the world's largest Anglican cathedral being laid. It also saw the construction of the steel framed reinforced concrete Liver Building within one of the former docks at the Pier Head in 1911. This building and the two 5.5 meter tall 'Liver Birds' that adorned it would in time become the symbol of the city. At 98.2 meters the Liver Building stood as the tallest building in Europe until 1932, and the tallest in the UK until 1961. The height of the building was at the time only limited by the speed of elevator technology needed to serve what can be argued was one of Europe's first truly modern skyscrapers. The technologies developed in Liverpool to deliver these new modern types of building method, would in themselves go on to influence designers and engineers the world over and lead to the dramatically altered skylines we see in our cities to this day. By 1916 the first of what were envisaged to eventually be six or more 'Graces' were completed and stood proudly on the busiest port of the British Empire. This period marked the pinnacle of Liverpool's economic success, when it regarded itself as the "second city" of the British Empire.

For the 1920s and 1930s the city continued to expand with extensive garden suburbs to the south, an airport, new public parks and the creation of an internal rail and underground system to serve the ever expanding population. This period of optimism saw the start of the city's second cathedral, one designed to rival St Peter's in Rome (due to the outbreak of war only the crypt was ever constructed before the cathedral was redesigned). Road connections were improved to the city with the world's longest underwater road tunnel in the being constructed under the River Mersey. The opening of the Mersey Tunnel in 1934 connected Liverpool to the port and dock systems on the opposite side of the River Mersey on the Wirral Peninsula at Birkenhead and Wallasey. Increasing standards of living and wages across the city resulted in the growth of resorts such as New Brighton and Blackpool connected to Liverpool by rail to serve the needs of the cities expanding population. Modernist and art deco buildings sprang up across the city, reflecting its optimism and approach to modernity, confident in its place in world trade and dominance in the mercantile sector that continued to fuel the city's growth.

1939 saw the outbreak of the Second World War and the city of Liverpool would never be the same again.

3. The Fall of Liverpool

Before the outbreak of war there were already signs that global shifts were taking place in world trade. Liverpool was no longer the center of world shipping and the role of the British Empire and the Commonwealth of Nations, upon which its trade depended, was changing. Shifts in shipping patterns, the dominance of other port cities, increases in other forms of transport such as road and rail all meant that Liverpool was no longer at the cutting edge of technology, and no longer the heart of mercantile trade that it had enjoyed being for over 100 years.

However, it was the outbreak of war and the devastation of the city, its docks and the resulting displacement of its residents that meant Liverpool was about to enter a serious spiral of decline from which it may never truly recover. The Second World War saw over 4,000 people in the city directly lose their lives to the bombing raids and much of the city center, its docks, and its once grand buildings left in ruins. So extensive was the damage to the city that the magnitude of the destruction was suppressed due to fears of its affect on the morale of the people of the city and the nation as a whole.

With much of the city centre in ruins and the once bustling docks desolated by a combination of bombing raids and falling trade activity in a post war Europe, the City Council took it upon themselves to plan for a new brighter tomorrow. In 1948 the City Council appointed two architects, Gordon Hemm and Alderman A. Ernest Shennan, as well as a Fellow of the Royal Society of Arts, J.F. Smith, to reimagine a new Liverpool rising from the ashes of war.

Whilst nationally the UK was three years into a Socialist period of government, Liverpool was governed by a Conservative majority. As would be repeated in the coming decades, it would appear that it is when Liverpool's administration is the opposite of the national government that the city undergoes its most radical periods of inward reflection and subsequent transformation. The plan for Liverpool which became known as the 'Shannon Plan' called for a new relationship between the residents of the city, traffic and commerce. The Plan called for the creation of an new inner ring road "*.. its main function will be to divert as much as possible of the traffic converging on the centre of the city, and to cause it to travel round rather than across the commercial core.*" This was not the first Plan for the city looking to ease the movement of traffic, in fact the first plans for an inner ring road were drawn up in 1853. In the in-between war years, designer John Brodie had called for many more miles of suburban dual carriageways across the city.

It was not a plan for immediate implementation, but intended to guide the future of the city as it was rebuilt. There is a very poignant quotation in the Shannon Plan about how the City Council saw the plan's implementation:

"Like Rome, it will not, of course, materialise in a day but we can visualise it, and prepare accordingly for the day when redevelopment shall by sheer force of circumstances gather impulse and momentum."

The Plan was successful in many respects in that it saw the galvanization of a city wide plan for the first time, a plan for the betterment of the city and its residents. A number of socialist style housing schemes, new airport buildings, industrial estates and roads as well as new civic buildings were delivered before the Plan fell out of favor. A change in 1955 to a Labour administration from a Conservative one in the city, marked the end of the Shannon Plan.

However, the arrival of a new administration brought a new focus, and in 1961 the city's first City Planning Department was founded. Fortuitously this was the same year as the Beatles were to appear at the Cavern Club. These two seemingly unconnected events would change the city, its identity and its cultural legacy forever. Despite the emerging economic decline Liverpool maintained a grass-roots and independent creative community. The city's music scene promoted Liverpool as a major cultural center in the 1960s and coined the term 'Mersey Beat' which spread the music of the city around the world.

Under the guidance of the City Planning Department, 1962 saw the publication of Shankland Report No. 7. Its pages contained the final conclusions of an exhaustive study into the idea of delivering a comprehensive new inner ring road, to be framed by new development opportunities. This was followed the Shankland Report No.11, which looked at parking and pedestrian movements in the city.

The Shankland report's had at their heart an ambitious framework for the future of Liverpool, with proposals for wholesale demolition and redevelopment of swathes of the city. The reports also called for pedestrians to be separated from vehicles via an extensive network of 'high level walkways'. Work commenced on the wholesale clearance of areas of the city and construction started on a number of sections of road and the pedestrian walkways in anticipation of the commencement of the wider Inner Ring Road project.

The Shankland report's central recommendations to Liverpool City Council was that it submit the plans to the Ministry of Transport immediately to secure funding, so that work could start as soon as possible. One of the points made in Report No7 was that no one part of the road scheme could possibly function alone. While it ought to be constructed in phases, none of them would work efficiently until the whole inner ring road was built out. The Report called for the Council to be committed to a 13 year construction period. The Shankland report's made three central assumptions:

- The central area of Liverpool would continue as a significant commercial and regional hub;
- That Liverpool would continue as a major port; and
- That the central area would continue to be largest single center of employment in the region

Arguably, two of these assumptions were safe to make, but in 1962 it would not have been apparent that the port of Liverpool was to fall into such rapid decline that economic calamity was about to hit the city. Funding for the Inner Ring Road was not secured and the plan for the Inner Ring Road was subsequently abandoned.

In 1972 the southernmost docks of the city including the Albert Dock were abandoned as they were no longer able to accommodate modern shipping as they were too shallow and it was becoming too costly to dredge the sand from the docks and the River Mersey. The following year the southern dock began to silt up, the pattern was repeated along the river front, until little remained of the former bustling quaysides and wharfs. The warehouses and wharf side buildings quickly fell into disrepair with swathes of former brick built warehouses along the waterfront being pulled down or falling down due to neglect.

By the late 1970s and early 1980s a shift in global trade, manufacturing and how trade was transported by new larger containerized ships meant that the once great port of the British Empire had lost over 80,000 dock related jobs and the city's manufacturing sector shrank by 50%. Many thousands more jobs were lost across the city, as industries and businesses that once supported the docks and their workers no longer had markets or customers. Liverpool fell into a steep spiral of economic collapse with little investment being available to stem the decline, jobless figures rose and the city entered a period of natural and forced depopulation.

Plans by the Council to stem the decline of the city included the hugely ambitious Seifert Plan to create a truly international 'River City' to fill in the Albert Dock and create a series of new buildings and towers. Including one tower which, at 560 meters tall, would have been the tallest building in the world at the time. However, lack of funding, belief and investment meant the 'River City' idea would never leave the drawing board.

The expansion of new towns around automotive industries on the outskirts of Liverpool saw many thousands of Liverpool's residents either move to find new work or were forcibly relocated to new communities in surrounding boroughs. At its peak in the 1930s Liverpool had a population of 846,101, but by the 1980s 10,000 people were leaving the city a year. By the starts of the 1980s Liverpool had lost almost half of its citizens, industry lay in ruin, the once proud dock systems were silted up and abandoned, 10,000s of thousands of homes

and buildings abandoned across the city. This led to the perfect cocktail of deprivation which when combined with racial tension in the city which led to the synonymous riots of 1981.

Over nine days of disorder on the streets of Liverpool hundreds of police and many hundreds of the city's residents were injured, one man was killed, 500 arrested, businesses looted, 70 buildings in the city destroyed by fire and damage running into the many millions of pounds.

Liverpool's rapid post war industrial decline and resulting civil unrest during the early 1980s has overshadowed the city and its identity for decades. However, it was not until the release of National Archives in 2011 under the Freedom of Information Act that it became clear the fate of Liverpool could have been even worse. The National Archives show that the then Prime Minister, Margaret Thatcher, was advised not to invest in Liverpool after the riots of 1981. Senior ministers told the Prime Minister at the time that Liverpool would be best left alone to "managed decline" and that pouring money into the "stony ground" of Merseyside would be a waste of money.

Whilst at the time there were calls in government to regenerate older industrial cities like Liverpool, the National Archives have identified that the former Chancellor Geoffrey Howe said at the time that the "government must not overcommit scarce resources to Liverpool". Chancellor Howe went on to add in his letter to the Prime Minister "I cannot help feeling that the option of managed decline is one which we should not forget altogether...We must not expend all our limited resources in trying to make water flow uphill."

4. The Rise of a New Liverpool

In response to the riots of 1981 the government appointed Michael Heseltine as the Minister for Merseyside. The same year saw the creation of the Merseyside Development Corporation established to regenerate the swathes of derelict docks and the city center. One of the first actions of Michael Heseltine was to create a focus that could revitalize tourism in Liverpool and in doing so bring pride back to the citizens of the city. This project was to be known as the Liverpool International Garden Festival. A project of national and international significance that would transform a redundant landfill site and wasteland fronting the River Mersey to the south of the city center into a new park. Whilst only open from May until October 1984, the festival drew an audience of 3,380,000 visitors to the city. Such was the success of the festival that it became the model for several other festivals held in former industrial towns and cities that had fallen into decline around the UK.

One of the most significant physical forms of regeneration in the mid-1980s was the redevelopment of the Albert Dock complex, which had closed in the 1970s and fallen into disrepair. Such was the dereliction of the Albert Dock complex that despite falling within the highest grade of historic buildings in the country, on several occasions plans had been presented to demolish the complex of warehouses and fill in the docks. Whilst work on regenerating the Albert Dock commenced in 1981 it was not until for the formation of the Merseyside Development Corporation that works were progressed and the Albert Dock opened up to the public for the first time in 1984.

In 1998 under an initiative by the Merseyside Development Corporation Liverpool, an art gallery and museum was created in one of the key buildings in the Albert Dock complex. Tate Liverpool was the first time the Tate art gallery had established a presence outside of the capital. Tate Liverpool was created to display work from the Tate Collection, which comprises the national collection of British art from the year 1500 to the present day, and

international modern art. The opening of the Tate Liverpool and the completion of the Albert Dock restoration was heralded the largest single conservation project undertaken in the UK.

The Merseyside Development Corporation was wound up in 1998 having been hailed as success in transforming the city. During its ten years the Corporation operated it transformed 3.82 km² of derelict docklands, created 22,155 jobs and saw £698 million (€995 million) of private sector finance leveraged into the city. In terms of infrastructure over 97 kilometers of new roads, cycle ways and footpaths had been delivered by the Corporation, opening up new communities and providing access to new job opportunities across the city. Despite the success of the Merseyside Development Corporation in securing inward investment the population of the city continued to fall. By 1999 the overall population of the city had fallen to 439,473, which was just half the population of the city several decades before.

Following the winding up of the Merseyside Development Corporation, the UK's first Urban Regeneration Company, 'Liverpool Vision', was established in the city 1999. Liverpool Vision was established as an Economic Development Company founded with the task of leading the physical transformation of the city into the new millennium.

In 2003, the city was presented with an opportunity to bid for Liverpool to be nominated as the European Capital of Culture (ECoC) in 2008. The European Capital of Culture (ECoC) is an initiative which was launched by the European Union in 1985, with the title awarded every year and on a rotating basis to respective European Union member states. The first UK city to hold the title (then termed 'European City of Culture') was Glasgow in 1990. Glasgow's experience and subsequent development became a keystone in arguments for culture-led urban regeneration, an aspiration which has since become central for title holders. With the UK nominated as ECoC host for 2008, a national competition was held and Liverpool, alongside 12 other UK cities, bid for the title and Liverpool was successfully selected as ECoC 2008 in June 2003.

Liverpool's European Capital of Culture 2008 winning Vision was to positively reposition Liverpool to a national and international audience and to encourage more visitors to the city and the region. It would also encourage and increase participation in cultural activity by people from communities across Merseyside and the wider region. In doing so it would create a legacy of long-term growth and sustainability in the city's cultural sector and develop greater recognition, nationally and internationally, for the role of arts and culture in making our cities better places to live, work and visit.

In Liverpool, the aspiration to regenerate and reposition the city was placed at the heart of the ECoC vision. The main branded programme of events and related activity was coordinated by the Liverpool Culture Company with a wide range of stakeholders over six themed years, with a budget of £129.9 million (€184.8 million). The interaction with the wider city regeneration and re-imaging programme, which emerged out of public and private partnerships, was funded mainly by private capital to a value of £4 billion (€5.6 billion) over eight years.

Liverpool's bid had at its heart a series of annual events in the run up to being European Capital of Culture 2008, which together would positively reposition Liverpool to a national and international audience. These included:

- 2003: Year of Learning
- 2004: Year of Faith
- 2005: Year of the Sea
- 2006: Year of Performance

- 2007: Year of Heritage, Liverpool's 800th Anniversary and the year areas of the city were designated with World Heritage Status
- 2008: European Capital of Culture Year
- 2009: Year of the Environment
- 2010 Year of Health, Well-Being and Innovation.

The impact of the cultural events leading up to and including hosting the European Capital of Culture in 2008 (but excluding the two subsequent events) were captured by Liverpool University and John Moores University in their joint paper 'Creating an Impact: Liverpool's experience as European Capital of Culture' in 2011.

The findings of the joint university study separated the impacts of hosting ECoC in Liverpool into several categories as follow:

- 1) **Cultural Access and Participation** – The ECoC programme identified that 33% of the audience was local to the city with 5% of the remaining audience being international. In the lead up to 2008 the city saw a 10% rise in arts audiences across the city, with higher levels of interest in going to museums and galleries in Liverpool than elsewhere in the UK. During this period attractions across the city saw an increase by 50% patronage, peaking at 5.5 million people. By 2009 66% of Liverpool's citizens took part in at least one of the ECoC events.
- 2) **Economy and Tourism** - The Liverpool ECoC attracted 9.7 million additional visits to Liverpool, constituting 35% of all visits to the city in 2008. These visits generated an economic impact of £753.8 million (additional direct visitor spend) across Liverpool, Merseyside and the wider North West region. 2.6 million European and global visits were motivated by the Liverpool ECoC in 2008. 97% of these were first-time visits to the city. The ECoC generated an additional 1.14 million staying visitor nights in Liverpool hotels, 1.29 million in the rest of Merseyside and 1.7 million in the rest of the North West. In 2008 there were an estimated 27.7 million visits to Liverpool, a 34% rise on the previous year; and 75.1 million visits to Merseyside, a 19% rise on 2007. This increase was proportionally much greater than in other cities. Merseyside saw a 20% rise in day visits between 2007 and 2008, in comparison to rises of between 1 and 4% in other areas of the North West; Merseyside also saw a 4% rise in staying visits over the same period, in comparison with a 7% drop in Greater Manchester.
- 3) **Cultural Vibrancy and Sustainability** - Since ECoC nomination in 2003 National and local media coverage on Liverpool's cultural offer more than doubled and in 2008 positive stories on the city's cultural assets dominated over the traditional emphasis on (negative) social issues. Liverpool culture stories had diversified from the traditional focus on popular music, the built heritage to the visual and performing arts and growing references to Liverpool's creative industries. By the end of 2008 the arts sector viewed the Liverpool ECoC as a success in terms of raising the profile of the city and its arts and cultural offer and in bringing visitors and the local population in to enjoy its offer. The city region's creative industries sector also felt that: the Liverpool ECoC had improved the profile of the city, particularly externally; that it had improved the 'local morale' of the sector and increased its credibility within the city region; and many anticipate long-term, positive impacts for their businesses. Up to 51% of local cultural sector peers agree that by the end of its ECoC year, Liverpool has been repositioned as a 'world class city'. At least 15 of the events of Liverpool ECoC were judged to be 'world class' or 'excellent' by the majority of a panel of consulted peer reviewers. There were 1,683 creative industry enterprises in Liverpool employing 11,000 people. This represented a growth of 8% in the number of enterprises since 2004. Total audience among the largest arts and cultural organizations in the city topped 5.6 million.

- 4) **Image and Perceptions** - The traditional contrast between negative reporting on social issues and positive stories on city icons has been replaced by a wealth of stories on current cultural offer and economic change. By the end of 2008, this had led to a much more nuanced view of the city, with a balanced proportion of positive, negative and neutral coverage. Coverage of the Liverpool ECoC was overwhelmingly positive between 2003 and end of 2008, peaking in 2003 when 74% of all national stories being positive. Events delivered under the Liverpool ECoC brand received over 90% positive or neutral coverage throughout this period. Positive stories on Liverpool as a city grew by 71% in the national press between 2007 and 2008. From 2005 to 2008 overall positive impressions of Liverpool increased amongst the UK population (from 53% to 60%) while negative views dropped from 20% to 14%. By the end of 2008 65% of UK residents were aware that Liverpool was European Capital of Culture, 77% of visitors felt the city was 'safer than I expected' with 99% of visitors particularly liking the 'general atmosphere' and 97% the 'feeling of welcome'. 68% of UK businesses believed the ECoC had a positive impact on Liverpool's image.
- 5) **Governance and Delivery Process** - Liverpool's approach to ECoC governance was the result of extensive partnership across public, private and third sectors. This contributed to the repositioning of culture as more central to cross-sectoral agendas. The Liverpool ECoC generated the highest amount of sponsorship and earned income of any ECoC, with a total of £22.3 million of sponsorship (both cash and in kind) and £4.1 million of earned income. By the end of 2008 Liverpool ECoC stakeholders agreed that the year was seen as a success, that it had added value to existing regeneration programmes and that there was great potential associated with its legacy. Liverpool residents showed much higher levels of agreement with the claim that the city was a better place than before the ECoC award (85%, a 20% rise on 2007). Up to 78% of North West residents agreed that Liverpool had 'benefited' or 'benefited a great deal' from hosting the ECoC. Internationally, the Liverpool ECoC was perceived as a relevant reference point for future ECoC hosts and is presented as an exemplar by the European Commission in areas such as its volunteering, community involvement and research programmes.

Such was the deemed success of Liverpool hosting the ECoC in terms of generating significant social and economic benefits for the city, that the Department for Culture, Media and Sport created the UK City of Culture concept. The UK City of Culture will now be held every 5 years, with Derry/Londonderry securing host city status for its first year in 2013, and Hull being granted the title for 2017.

It is important to understand Liverpool's year as European Capital of Culture in 2008 within a wider economic, social and political context. In recent years, a renewed local political leadership has sought to re-engage with national government and to build on local economic growth and substantial public and private investment in the city, though in the context of continuing social problems associated with more than half a century of decline.

The decade immediately leading up to the Liverpool ECoC year coincided with a period of continuous economic growth in the UK, during which Liverpool's economic situation changed considerably, matching, and at times surpassing, the UK-wide growth and narrowing the historic gap in socio-economic performance between Liverpool and the rest of the country.

Simultaneously there has been a development of partnership working by the leaders of Liverpool to regenerate the city (and the wider Liverpool city region), with increased investment from both the public and private sectors and significant national and European funding. Following the success of Liverpool's programme of events to celebrate its year as European Capital of Culture in 2008, an annual events programme was developed by the

Culture and Tourism department of Liverpool City Council to capitalize on the cultural offer of the city. In order to monitor the impact of these events and to ensure that they can continue to be improved and developed in future years, the Council has commissioned annual visitor and economic impact studies. Event research has been used to understand the economic impacts of the City's 800th birthday year and 2008 Capital of Culture events programme and to develop a programme of events that look to expand the culture offer of the city beyond the city center.

One such cultural event that built on the legacy of Liverpool's hosting of ECoC in 2008, was to mark the anniversary of the sinking of the RMS Titanic. The ill-fated Titanic was registered at Liverpool's White Star Line and as such had strong links with the identity of the city.

Liverpool City Council decided to mark the centenary of the loss over 1,500 men women and children on board the ill-fated transatlantic crossing by commissioning French street theatre company Royal De Luxe to deliver a fitting and reflective event in the city. The Giant Sea Odyssey which was created for the centenary of the sinking of the Titanic was a spectacular three day event in Liverpool in April 2012. The three day Giant Spectacular was supported by funding through the Arts Council drawn from the Lottery funding programme and the private sector.

An estimated 800,000 people watched as three giant marionettes roamed the streets of the city. Inspired by a letter a 10 year old girl sent to her father on board the Titanic in 1912, the Royal De Luxe theatre company created an enchanting story about a giant who perished on the ill-fated ship, his orphaned little girl, her uncle and her giant dog. Liverpool City Council worked closely with the theatre company to ensure that the three giants travelled the city, reaching communities that would not normally benefit from tourism or attention from the media. The Little Giant Girl, which stood at 9 meters tall, and the Giant Uncle, which stood at 15 meters, travelled to some of the most deprived communities in the north of the city, where each night there were dedicated events to bring the communities together in celebration of this unique public art experience.

Staging the Giant Sea Odyssey took 18 months of planning and required the closing of main arterial roads in the city, as well as removing railings and overhead wires to enable the free flow of the three giants. It required dozens of stakeholders including community leaders from across the city, together with a complex traffic and security management plan to deliver the event.

The cost of the event, estimated at £1.5 million (€2.2 million) was partly met by European legacy funding from Liverpool's 2008 Capital of Culture year. Early forecasts had suggested the cultural event would deliver a £12 million (€17 million) boost to the city's economy, with initial expectations of around 250,000 people attending.

The actual Giant Sea Odyssey event surpassed all expectations and was heralded as a huge success, with an estimated 800,000 people attending the three days. According to Vector Research's report for Liverpool City Council, the event generated an economic impact of £32 million (€45.5 million) to the city's economy. The event captured the imagination of the city's citizens and drew the world's media to Liverpool. Numerous participatory projects were also delivered alongside the Giant Sea Odyssey to ensure as many people as possible from across all communities in the city could become involved in the run up, during and after the event.

Such was the success of the 2012 Giant Sea Odyssey that Liverpool City Council took the decision to engage again with Royal De Luxe theatre company to commemorate the centenary of the outbreak of World War I. The return of the giants to Liverpool was timed to also capitalize on Liverpool hosting the UK government's International Festival for Business

(IFB). The IFB was a 50-day business festival hosted by Liverpool and orchestrated by Liverpool Vision as an ambitious showcase for Great British industry across multiple sectors, and championed UK business to new markets, new products and new partners. The idea of Liverpool hosting the IFB was once again the brainchild of Sir Michael Heseltine, the man who had started the cultural regeneration of the city in the 1980s. This time the focus of the festival would be on business, but with a back drop of culture and place making. At the launch of the IFB at St Georges Hall in Liverpool in 2014 by the Prime Minister David Cameron, Sir Michael Heseltine is quoted as saying "Great cities are partnerships between the public and private sectors – they always were and they will always be".

As outlined above, the IFB whilst focusing on business opportunities for Great Britain, also utilized Liverpool's cultural offer and created opportunities for public engagement through a cultural programme that sat alongside the festival. As well as concerts, sporting events, exhibitions and plays, the city once again played host to the return of the Giants.

Titled Memories of August 1914, the return of the Giants was heralded as one of the UK's landmark events to mark the centenary of the First World War. Coming just two years after the Giant Sea Odyssey it was hoped that the event would at least great similar levels of media attention and pride for the city. For the 2014 a new giant marionette was created, the Grandma Giant, who along with the return of Little Girl Giant and her dog would once again take to the streets of the city. This time the story would focus on the outbreak of war and how the citizens of cities like Liverpool would see their lives transformed.

The decision was taken once again to base the Giants in parts of the city that usually do not form part of the tourism offer. These communities are considered to be some of the most socially deprived in the region. This approach brought a scale of public art to the communities of northern and eastern Liverpool that had not been witnessed before.

Rather than just meeting the visitor numbers of the Giant Sea Odyssey, the Giant Memories of August 2014 surpassed expectations. The event saw over one million people converge on the streets of the city to capture a glimpse of the Giants as they walked in search of one another. Evidence from the report into the impact of the return of the Giants by the Murray Consultancy, which was commissioned by Culture Liverpool, suggested that they had an unprecedented economic impact of £46 million (€65 million) in the city across the three days of the event. Around a third of the visitors to the event were from outside the region, with many of these traveling from overseas. Average spend of residents from the city associated with the event was £19 (€27), whereas the average spend of visitors from outside the region was £110 (€156). Around 12 % of the visitors had never been to Liverpool before.

5. The Future for Liverpool

Like all world class cities, Liverpool has the skills, the infrastructure and the connections to succeed. Liverpool also has a renewed sense of place on the world stage and the self-belief that it is once again a powerhouse of business. Trade is in the DNA of the city, as a port city it has over 800 years of trading with world, so as a city it understands the importance of marketing and positioning itself for inward investment and trade with ever changing world markets.

In 2008, during Liverpool's well publicized and hugely successful ECoC, the city's economic regeneration company Liverpool Vision was merged with Liverpool Council's Land and Development Company to form a single Economic Development Company within Liverpool. In 2013 Liverpool Vision created Marketing Liverpool as the city's destination marketing

organization. It has responsibility for communicating the city’s brand positively and imaginatively to local, national and global audiences. Marketing Liverpool works with partners in business, cultural organizations, education institutions and community groups to promote Liverpool as a city in which to live, work, visit, invest and study.

Marketing Liverpool has established an impressive track record in attracting major conferences and events, increasing the number of visitors and improving Liverpool’s reputation as a leading UK business destination. Most recent census data would suggest that Liverpool’s population has now grown by 5.5% in the past decade. Think tank Centre for Cities unveiled in July 2015 in their report that the population of Liverpool city had more than doubled between 2001 and 2011, and that the rise was being fuelled by young professionals and not by students.

Liverpool has employed an approach to its brand identity and city promotion that could be adapted and applied to other cities that are seeking to reestablish their position once traditional industries move away. The following has therefore been prepared as a methodology and approach that could be adapted and applied to comparable cities facing a decline in their traditional industries.



Figure 1: The Methodology of Brand Essence

The methodology is explained in more detail as follows:

- 1) **Brand Essence** – a city must identify what makes it different. What is its differentiator from other cities in its region, nationally or even internationally? For Liverpool, the brand essence has been identified as having ‘Dynamic Creativity’. By focusing on this brand essence it is possible to identify audiences and drive focus for the city.
- 2) **Audience** – the audience of a city can be broken down into four distinct categories, those of Visitors; Students; Residents and Business. Each of these audiences will have a different relationship with the brand essence and a different approach will need to be employed for each audience.
- 3) **Audience Focus** – as outlined above, each audience will have a different relationship with brand essence. For visitors this will be inherently different; for student’s life changing; for residents life affirming and for business fertile ground for growth.
- 4) **Local Context** – By applying each of these categories to Liverpool, Marketing Liverpool have been able to identify the markets and tailor messages and opportunities accordingly. For instance, in the case of visitors, Liverpool’s mix of peoples and culture is completely unique. Always changing and always authentic, the city and its visitors always demand participation. In the case of students, Liverpool has been home to radicals and free thinkers, poets and creators. As a city Liverpool encourages individualism, bringing out natural creativity and offering a world-class learning environment. In terms of its residents, Liverpool pioneers rebels, Nobel prize winners, where everyone can find a home. The vibrant mix of people and cultures has created an environment where everyone is welcome. With regards to business Liverpool has a growing reputation for harnessing graduates with fresh ideas and is thriving with entrepreneurial spirit.

According to the Centre for Cities most recent results, more than half of Liverpool’s city center residents are aged between 22 and 29, with the availability of jobs and the cultural offer of the city center being the main reasons behind the surge in growth in this demographic. This is comparable to 160% increase in population in the city center for that period.

Over the last decade, Liverpool has attracted over £5 billion (€7.1 billion) of investment in property, infrastructure and services. It has redesigned its core to create the UK’s most successful new shopping and leisure destination in a generation, reshaped the river to make room for the world’s largest supertankers, and reinvented its waterfront to make way for the transformational projects such as ACC Liverpool and the proposed Liverpool Waters development, which itself will see a further £5 billion (€7.1 billion) in the regeneration of the northern docks in the coming few decades. Liverpool remains a small city, with UNESCO protected sites at the heart of the city and its waterfront.

In the words of Liverpool’s first elected Mayor, Joe Anderson:

“Liverpool is a city where the best is yet to come”

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The Exploration of Industrial Transformation in Chinese new economic normality

——Case of Yangcheng Lake area planning in Suzhou

(Xiaodi Guo)

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1 background

With the rapid development of urbanization, many villages become the industrial area which has the characteristics of urban system, so it is also a penetration zone that directivity factors related to urban development concentrate. From the point of view of the forming process, industrialization and urbanization are the same process but different aspects, both they have the relation that supplement each other. In other words, the industrial development has promoted the urban sprawl, making the city outskirts into a factory zone. And there are three main historical reasons contributed the development of suburban industrial land use.

1.1 Environmental factor

Since the industrial revolution, the development of industry was the main driving force of urban development, and a lot of industrial cities were built based on the factory hub. It brought urban construction boom. For example, the emergence of railway lines and mining area which represents high technology at that time had provoking influence on other parallel systems in the same division, which residential blocks and small business for workers were built in that area. And it is true that the emergency of industry revolution brings us numerous advantages such as convenient living, high products efficiency, high employment rates and many new technological tools, etc.

However, with the development of industrialization, people gradually found that the industrial development has not only changed the standard of people's living, but also changed the living environment. A series of urban problems had emerged with the high-speed industrial development. The number of acres of farmland had been replaced by millions of factory chimneys, and a growing number of Large-scale people were migrating to urban area especially industrial agglomeration, so that many residential communities had become slums. For example, Friedrich Engels wrote a book named 《The Condition of the Working Class in England》 which also mentioned that in Birmingham, a drainage ditch and garbage could be seen everywhere.^[1] Many landowners intended to establish an upper class residential area in the industrial areas, however, this area were nearly occupied by heavy industry, deteriorated into a slum where hundreds of people have to live under one roof. "Urban disease" was very prominent especially in public health and safety. This brought a series of problems including that Water shortages, serious river pollution and a deterioration in the aquatic ecology in 2011

were described as "quite outstanding", and could threaten the country's sustainable growth. China also get through the tough time. In China, data shows that up to 40 percent of rivers were seriously polluted in 2011 after 75 billion tons of industrial water was discharged into them.^[2] And industrial pollution was the biggest source of the PM 2.5 problems which cause Beijing's smog as well.

Hence, nowadays in China, commercial and residential buildings had replaced tens of thousands of factory chimneys locating in the city center while Industrial regions had always been driven out from city center to the city boundary. TFrom the analysis above, some of the suburban industrial zones were formed passively because of the relocation of factories which formerly located in the city center.

1.2 Comprehensive factor

In the 19th century, American planner and economist William Alonso had proposed The bid rent theory^[3] to explain how the price and demand of real estate change as the distance from the central business district (CBD) increases. The model which shows the bid rent in the inner city can be derived from this theory. According to this model, it could be assume that manufacturing will pay slightly less rent for the land as they are only interested in the accessibility for workers, "goods in" and "goods out".

There are several benefits of locating industry in the outer ring--suburb area. First, it is much easier to locate factories rather than commercial and residential land in the suburban area because of the weak dependence of manufacturing to the CBD. Second, there is more idle land available for factories. Third, in spite of the low rent, there is convenient regional and urban transport network to enhance resources、 goods and personnel exchanges from the processing area

to the raw material production area and retail area. Hence, factories, which have the input and output linkage, are spontaneously close to each other locating in the city outskirts in the practical application. Therefore, there are more and more those "home grown," self-organizing, "forced formed" suburban industrial zones.

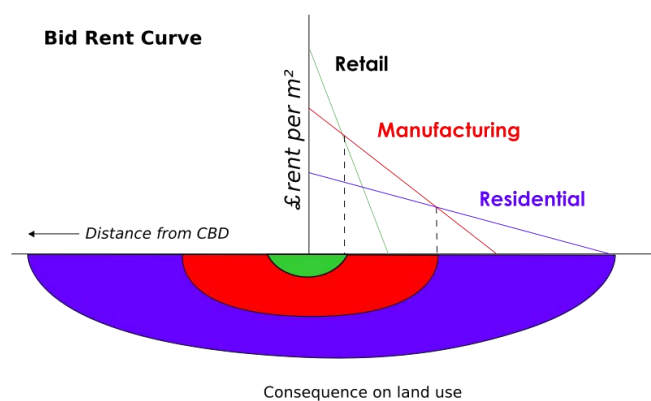


Figure 1: The bid rent model (Source: Location and Land Use, 1964)

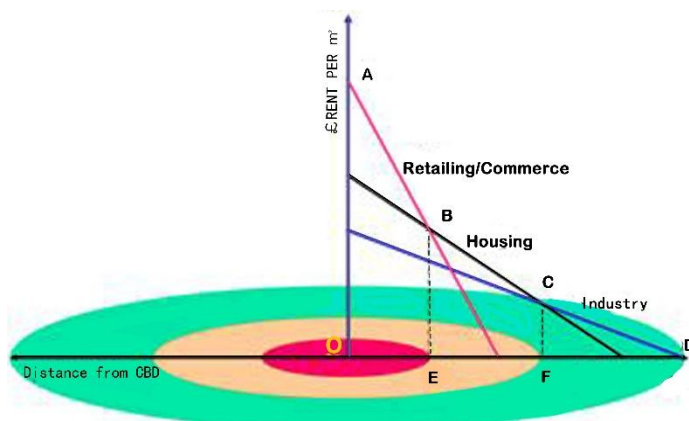


Figure 2: The bid rent model in inner city (Source: Location and Land Use, 1964)

1.3 Political factor

In china, we have to mention the political factor. The political factor have two different means to improve industrial development by different policy intentions. One situation is that in order to attract substantial investment, different levels of local government promote the local economic development, increase the growth of gross domestic product and establish the economic zone mainly containing the manufacturing plants in the suburb area. Because in the suburb area the politicians do not have to consider demolition problem. In comparison, if in the city built-up area, they have to finance a large sum of removal cost from the fiscal levy to the relocated households. The other is that when the development level of local industrial plants had reached a certain size and achievement, in order to meet the future demand, the government establish the industrial zone in the city outskirts and provide many incentive policies including preferential tax policy and preferential land policy and etc. In China, this situation can be frequently seen in the south of China called "Sunan mode", such as the outskirts of city Suzhou、Wuxi、Hangzhou and etc.

2 The comparison of relocation factories and retaining factories

Industrialization as a mean of urban sprawl, contribute to the pollution of living environment in cities. So the factories in the city core were forced to move from the city center to the edge of the city in order to reduce the impact of environmental pollution on people's lives. However, now with the further expansion of cities, the urban construction areas spread outwardly, people have to face a main contradiction between pollution and ecological protection. Therefore, many factories located in the outskirt of the city are likely to move. The traditional way is moving the industrial enterprises in the farther suburban areas. The new way is retaining them in the city boundaries and reinventing their activities from within the social and technical change of the society. Those two ways are different not only in the planning objective, but also in planning principles and planning methods, even in the development of the area as it was used to be an industrial zone which called "brown field".

2.1 The Compare of Planning Objective

The traditional way's target is to enlarge industrial cluster scale and optimizing market conduct, focusing on the fast-growing of economic aggregate. While the aim of the new way is not only to improve the development requirements based on the first way such as maximizing the efficiency of productivity and improving the developmental level of industry but also to considering from the ecological, technological, social, economic and other multi-angle in order to achieve sustainable development goals.

2.2 The compare of planning principle

There are three main differences in planning principles between relocating factories in last century and retaining factories in Internet era nowadays.

2.2.1 The first different principle

The first principle of relocation factories is highly concentrated in the advantageous location principle. In the 20th century, the German economist Alfred Weber proposed Industrial Location Theory, which mentioned that the factor of location determine production sites. There are two main benefits. On one hand are advantage location can help the factories to decrease the production cost, save transportation cost and have notable external benefits. On the other hand, based on the first advantage, many factories will get together until forming a certain size, the benefits of industrial agglomeration can highly accelerate the division and cooperation between different industry categories by restructuring the industrial chain, and in turn, stimulate the production efficiency by healthy competition. So various stakeholders including local government, enterprisers, employees prefer to locate the factories in a good location, for example, near the transportation junction, close to the raw material production area or cheap labor market. However, this also brings a lot of problems, chief of them are population explosion and traffic congestion.

Nowadays, with the development of hi-tech, production factors can overcome the geographical distance barrier to gather much easier and more effectively than before, so production activities are networked and the mode of industry cluster have already changed to relative concentrated but moderately dispersed. Therefore, many factories do not need to gather in order to get enough communication and cooperation, because enterprises can satisfy the needs of supply and demand docking, product communication and project collaboration, and greatly enhance the efficiency of innovation and collaboration by mobile termination in industrial cloud. For example, the production department of steel industry can relative concentrated while the sales department can moderately dispersed close to the economically advanced city center. And the production department of advertisement design, culture creativity can be the employees' home like SOHO with no geography barriers. Under the guidance of this relatively decentralized mode, the problem of traffic congestion can be solved and many mobile employees go back home to start a business though internet web platform like "Taobao", "alibaba" website in China.

2.2.2 The second different principle

The second principle of relocation factories is Simplex development. Most planners planned to move factories as many as possible whose categories are close or in the upstream and downstream industry chain together to the new place by traditional planning way, which cause that the industrial zone has been dominated by only one or two certain industrial category. The substance of this principle is Horizontal expansion of the industrial structure including the Industrial structure restructuring, transfer and the Selected of Leading industry^[4]. In short, the consistence of the properties means the corporations in the same cluster have the same business nature. The disadvantages are poor ability to resist financial risk, high cost of commuting traffic, waste of land and etc.

In comparison, the principle of retaining factories is Mixed-use development. The crucial factor that makes enterprises get together is people's activities not the production resources. The daily production activities are changing with web 2.0 like Facebook Generation, 3D print so many conventional activities have been replaced by computer automation control to

increase the efficiency, especially it is a good way of improving the urban land use situation to increase city land supply, then, to nature many new type of industry. The substance of this principle is longitudinal extension between different industry categories. For example, the mixed-use of cultural and creative studio, mini manufacturing workshop and tourism system can build experiential industrial tourism blocks which can increase more profits and create more jobs.

2.2.3 The third different principle

The third different principle is that the industrial zone is composed of large-scale factories in the early stage by traditional planning way, while the SMEs constitute the industrial zone by new way. The reason why large-scale factories are the best choice of construction of industrial park lies in the limited by geography and spatial facts in the past. It is evident in the fact that the above-scale factories accounting for 20 percent own 80 percent of financial resources. Hence many SMEs can hardly survive in that period because most of banks are reluctant to lend money to SMEs, which is a key constraint on growth for SMEs development, leading to the imbalances of institutions and systemic of industry in China. However, in the Internet era, the mode of “B to B”、 “B to C” and “C to C” have consisted of the internet finance system supporting by internet banking with low cost and high efficiency, especially the construction of logistics delivery platform and information integrated trading platform has changed large-scale factories monopolization. Therefore, SMEs can also equally obtain effective information like large-scale enterprises in the first time which make it possible to establish an industrial park consist of SMEs without deep pockets. And planners change the traditional planning way to encourage people to startup as a mean of curing unemployment by building industrial incubators(It is also called Modern Enterprise Accelerator) consisting of SMEs.

Table 1: The compare of different principles between two ways

	The Traditional Way	The New Way
The Main Principles	Highly concentrated in the advantageous location principle	Relative concentrated but moderately dispersed
	Simplex development	Mixed-use development
	Composed of large-scale industrial enterprises in the early stage of industrial area	Composed of SMEs (small and medium-sized enterprises) in the early stage of industrial area
Representative Industrial Sector	Coal Industry, Steel Industry, Chemical Industry, mechanical manufacturing and etc.	Light Industry (Agricultural Product Processing Industry, cultural industries and etc.) New and High Technology Industries (Information, Biology, New Energy Sources industry and etc.)
Representative Region	Germany's Ruhr industrial area, Industrial area in central England, Industrial area in the south and central of Liaoning Province in China	Industrial area of northeast Italy, Industrial area of South Germany, SILICON VALLEY in America, Japan's Kyusyu Silicon Island

3 Take Yangcheng Lake area planning in Suzhou as an example

3.1 The location condition of Yangcheng Lake area

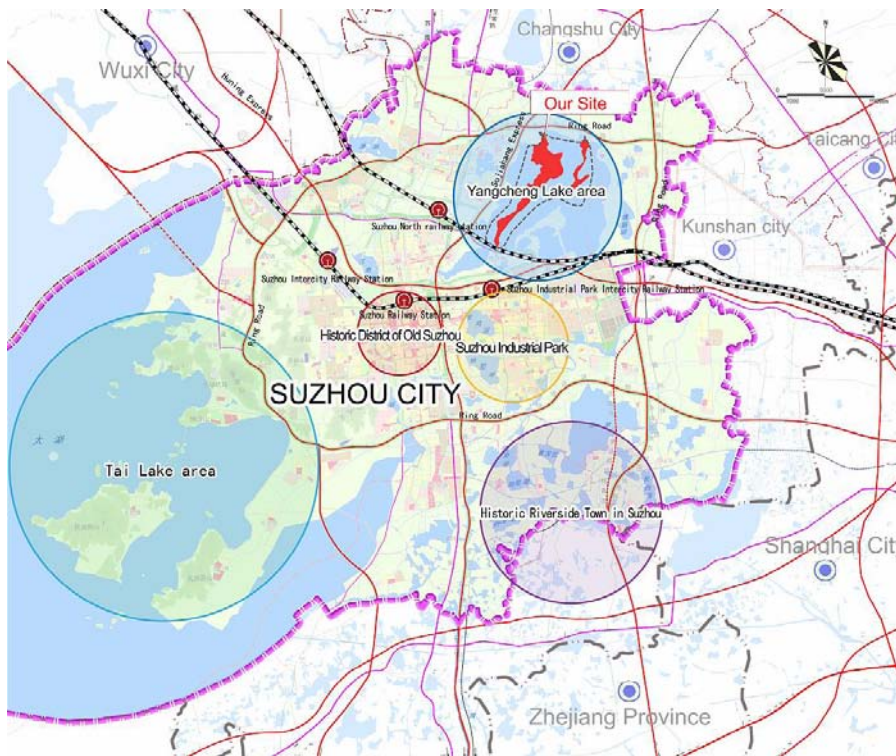


Figure 3: The Location Map of Yangcheng Lake area (Source: The Planning of Yangcheng Lake area)

the west of site's boundary, and the site is north to Suzhou Industrial Park. All in all, the site has a convenient external transportation and geographical advantage for factories.

Yangcheng Lake with the area of 61.72 (including the water area of 43.02 square kilometers) square kilometers is located in the center of the Yangtze River Delta Region, northeast of Suzhou boundary of Jiangsu province in China. Suzhou used to be mentioned as the old saying: "There is a paradise in heaven, while there are Suzhou and Hangzhou on earth". There is city ring road in the north and Sujiahang highway in

3.2 The natural situation of Yangcheng Lake area

Yangcheng Lake is abundant with natural resources and cultural resources. The water quality is high as drinking water resources for the city and the bottom of lake is rich in minerals, and lush pasture which bred the abundance of agricultural products, including the most famous Yangcheng Lake hairy crabs. And the land or islands are divided or connected via water drains, canals, rivers or lakes with a beautiful scenery of unique features of south of the Yangtze River, where the layout structure was the clamp river and the street for the market along water. In additional, there are many local villagers for generations living here, so traditional culture like folk culture has a long history. All the factors above are conducive to the development of agriculture and tourism.

3.3 The present industrial situation of Yangcheng Lake area

In general, there is a continuous decline of economic output of this site in recent years because of the constraint on environment. And the types of factories are mainly export-oriented manufacturing enterprises providing "OEM" (Original Equipment Manufacturer) service to consumers which have poor resist of financial crisis.

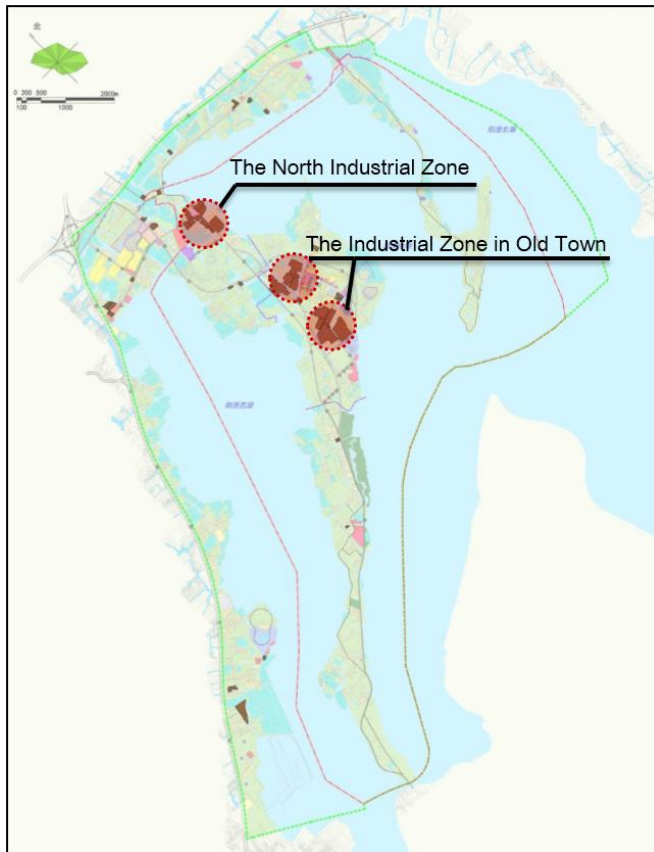


Figure 4: The industrial zone in site (Source: the writer draws)

Another character of the industry here is that nearly all factories are self-growing, until now there are three main gathering spots which are scattered around the site. And the areas of these three industrial gathering spots are relatively 19.01 hectares, 18.16 hectares and 29.28 hectares. As a result, the government prefers to move the factories not only from the perspective of economic aggregate, speed increment, and development level but also from the perspective of environmental protection. However, why the government did not take action of moving factories? Because government officers have to face the remaining problems like employment issues, tax income and so on after moving the factories. In our planning, to solve these problems will also be our main tasks.

4 The industrial planning strategies of Yangcheng Lake in new way

4.1 The whole industrial planning structure

At first, we deeply analyze the present industrial structure and the economic data of each enterprise's by GIS and satellite remote sensing tools. And then considering the booming of tourism and the effect of interregional relationship and industry migration of the adjacent areas, we draw new industrial structure (including primary industry, secondary industry and tertiary industry) by scenario planning. It proposes that the structure is consisted of tourism industry as the core, agriculture as basis, focusing on tap potential of light industry like culture and creation.

4.2 The development strategies of industry in new way

4.2.1 Dynamically combination strategy

Today with the integration of science and technology, the result of 1 plus 1 not equals 2 but more. Therefore, relying on the industrial structure above, our plan put forward the combination strategy: Promoting industry amalgamation around tourism, agriculture and manufacturing can raise the traditional industrial level, as well as realize the industrial innovation and develop some new growth points. For example, we plan to construct a regional biotechnology research and development center in order to increase investment in science and technology and combine agricultural product processing industry with biotechnology, making the traditional biopharmaceutical companies to creating their unique brand and

breeding new industries like Organic medicine makeup industry, nutritious food processing industry and etc.. and then to establish an industrial incubator of high-tech enterprises that integrate research and development, production and sales of natural plants. Finally, we utilize the Internet platform to connect the SMEs of Yangchang Lake and its “neiborghods” to create a virtual platform for purchasing and selling products of light industry. This joint development can alleviate the "small enterprises" conflict with the "big market" and solve the problem of the high transaction costs, low efficiency, and achieve Modernizing trading.

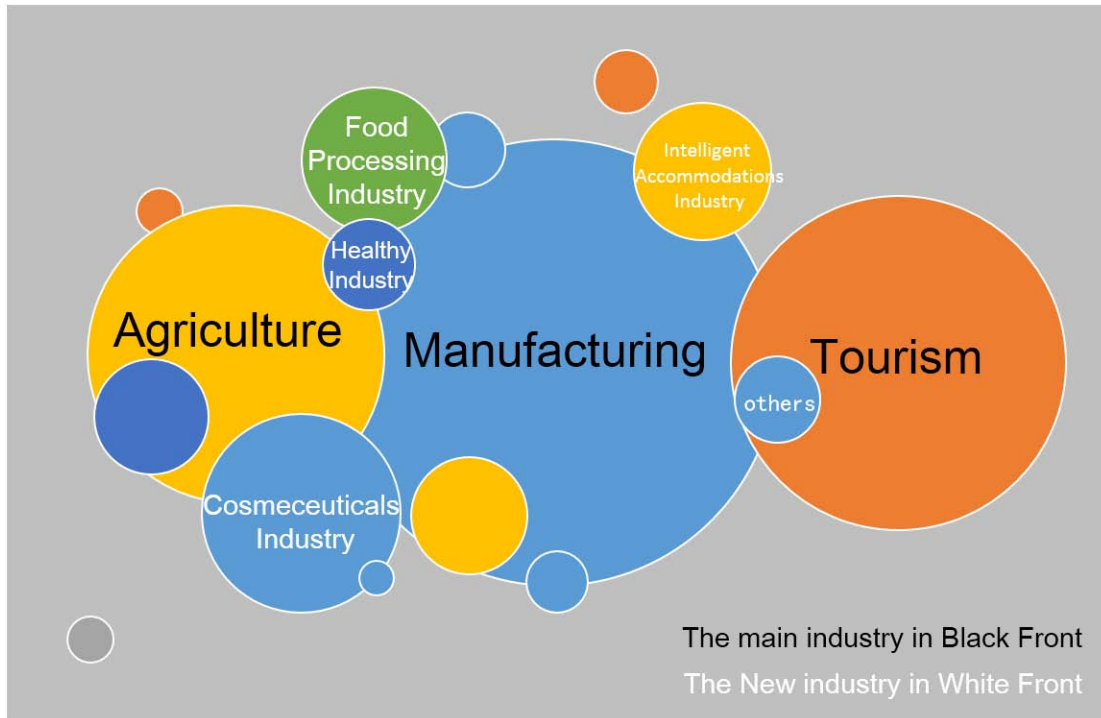


Figure 5: diagrammatic drawing of Combination strategy of Yangcheng Lake area(Source: the writer draws)

Based on the combination strategy and biological principles, we form ecological industry mode of this site which treat the industrial system as a nervous system, while each category of industry is one neuron and different factories are the nerve terminal. Because when the demands of conventional activities are changing and giving feedback to the companies as the nervous impulse are stimulating the nerve terminal, then the nerve terminal can pass the “signal” to the nervous in order to enhance the nervous system. In other words, establishing the “industrial nervous system” can stimulate industrial vitality, promote industrial development and enhance industrial competitiveness through the system mechanism.

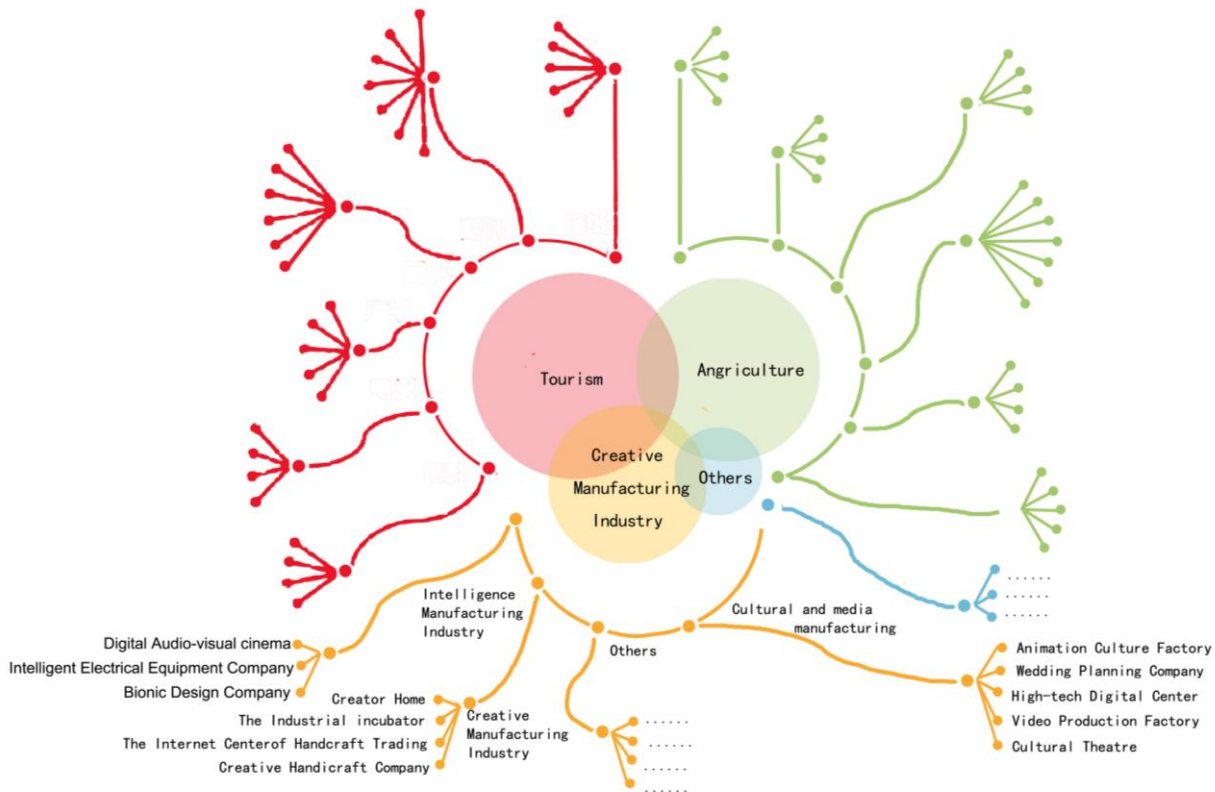


Figure 6: diagrammatic drawing of Industry Neuron in Yangcheng Lake area(Source: the writer draws)

4.2.2 The improve strategy of manufacturing hierarchically

We classify the manufacturing factories' attributes like production efficiency, the danger of environmental contamination and development prospects into three categories. This strategy is a process of a targeted reinvention, not "blanket" relocation, which alleviate the pain of economic dislocation in the development of this site.

The first category contains factories of pharmaceutical Manufacturing, food processing industry, sports and entertainment products manufacturing, printing and media industry which have high efficiency, few pollution, beautiful prospect, then the government needs to conduct remarkably effective promotion in value-added production, encourages "OEM" factories transfer to "ODM"(Origin Design Manufacturing) or "OBM"(Original Brand Manufacturing) factories, create their own brands.

The second category refers to the factories of textile industry, paper industry and leather production industry which have medium product efficiency, bright future of development but serious pollution, then we plan to introduce research institutions to promote industrial upgrading in their industrial chains. For example, the factory producing textile can change to the production of cellulosic biomass.

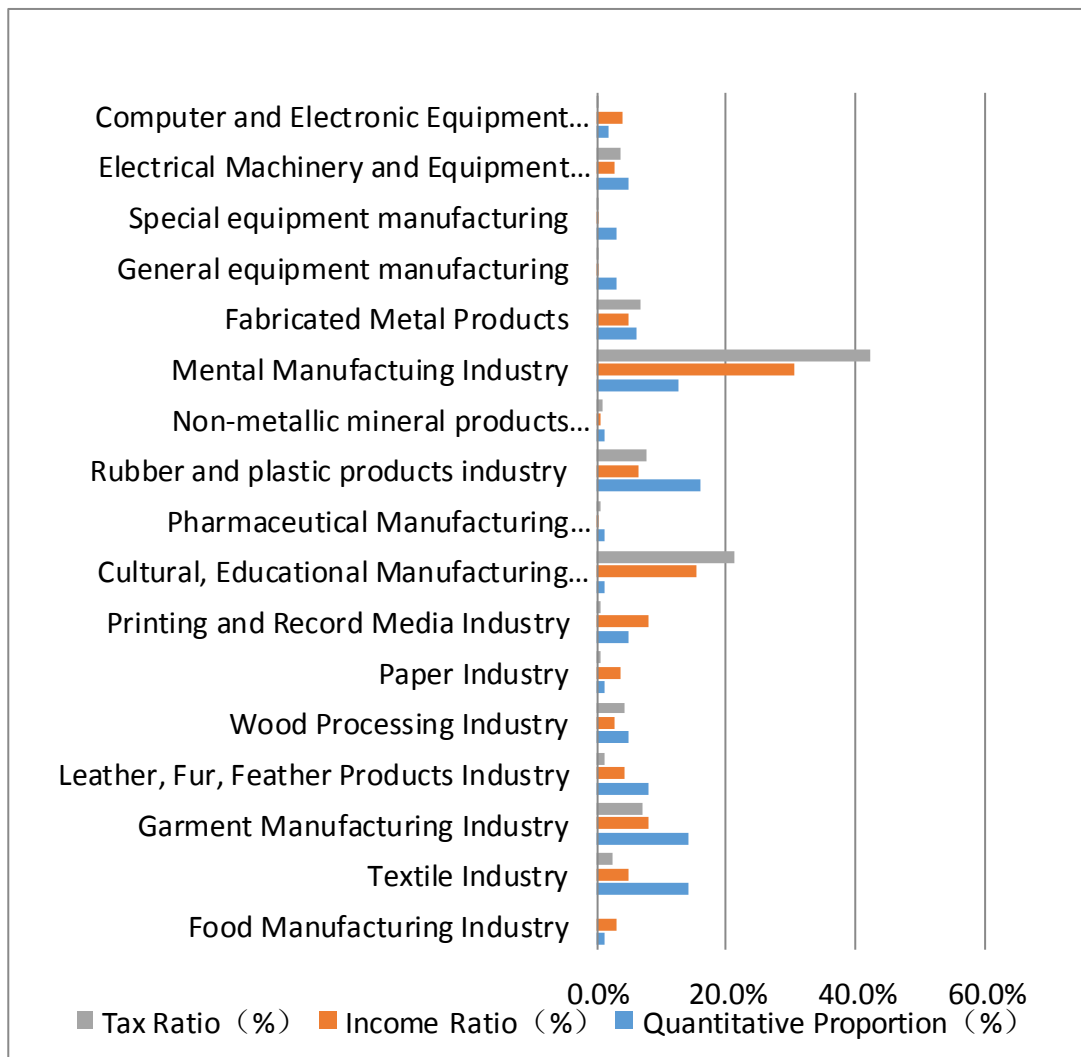


Figure 7: The Industry Structural Condition of Yangcheng Lake area in 2013 (%) (Source: the writer draws)

The third category contains the factories producing fabricated metal products and rubber and plastic products industry which have low efficiency, serious pollution and little prospect of development, we may close the factories and persuade the enterprises to rent out the factory buildings to cultural creativity industry.

4.2.3 Mixed-use strategy

Facing the constraints on land use, energy resource and environment, mixed-use strategy has become a key strategy for urban and space sustainable development. From our plan, a few industrial buildings will become brown field, so we provide vacancy factory buildings with low rent. The stakeholders can be connected by internet and the stakeholder network will take over the building and refurbish the building to attract more and a greater variety of tenants. This strategy can provide more job opportunities especially in cultural creativity industry.

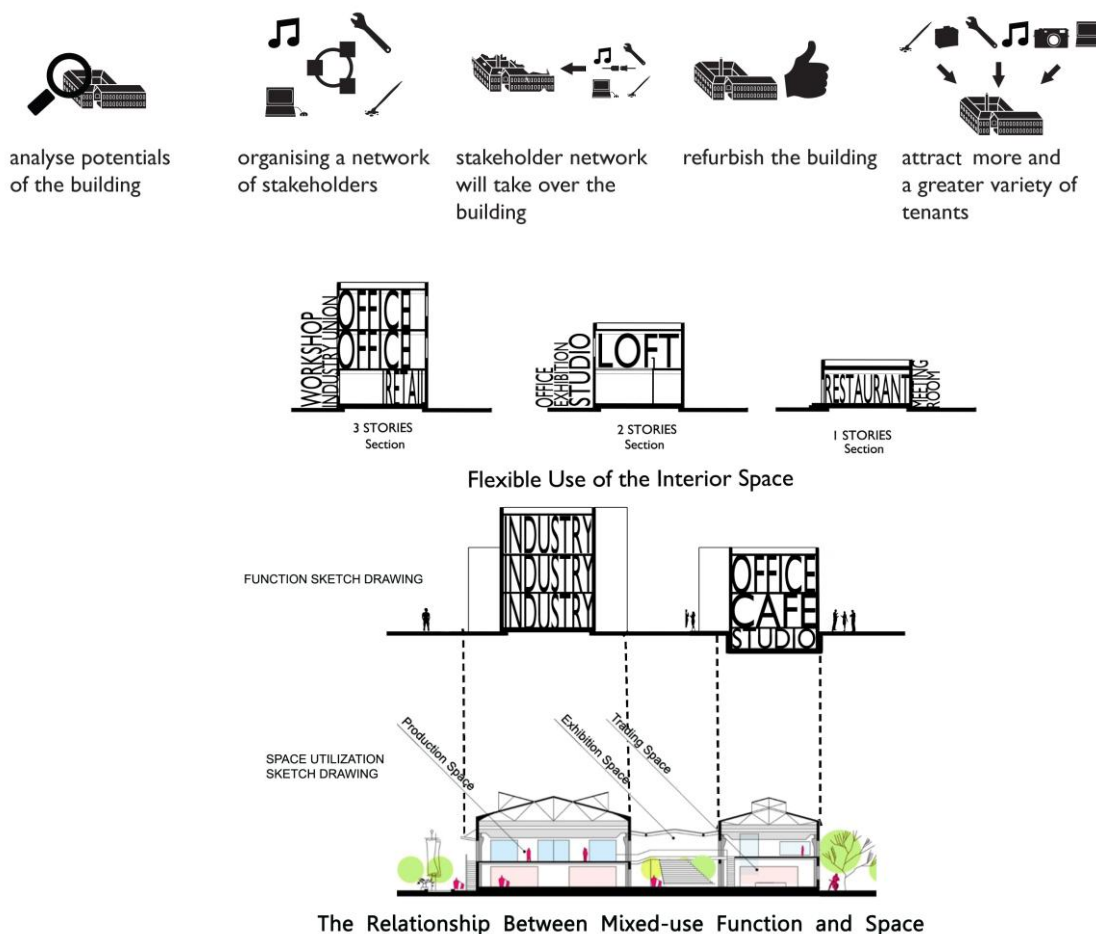


Figure8: Diagrammatic Drawing of Industrial Mixed-use strategy in Yangcheng Lake area (Source: the writer draws)

5 Implications

Form the analysis above, we can conclude that the high-tech like internet intrusion will influence people’s daily activities, change the industrial structure and land use macroscopically which can be utilized by the government and planners earlier and alleviate the crisis brought from the economical switch. Microscopically, the planners will change the planning concept and ways, converting the way of “moving the industrial enterprises in the suburban area” to the new way of “retaining them in the city boundaries and reinventing their activities from within the social change of society”.

In the past our main duty is only improving the quality of people's living standards, and to guarantee the orderly economic activities and to promote the economic development of the whole city. However, with the progress of social and science development, China's OEMs are facing structural problems, more and more traditional industrial zone are facing the fact that the efficiency of the industrial park reduces as the population grows under

the background of urban explosion. Planners have to use a strategic and forward-looking vision when they are planning urban area, and to consider the natural system as the survival background of urban planning.

In the future, we still need to do more effort on the “new” urban planning methodology that will make society more robust. On one hand, with the rapid development of new technology such as big data, networking, network security, the industrial structure of China has to be reconstructed in the development philosophy, manufacturing mode, technique system and value chain. On the other hand, regard to China, we should shift “made in China” to “create by China” with the trend of world international development and fierce competition of manufacturing, and find a smart way to ensure that within the affordable range of natural conditions, the natural resources can be used in an efficient and sustainable way, and maintain a momentum of vigorous growth of urban economic development.

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Social change from the Solidarity to urban movements - Design Thinking approach in co-producing city of Gdansk

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This paper presents a model of bottom-up revitalization of Gdansk's urban quarter using Design Thinking approach as users needs oriented method co-producing of space. This project is introduced as a possible canva to elaborate the model of intervention for other spaces in need of similar intervention.

Social change of *homo sovieticus*¹. Introduction

A quarter of a century has already passed since the political transformation of 1989. Changes which occurred in Central and Eastern European cities are significant, but have not yet overcome the social problems: indifference and languor attitude, as well as lack of general education. These factors have a great impact on the functioning of the city in all its aspects including historical heritage and urban space (Gutowska, Kobyliński, & Barański, 1999).

This situation prompted several questions. The first in consideration of social behavioral context, asking (1) how to react, when political system, which have been creating for many years not only economy (and industry) but mentality of society as well, move away? How to react when regime has borne people who are unwilling to change their neighborhood, who critic and demand but do not seek solutions? (2) who do not understand the values of heritage and common space? Then, how to respond, when, as a result of this transformation, (3) social polarization increase and neglected unwilling areas rise up? It is a common problem concerning the whole city, but it is especially urgent to come up with remedies concerning the historic center. These questions spring to mind when contemplating all postsocialist cities in Central Europe - and Gdańsk is one of them.

Another important aspect of this research is to try to (4) determine the role of urban movements in revitalization processes. In the last decade there is a spurring the community involvement in planning (Kamrowska-Załuska & Lorens, 2013, p. 1). Moreover urban movements which in most cases formed as a groups of protest are more and more active in shaping urban space, preparing both policies and strategies as well as projects capable of transforming their surroundings.

All of those mentioned above are groups of special interest in this paper. It is high time to definitely overcome destructive influence of former political system and market oriented approach both of which left a lot of abandoned places and helpless people. In our example the inhabitants as well as urban activists are trying to find best ways to motivate themselves and other stakeholders to share responsibility for space in their neighbourhood. Taking all this into account, looking for the best method of cooperation and finding solutions (5) we

¹ With this term we refer to the definition of a Polish philosopher, priest, Józef Tischner, who has supported Solidarity movement, Tischner (1992).

consider if the Design Thinking (DT) approach is satisfying answers for co-production of space?

One activity – many observers. Learning of responsibility

Historic context

To explain the background for present social and urban situation which we consider in this paper, we need to start our journey in 1945. During the Second World War an enormous part of the inner-city was destroyed². Soon after that Gdańsk, as one of many cities in this area, turned up inside Polish borders. In place of former, mostly German citizens came Polish repatriated people from East parts of Poland (Kresy), not any longer Polish, as well as from central Poland. On the other hand, Poland was under the influences of Soviet Union, soon becoming a country with communist regime. Finding the local identity of resettled society as well as expression of socialistic ideology, the Main Town and Old Town in Gdańsk have been considered as unique examples of reconstruction, but still historic centers – each of them in an individual way. This approach was presented in “Plan Zachwatowicza” (Friedrich, 2015, pp. 43, 112), established at the end of 40s. According to this Main Town of Gdansk was reconstructed as a workers’ housing estate (Friedrich, 2015, pp. 130–132). Communistic propaganda claimed that flats were dedicated to workers of the shipyard – a traditional industry of Gdansk for centuries, as well as for the intelligence and workers from other industries (Wytwórnia Filmów Dokumentalnych i Fabularnych, 1953).



Fot. Nowadays situation in backyards between streets Klesza, Mariacka, Grząska, Chlebnicka. Fot. J. Szechlicka

² According to different sources, it is around 75-90% of the structure. This ambiguous was precisely described by Friedrich (2015, pp. 37–43) and Gawlicki (2012, pp. 18–23).

The main idea of reconstruction was to restore the historic character and provide a modern quality of life. The architectural assumption was to build on a gothic urban plan, using the same plot, the outer contour of the walls, scale and general shape of the building's façades on the street side following time till classicism period (Gawlicki, 2012, pp. 177, 274). On the other hand, flats and interiors of urban quarters were considered to be modern blocks: the main purpose was to provide hygiene and utility. Buildings were generally shallower with around 2/3 previous depth and one block functionally could consist of more than one façades (Friedrich, 2015, pp. 112–113). Backyards became airy, green, sunny space for living with open public space where, at some time in the future, some kindergarten, schools or playground could be located as well. It is worth mentioning that from these ambivalent approaches to reconstruction (historic and modern) coming up from two different needs (local identity³ and ideology expression), a kind of compromise had to be taken. The most important were resigning, in many examples, from authenticity value in favor of the architectural creation and, on the other hand, creating disproportionately, inhuman size of open space, incongruously in center of the city. But, generally speaking, as half of century has passed already after the decision to reconstruct Gdańsk Main Town, we can definitely say that this decision even though criticized for its deformation of briefs referred in Athens Cards (1931, 1933), was a good one.

Backyards lasted in this shape till 1989. As long as the majority of the flats belonged to the local authority housing they used to be well maintained. Today's backyards are still wide, open spaces. But not anymore are they clean, green or friendly. Most of them are devastated, full of garbage, of people drinking alcohol, parked cars and "gaps" after never-finished archaeological excavations. They serve as a delivery area for the commercial premises. What is more, a huge number of the residents of the flats now are elderly persons. Many flats are used as second houses or rented short-term.

Design Thinking approach

This long-lasting critical situation induce a social awareness. In summer 2014, on the initiative of the Gdańsk Urban Development Association (FRAG), a non-governmental organization, the first two meetings were planned (Paczos, 2014-06-09, 2014-07-23). People seeking for changes in Main Town backyards gathered all together: inhabitants, managers of the housing properties, local authorities (Vice-president of Gdańsk City, clerks of other communal institutions) and NGO members. The plan of renewal was tentatively approved. It has provided for actions:

1. plan of disposition for public and private space in backyards
2. its implementation
3. support for residents in planning, organization and financial field

To achieve this plan the next step was to organize a Pilot Project of redevelopment of one of the badly-kept interior of urban quarter. A backyard located between streets Mariacka, Klesza, Chlebnicka and Grzaska was selected. It displayed the main problems such as unorganized car-park and greenery, garbage, uncontrolled alcohol drinkers, unfinished archeological excavation and residents in conflict. For this task the collaboration between FRAG association and Gdańsk University of Technology was begun. The organizer of the project was *DoctorAnts* organization at Faculty of Architecture. All parties were looking for a

³ In context of presented paper it is important to stress that the approach of historic reconstruction was particularly important and supported by new Gdańsk citizens, in opposition to opinion on this topic, in e.g. Kraków circle Friedrich (2015, pp. 98–99).

method of cooperation which would provide a solution that the users would accept and corresponding to the wide, polyphonic context of the place. No one had doubts that it was going to be a difficult task because of the complicated, multilevel technical, economic and social problems and a lot of particular business of stakeholders to be aware and reconcile. Community's acceptance was crucial and fragile to keep at the same moment.

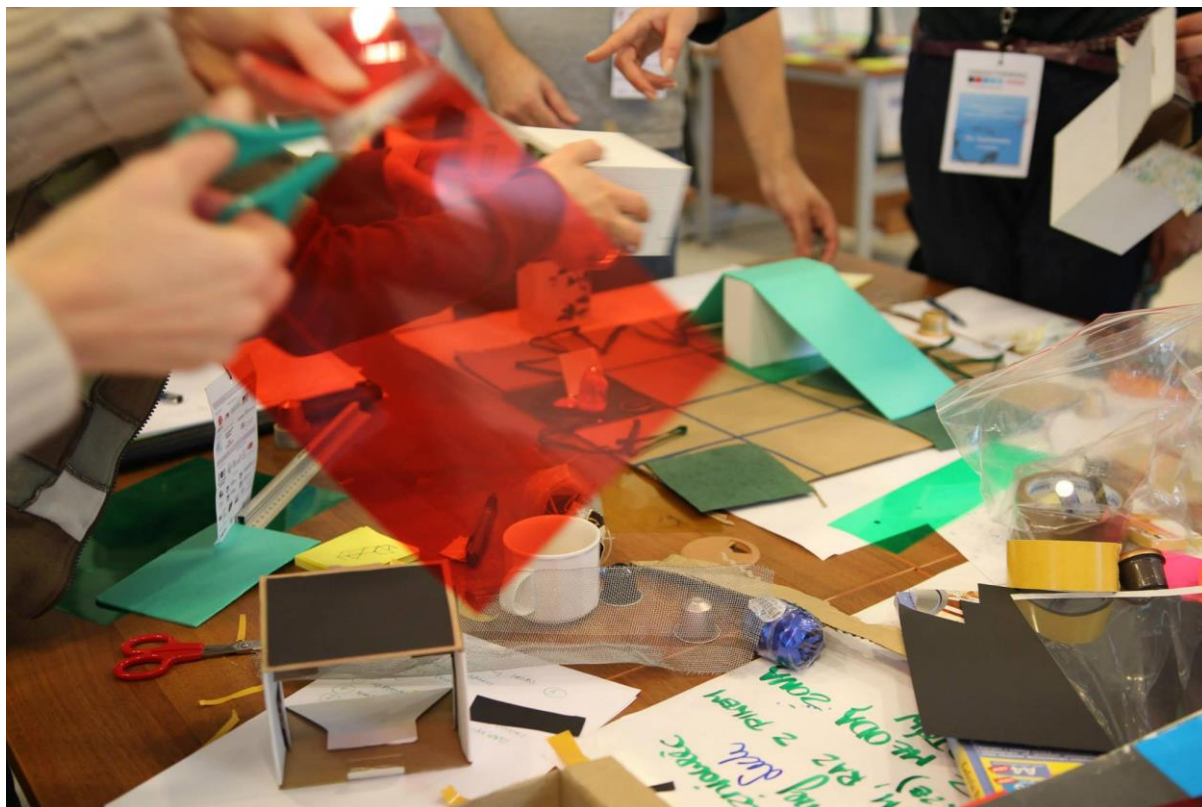
During the initiative we needed to find out:

1. appropriate means of communication between designers and stakeholders to reach solutions compatible with both bottom-up and top-down approaches.
2. methodology of designing interventions in backyards in relation to 1000-years of history of Gdansk which is consistent with the principles of conservation, taking into account social and economic aspect of revitalization.
3. method of effective, satisfying collaboration of designers, using creative and inspiring tools.
4. model of financing and co-creating the space.

Taking all this into account, the plan of regeneration as well as social background of the area, the Design Thinking was selected as suitable for cooperation and solving the problem in this particular case. This methodology can be considered in two aspects: as an approach, a way of taking challenge and also as a method of work, using appropriated tools, focused on the design product. In our paper we will focus on the first: Design Thinking as an approach.

Tim Brown, CEO of IDEO, a company which popularized Design Thinking in the whole world, provides a useful definition of this, "Design thinking can be described as a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity... design thinking converts need into demand" (Brown, 2008).

And why this methodology was recognized as an appropriate for the challenge of urban quarters? "Because", as Brown said during his presentation in TED in 2009, "it gives us a new way of tackling problems. Instead of defaulting to our normal convergent approach where we make the best choice out of available alternatives, it encourages us to take a divergent approach, to explore new alternatives, new solutions, new ideas that have not existed before. But before we go through that process of divergence, there is actually quite an important first step. And that is, what is the question that we're trying to answer? What's the design brief?" (Brown, 2009). In these words Brown answers for needs of methods of work and in the next he answered the role of participation in the process of designing: "So if human need is the place to start, and prototyping, a vehicle for progress, then there are also some questions to ask about the destination. Instead of seeing its primary objective as consumption, design thinking is beginning to explore the potential of participation - the shift from a passive relationship between consumer and producer to the active engagement of everyone in experiences that are meaningful, productive and profitable." (Brown, 2009)



Fot. Prototyping. In the Model Room. Fot. J. Szechlicka

As a the result of this approach the design of the space itself that gain acceptance of all participants has come up. The other goal was to find a methodological approach which led to different models of interdisciplinary and transdisciplinary cooperation between local inhabitants, local government, entrepreneurs, university and NGO's including inverting planning in surprising, satisfying and effective ways based on users' needs and deep-set in history of the city. But in the end, the intention of the project was not only to create a plan for this backyard which shows us the way from point A to B, but also to establish rules that govern the process and preserve recreated space in good condition for future reference.



Fot. Testing solutions with inhabitants. Fot. S. Ciszek, <http://sylwesterciszek.pl/>

Research aims and methodology

This study was conducted in frame of participatory action research based on coproduction of space by all actors. We agree with definition by Greenwood and Levi: action research meant as a collaborative way of conducting research while simultaneously satisfying the research requirement and promoting (Greenwood & Levin, 2007, p. 11). Methodology of the research included: participant observation by taking active part in projects of revitalization of building quarter in Main City of Gdansk, in-depth, non structured interviews with all the actors involved such as inhabitants, local entrepreneurs, property managers, NGO involved, representatives of local government and municipal agencies.

Lesson learned. Results of the Pilot Project

Design solution of the Pilot Project under the title *“Urban quarters – non-places?”* is based on four main ideas:

- a reference to the history of this area by shaping space according to Buhse-plan⁴ for Gdansk and the use of materials typical for this part of the City
- creating space conducive for establishing neighbourly relations (gardens & playground, community areas)
- vehicle movement on the outskirts of the plot in accordance with the principle that the yard has to serve the people and not machines
- finding economic models that allow for the maintenance of space and for inhabitants to have feeling of security with out burdening residents increased operating costs

⁴ This plan prepared in 1866-1869, was measured soon before planting of the fortifications in Gdańsk and it consists very clear picture of division of properties and contour of the buildings in Main Town, Bugalski (2013).

From the beginning of the project we intentionally selected an urban quarter which was posing the greatest challenge, because of its size and number of residents. During a meeting with Vice-Mayor of Gdańsk for Housing and Public Utilities Policy Piotr Grzelak (Mrozek, 2015-02-18) and representatives of municipal agencies relevant for implementation of the project it was thought that the model was innovative, but probably too bold. Implementation of the project would require change local master plans and significant commitment of the city.

The project is going to be continued as a bottom up initiative, but with the support of the municipal authorities. As a first step a Project Council gathering local partners, representatives of residents and owners of local businesses was created. All buildings' owners in this quarter are preparing for request for lease in this area to municipal enterprise providing management for local government property (pol. Gdański Zarząd Nieruchomości Komunalnych - GZNK). They are also preparing application for municipal grant, both for development of interior of the building quarter and additional grant for landscaping and greenery design.

Introduction of new buildings within interior of the quarter was an important aspect which divided the stakeholders. This element would be vital to cover operational costs of the new high quality development, but for some inhabitants it wasn't acceptable. Finally, a decision was made to leave interior of the quarter, but to create an open square which could be a place for local festivals and other activities (Sikorski, 2015-08-05). Another one was the need to find consensus concerning the necessity to create connection with surrounding public and semi public spaces versus providing private space for inhabitants.

As a result of this work and in cooperation with the client, in this case, a non-governmental organization which is FRAG, we were able to involve in this initiative residents, officials, property managers, businesses and animate public debate thanks to the involvement also of local media in the process. This resulted in the fact that some of the residential community in the Main Town organized around few critical courtyards reported in GZNK desire to lease their yards if city together with them would prepare their renovation projects. Not without significance is also the fact that representatives of the city in line with the conclusion of the Pilot Project increased the scope of financial assistance provided for the renovation of the backyards in the Main Town (Borysewicz, 2015-07-30) Previously in the public debate with the participation of social activists as well as interviews with local residents conducted by FRAG emphasized that the size of the financial aid being allocated for the residents to take care of their yard was not sufficient to proper organization of space to allow them safely an acquisition of so devastated space (Paczos, 2014-06-09, 2014-07-23).

Broad context of activities related to the Pilot Project and changes in its environment.

Presented plan is showing multiple progress which has occurred since the start of the Pilot Project. That project itself initially was concerned only to the quarter no.1 (Fig. 4). Following numbers on this figure represent the main activities that began the process of transforming interiors of the building quarters on the Main and Old Town. There are over forty interiors in this area requiring intervention, majority of them require serious revitalization. This number is based on FRAG' research: information from district councils, GZNK managers and interviews conducted with residents.

Despite ongoing for a long time degradation process of these semiprivate space only one neighborhood, no.4 on plan, decided to take in perpetual lease its own yard. Although these homeowners' associations have demonstrated a strong local commitment and decided

themselves to organize the area at the back of their houses, the vast majority of problems like wild parking, trash, lack of security and general poor state of landscape architecture remained. Of the time they admitted that they didn't expect that the cost of development and maintenance of this area would surpass the possibilities. Mentioned by them solution to find business partner like neighbor hotel who could sublet from them part of the interior and provide money for better land arrangement occurred impossible due the fact that agreement between city and homeowner associations does not allow for that and need to be changed first (Mazur, 2014-09).

Quarter indicated with no.1 on the plan was this included in the Design Thinking Pilot Project. The goal was to create the perfect design, not only filling the needs of residents, but also indicating the possibility of financing by introducing an additional commercial building in the interior of this quarter. Since it was connected with the need to change local master plans and commitment of the city, including the city council, it turned out, the process would be too long to draw conclusions from its implementation for the purpose other quarters. Participants of the meeting including representatives of the city, representatives of the team Design Thinking and members of the association FRAG determined that it is necessary to base on the conclusions from the quarter No.1 to continue the project for another quarter in the realities of existing financial instruments and without the need to change local master plans to be able to obtain effect implementation in the foreseeable time horizon (Mrozek, 2015-02-28).

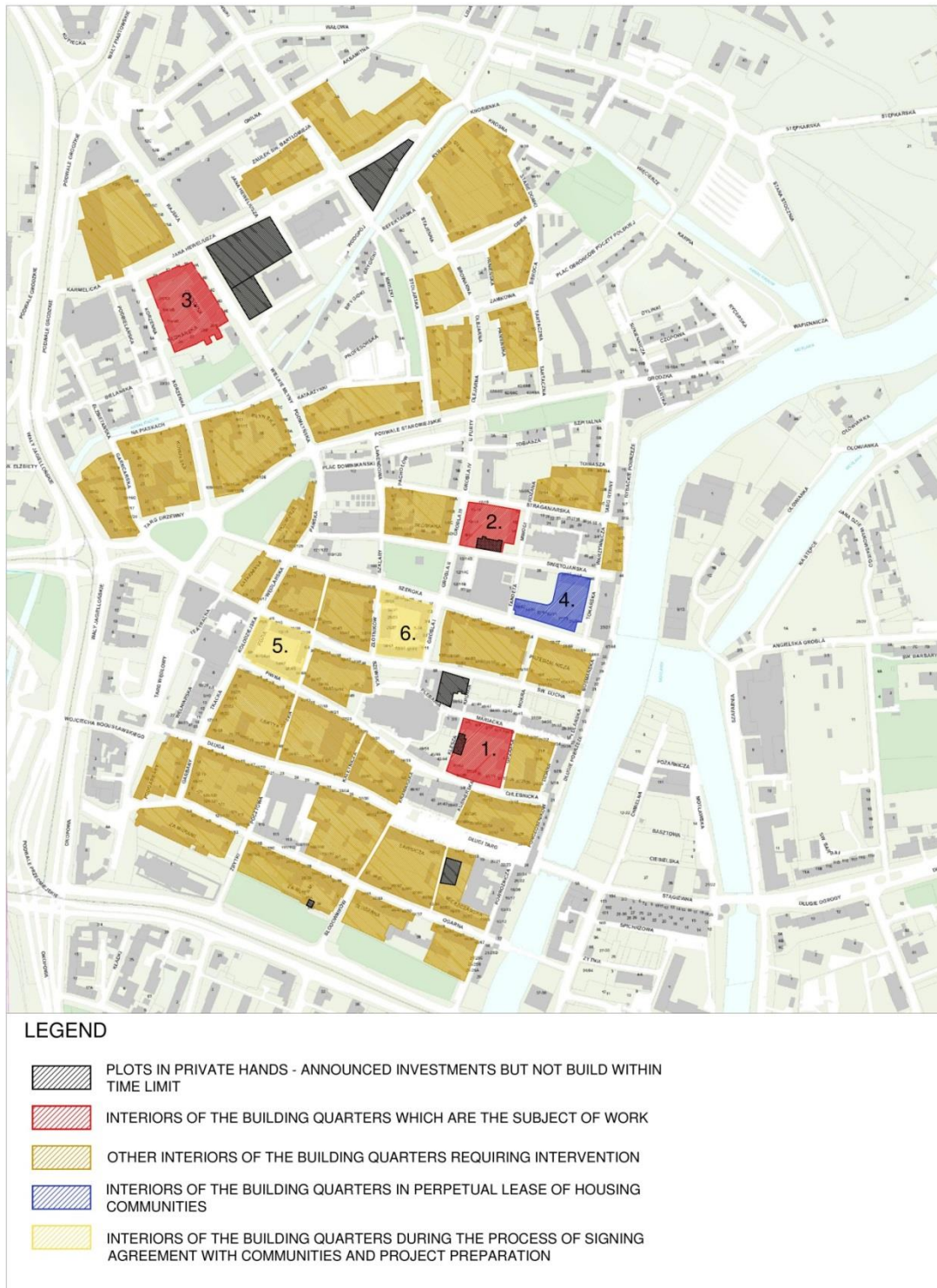


Fig. 4 Present situation on day 08.08.2015 showing progress in the process of privatization and revitalization of the courtyards quarters, author Paweł Mrozek - on the basis of materials of FRAG and map from the mapa.gdansk.gda.pl/

The next quarter no.2 on the plan is considered as the continuation of the Pilot Project. With the revival of the public debate (Kozłowska, 2015-01-28) on issues of neglected backyards in the Main Town which is a side effect of the Design Thinking Pilot Project. Authors of the project managed to acquire a local developer interested in taking a similar project in the yard

adjacent to the parcel on which intended to realize his investment. His motivation stemmed from the fact of improving the image of his own project, which could significantly benefit if in vicinity with the well-kept semi-private space.

Design of interior of the quarter is currently in the process of public consultations, which are intended to focus the inhabitants of the quarter around a common vision that based on their needs. The methodology of the project is based largely on the experiences learned from the Design Thinking Pilot Project, but because of the specific of private source of funding and significant ahead of time in relation to the estimated time implementation allows for several iteration and develop solutions much more precisely enrolling in the expectations of all parties involved in project. A significant deviation from the methodology DT was to start from the initial prototyping phase based on the findings of the previous project and materials provided by the investor – recognizing it as a start point for designing of solution. During the earlier public consultation it became clear that the first meeting with the locals is crucial to raise their interest in the whole process. At the same time, due to the methodology the initial phase of emphatization proved to be for residents too unattractive in a form to achieve their satisfactory commitment later. The authors of the project decided to enter in the head of the process the blind prototyping stage. It was possible mainly due to the previous experience of the first project and emphatization made by the association of FRAG for a wider group of inhabitants of building quarters with similar problems.

The process of citizens participation began with testing the blind concept, but with awareness that presented concept does not have to meet the needs and expectations of residents. As expected, the inhabitants with materials presenting possible on their backyard development concept quickly reached the desired degree of understanding of the issues related to their own backyard, allowing them to start a discussion between them on the specific needs and spatial solutions. Participants in these first workshops were forewarned about the intentions of people conducting workshops and about the fact that the presented project is intended only to stimulate their awareness and show possibilities, the final version created based on the work with them does not have to be related to the present project.

The above description does not present a full picture of the continuation of the project Design Thinking, as at the date of 7/10/2015 project is still in development and with the modified methodology is planned to be described in a separate paper after completion of all project cycles. But this shows that the project undertaken by the group Design Thinking together with the association of FRAG has its continuation.

Looking at the Design Thinking project for interiors of the quarters in longer term, authors pointed out in consultation with the district council and representative of GZNK the new potential project for the interior of the quarter located this time in the Old Town No.3 on the plan. This example was selected to check for the possibility of a different approach, in the absence of an external investor, and with the involvement of only municipal funds and housing owners association. This need is partly the result of spontaneous processes that occurred after the end of the Pilot Project and which have mobilized residents at least of three other quarters to take lease on their backyards and would be probably most common situation in the future. These are the quarters No.5, 6 and also no. 1 on the plan. The last was covered by the first project where the design process caused the largest mobilization of the inhabitants. Initiated by a group of Design Thinking and FRAG dialogue between the residents of this neighborhood should be considered as greatest success of this first project in the context of this particular quarter. However, at the present time the homeowners associations have still not managed to obtain external financing from investors despite the fact that within the quarter is located already one new accomplished investment and another

one is potentially in preparation. At the moment, despite the increased involvement of residents and municipal funds in renovation of the backyard it does not guarantee that this most difficult interior of the quarter will solve its problems in a satisfactory manner. Certainly it fails to obtain high-quality semi-private space when the priority is given to only such needs as the need for parking cars and closing the quarter to outsiders.

Conclusions

Design Thinking Pilot Project is presented as an example of social movement based on bottom-up approach which could be a chance for tangible social and economic transformation and a reliable alternative to the current model of revitalization in Polish cities. As a result of economically viable, socially acceptable and technically feasible project was prepared which was able to involve all parties in its design.

We wanted to initiate social change in all the courtyards of the area of the Main Town starting with the one which we found the most challenging. To achieve this we decided that we need to build an interdisciplinary (incl. specialists from different fields) and a transdisciplinary design team (incl. representatives of all sectors: residents, NGOs, entrepreneurs, academia and public bodies). The project team has been working on the principle of synergy and with respect to end users which allowed to include both experts previously involved in the subject as well as interested end users themselves in its composition.

Since the courtyard revitalization initiative was undertaken last year, there were numerous activities initiated by different actors, of which significant percentage was residents of the Main Town. It is difficult to evaluate their effects at this point, because they are at different stages of implementation from changes in mentality to changes in the physical space. An important aspect of this action is that residents feel they can change their surroundings - and that is the first step to empowerment, but also that if they want to do it they have to take responsibility - it won't be done for them, but they will receive support from municipality.

It is necessary to maintain an active working group, as a platform for dialogue, dealing with the issue of the quarter interiors. Their mission would be to engage all actors, monitor the social consequences of the projects and uphold public debate in order to mobilize homeowners associations to organize themselves around the problem of their courtyards.

There is a need to implement model based on best practices. This should be done on a project basis taking into consideration conclusions of the Pilot Project. Due to different specificity of the courtyards there is a need to look for different business models depending on the degree of involvement of various actors who are present in certain quarters. In this situation the cases can be associated with three typical approaches, depending on which of the parties would come up with the initiative and take a leading role in the project:

- Homeowners associations as leaders and initiators of the process (the most common case) - The residents themselves come up with an initiative to lease the land from the city and apply to municipality for existing grants while seeking to mobilize additional funds from commercial loans and other forms of financial support, for example, participation in the costs of local entrepreneurs.
- Classic PPP - in the case if a private investor takes the initiative and is willing to participate in the costs. He also takes a leading role and gains better quality of development on adjacent property and better image of area where he intends to commercialize his investment.

- Municipal Initiative - which is the case when most of the flats and commercial space in quarter still belong to the municipality; additional condition is that the other property owners are willing to lease the yard together. The municipality in this case is ready to bear higher costs related to the project in order to convince other residents and provide a relatively durable and high quality of space. Sometimes as an incentive, even before negotiations, municipality makes investments at their own expense in advance.

The type of approach which is taken will strongly influence what kind of space will be created: if as a result of development there would be semi-public or semi-private space created as a result of closing the quarter to others than its residents. A quarter will look different if the priority is given to the need for car parking or for other uses.

Finally one of the most important aspects is the influence of these initiatives on urban policy and on the approach of the city to revitalization of courtyards. In the process structure of financial grants for revalorisation of courtyards is being reconsidered and city authorities better recognise need of their participation in this process. This participation is vital in several areas such as: (1) in supporting process - by informing about possibilities of intervention and best practices, (2) in facilitating it - by co-financing, (3) in controlling it - to assure positive directions of change.

Project „Urban quarters – non-places?” was carried out in framework of the „Design Thinking @ Politechnika Gdańska” event.

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- *Client: FRAG association*
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- *Organizer of event „Design Thinking @ Politechnika Gdańska”: Joanna Pniewska (leader), Paweł Bielski, Sławomir Ostrowski, Joanna Szechlicka*

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A Little About Lots: Realizing Land Revitalization in Detroit

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Summary: This paper describes the process of working within a network of organizations to develop an open sourced tool for design-driven, vacant land transformation in Detroit. To learn more about this initiative, please visit www.dfc-lots.com.

1. Introduction

Engaging residents in conversations, visioning, and implementation of an innovative open space network are at the center of Detroit Future City's (DFC) efforts to realize the 50-year, future-oriented vision articulated in the Detroit Strategic Framework. Although the transformation of individual, formerly residential parcels of land (ranging from 1000 square meters to 3000 square meters) is itself not a large gesture, the potential of these transformations *realized in aggregate* across a neighborhood or district is at the center of DFC's strategy to improve the quality of life in Detroit—a city where some neighborhoods contain equal or greater amounts of undermaintained land than buildings.

Although the Detroit Strategic Framework calls for large-scale green infrastructural systems, the dispersed or fragmented qualities of vacancy in Detroit lend greater mobility to planning strategies and design-driven solutions that operate as a dispersed, non-contiguous network, rather than a singular, monolithic object (or field).

At the same time, the current level of understanding of the complexity of issues surrounding land ownership, acquisition, remediation, and design potential varies tremendously within Detroit's population. Often education in topics ranging from urban hydrology to municipal zoning must precede a conversation aimed at future-visioning for, with, and within a neighborhood—particularly when pilot initiatives are being tested within neighborhoods where real residents and families are being asked to co-exist with experimental (or new to Detroit) landscapes.

2. Organizational Role Within and Between Power + Political Structures

The Detroit Future City (DFC) Implementation Office opened in January 2014, one year after the launch of the Detroit Strategic Framework. Occupying a small storefront near the geographic center of Detroit, the office was formed to steward the vision of the Strategic Framework into action.

The Detroit Strategic Framework was the result of more than three years of work, an effort that included an international team of technical consultants, extensive data collection and synthesis, as well as an extensive public engagement process that has been well described and explored in other publications. An engagement team headquartered in a storefront in the Eastern Market district, a regional destination located near the central business district, facilitated hundreds of thousands of conversations with Detroit residents and business owners during this three-year process.

Local government initiated the process, which was funded largely through philanthropic support. Ultimately, however, the Detroit Strategic Framework was realized outside of the

government setting, materializing as a series of recommendations for various bodies of local, regional and multi-jurisdictional units of government. A steering committee representing Detroit based organizations, faith-based groups, residents, schools, non-profits, and other institutions was convened throughout the development of the Strategic Framework, and then transitioned into a committee, in order to steer the vision for DFC's Implementation Office. Despite the inclusion of residents and representatives of organizations of all sizes, it is safe to assess the Strategic Framework as an attempt to intertwine both a top down and a bottom up process—an attempt initiated largely inside of existing power structures.

Currently the Implementation Office operates within and between existing sources of power, resources, and political structures. With a very small staff, the model of progress is one that relies on partnerships and collaboration for advocacy, adoption, execution, and realization.

Since its opening in January of 2014, the DFC Implementation Office has tested a range of methods for enlisting civic participation in the process surrounding the transformation of land in Detroit, including resident facilitated data collection, collaboratively structured applied research, and the development of an open-sourced design tool geared towards the making of new landscapes in Detroit.

3. Defining Vacant Land in Detroit

Detroit is a city often rendered charismatic by its lack of buildings. Current analysis by DFC identifies 60 square kilometers of vacant, or structure-free, land in the city. This is land excluding parks, cemeteries, or other territories intentionally created for traditionally programmed space without buildings. This is the equivalent of one residential lot, averaging 1000 meter squared, per every three residents currently living in the Detroit.

The heart of the planning effort behind the Strategic Framework was the articulation of a 10, 20, and 50-year land-based vision for the future of Detroit. This vision is articulated through a series of maps and proposed neighborhood typologies with suggested new land use categories for Detroit. A centerpiece to this proposal is the development of an Open Space Network for Detroit. The proposed Open Space Network includes connected areas of vacant land where such open space amenities as carbon buffers, large-scale green infrastructure, urban agriculture, natural areas, and parks are proposed to exist in Detroit's future. The Open Space Network is not proposed as a single land use monolith, but rather a matrix of land uses concentrated in these areas.

The Detroit Strategic Framework acknowledges that vacant land will continue to exist both within the Open Space Network, as well as with different intensities or percentages in almost every proposed neighborhood typology. Depending upon the neighborhood typology, this land has the opportunity for different modes of expression. For example, in a more traditional residential area, vacant land offers a way for residents to have access to a large side-yard. In neighborhood types with a more evenly matched ratio of land to buildings, these lots—or land—may be managed under a different or more untraditional model, for example, providing green infrastructural services, allowing Detroit to reduce the burden on below ground, “hard” water systems, or as areas of food production, job creation, and the local accumulation of wealth.

In spite of this quantitative abundance of land, there persists a lack of language available to adequately describe this land. For example, are these vacant lots? This terminology reflects the long-standing regional bias towards single-family housing as the only viable development solution for land. The emphasis on vacancy implies an ending, or final stage, while ignoring everything else that may be occurring on a ‘vacant’ lot. For example, many of these so-called

'vacant' lots host an incredible amount of biomass, featuring a mix of ruderal and domestic plant species.

Then there is another commonly used term—'structure-free' land. This continues to imply the absence of something—the old vision, the former land use, and is not a possibility-oriented syntax. Parkland in so-called legacy cities, as well as in traditional, growth-oriented cities, is comprised of 'structure-free' land—ultimately the term fails to clarify.

Open space may presently be the most adequate term to describe this amenity—however a wonderful range of physical and material conditions persist on these 'vacant' lots and simply arriving at a suitable name is not enough for the real and pressing conversations around prioritization, remediation and a future realized with a finite set of resources, through action, in Detroit. Current land-based planning efforts led by professionals as well as by guerilla or marginalized groups lack a nuanced set of terms or language to engage in this process. This absence of language reflects the lack of understanding, both in the material, or the physical consequence of this land, as well as in what is ultimately a personal consequence that arises from existing in proximity to the land's physicality.

Current and recent planning histories of Detroit and of southeast Michigan (the region) have placed greater emphasis on economic development. Significant planning process and strategies have tended towards execution through top-down mechanisms, frequently led by professionals who are unfamiliar with the material consequence of land authored through processes of urban disturbance.

When domains collaborate, having uncontested terms—or even terms to contest—is important. And without words it hard to ask for or to refute something.

4. Land-Based Illiteracy

Presently in Detroit there exists an epidemic of land-based illiteracy, both by professionals and by residents. This is not exclusive to Detroit, however, there exists an urgency to enlist residents and members of existing power structures in conversations centered around a future that must be shaped by decisions deeply intertwined with the local designation and use of land. Data and terminology exist citywide to describe ownership information, to describe levels of taxation—means of communicating about the land as a commodity. However very little language or information exists to describe the land as land. One could argue that the absence of language prevents resident from better articulating this (potential) economic injustice.

In addition to the lack of information and suitable terminology to describe units of this land through a material or physical taxonomy, a lack of regulation and variance in taxation persists, too. That is, high quality soils—arguably a resource for future economies based on natural systems or ecosystem services—are treated with no discernable variance or difference than low quality or contaminated soils. A registry of land-based property ownership exists, as does a means of assessing or evaluating structures that persist on parcels of land in the city, and yet in the spring of 2014, no methodology was in place to assess or evaluate land without buildings. There was no means of identifying parcels or lots with higher inherent or potential value. Outside of traditional, housing oriented development tools, this land-rich region lacked a means of identifying its own (potentially) greatest assets.

In economic terms, vacant land is agnostic. The areas of Detroit with the highest concentrations of vacant land, or open space, are the areas that have experienced the highest concentration of building removal events. On the whole, these are areas that were built for the 'workers', rather than the 'bosses' during Detroit's rapid physical expansion at the turn of the last century. On the whole, these are areas facing the greatest difficulty attracting

and retaining residents. City services are more difficult and expensive to deliver to these areas, due to the reduced population densities.

However, despite the fact that there are areas with concentrated levels of vacant, or structure-free lands, parcels without buildings exist in every neighborhood and within every commercial corridor in the city. Although the volume of vacant land often overwhelms afar, the previously cited 60 square kilometers of vacant land, or potential open space, is not contiguous, but rather, dispersed across the city, present within almost every neighborhood in Detroit.

Economically this land has a similar affect in every neighborhood. Currently land without buildings is valued lower than land with buildings. As demolition activities persist and the rate of demolition accelerates, more and more land without buildings in being created. This means that a greater inventory of land with a reduced ability to generate tax revenue, as well as an increased need for maintenance, is coming online in Detroit. Where relationships with locally available vacant land are not centered on maintenance, we witness neighborhoods facing additional financial distress.

Thus, in the spring of 2014, when Detroit Future City began working on a new tool for land assessment, the lack of variance or gradient, particularly in the language around vacant land in Detroit, by both professionals and residents was paramount.

5. Adding to the Rainbow of Green

Although the transformation of individual, formerly residential parcels of land (ranging from 1000 square meters to 3000 square meters) is itself not a large gesture, the potential of these transformations realized in aggregate across a neighborhood or district lies at the heart of DFC's proposed strategy to improve the quality of life in Detroit. Part of the Strategic Framework calls for large scale green infrastructural systems, however fragmented qualities of vacancy in Detroit lend greater mobility to strategies that operate as a dispersed, non-contiguous network, rather than a singular, monolithic object (or field) within the city.

DFC's interest in balancing a long-term vision for land in Detroit against the need for short-term action is the catalyst behind the Detroit Future City Field Guide to Working With Lots (Field Guide).

Maps, or the question of where, are at the heart of the Strategic Framework, a document intended to speak largely to and with the existing power structures in Detroit. Acting in complement, the Field Guide is DFC's work to gather and build constituencies, to set aside the question of where and provide one answer to the question of *how*.

The Field Guide is a tool for Detroit based residents, neighbors, institutions, and even government agencies seeking to participate in land transformation activities in Detroit. Launched primarily as a web site in the autumn of 2015, the Field Guide offers a series of designs for individual residential and commercial lots in the city. Specifically the Field Guide provides design-based solutions for single, double, and triple lots, or for spaces under 10,000 meters. Civic-facing descriptions and instructions for building each lot design are freely available on the project website (DFC-lots.com). Detailed, technical construction drawings accompany each lot design to ensure the appropriate level of participation by residents, volunteers, and credentialed professionals.

The objectives of the individual lot designs range from enhancing the stormwater performance of land, to the creation of habitat and support of pollinators, to the provision of neighborhood based beautification and social spaces. The web site provides several methods for aggregating or sorting through the potential benefits and attributes of this first

phase of designs, including cost, maintenance level, professional assistance required, and level of stormwater benefit.

In addition to the lot designs, the website includes other resources, such as activities to assist individuals in better understanding the piece of land, or the lot they are starting with. A directory of Detroit-based businesses is one of a handful of tactical, pragmatic resources provided for individuals who can access and use the website.

The objectives of the Field Guide overall are to connect individuals and organizations to the technical and inspirational resources required to participate in land transformation activities, as well as to lift up and share existing work and progress which has already occurred in Detroit. Given the growing digital divide in Detroit, and the project's initial intention to launch as a web-based tool, a hands-on printed workbook has also been developed. The printed Field Guide is not a summary of the resources available through the website, but rather a means of directing individuals and residents towards this web-based resource.

The printed Field Guide is structured as a tool for the facilitation of small and large group workshops and conversations with residents and community groups interested in participating in land transformation and land based enrichment programs. Designed as a series of activities which include detailed observation of a piece of land for sun and shade, the creation of a budget for a volunteer's available time, and an interactive activity using trading cards which represent each lot design, the printed book aims to support educational opportunities and land based literacy while serving as a bridge between digital content and real-time program facilitators.

6. A Participatory Process

The content, parameters, language, and graphic formatting for the Field Guide were developed through a highly participatory process over the course of one year. At the outset of the initiative, the DFC Implementation Office convened stakeholders and potential participants for an orientation session and to solicit participants for the project's Stakeholder Advisory Group (SAG). The SAG met monthly to provide connective oversight and direction to the project and all of its facets of development. The SAG review sessions were augmented by a series of small group workshops, sometimes held three times a week, where stakeholders, professionals, and residents were invited to participate in 90 minute, hands-on, small group activities to support the project team in making a decision, narrowing or editing content, or refining the direction of some aspect of the project. The stability and consistency of the SAG enabled continuity throughout the project's process, and the small workshop format allowed new voices and individuals to join into the project once it was underway. Working together, within the feedback cycle this enabled some stability of perspective along with growth.

The process of developing the Field Guide was iterative, collaborative, and at times slow feeling. It marks the first time that this sector has developed a collaborative, open-sourced tool in Detroit. More than 50 individuals and organizations with divergent opinions and perspectives participated with continuity through this process.

By convening disconnected stakeholders, one outcome of this initiative to date has been to build towards trust and strengthen relationships within and between organizations where relationships were previously limited at best.

One of the barriers to progress in developing this open sourced tool has been navigating issues of institutional territory and overlap. Clear answers to this do not currently exist, however, trust and relationships built through repeated exposure continue to accrue.

Another barrier to progress has been implementation. Currently DFC is collaborating with a group of Detroit-based non-profit organizations to construct these lot designs and evaluate through construction the effectiveness of both the designs and the design specifications. The intention of the Field Guide is to connect individuals and organizations interested in taking action to the resources to do so. However, as DFC enters into a yearlong process of evaluating these designs, balancing the need for tools that support action and implementation against the value of evaluation and careful oversight persists. The interest of all stakeholders is to grow participation, knowledge, and momentum through this work, and implementing under-evaluated solutions at scale poses the threat to limit future knowledge, growth, and leadership around the issue of vacant land and its stewardship in Detroit.

By working within an existing network of organization to develop this open sourced tool, DFC has also created the opportunity for a community-based design process. Definitions of community vary—here I refer not to residents sharing a geography, but a community in the sense of there being a group of allied professionals who had not previously been engaged and acknowledged as a cohort.

7. Results and Learnings from Early Implementation

Returning to this notion of the lack of language previously available to describe land without buildings in Detroit, one of the greatest results of this initiative to date is the potential for and expansion of the nomenclature around vacant land. As a project lead by design professionals, and not community engagement professionals, significant amounts of individual and collective working time were devoted to identifying *correct language*—terminology that was technically or professionally accurate while being accessible and meaningful to most. One feature developed for the web site and supported too through the printed book is a way to visually discover a lot, thus diversifying the single-status, “vacant lot” into a rainbow of green. This question about language, or even the strategy of using language as a ‘canary test’, is perhaps one of the greatest learnings of the project team on this initiative.

As landscapes enter into construction, the heightened and continued need for communication—with residents, affected neighbors and block-clubs, continues. At the same time, the project team has discovered a notable absence of regulation around built landscapes in Detroit, both from the environmental as well as traditional, building-inspector facilitated review process.

The process of making this tool has been one centered more on a bottom up methodology, and yet has been able to identify a range of possibilities for top down influence, including a much needed increase in regulatory guidance around the form of landscape based interventions in Detroit, as well as a jurisdictional acknowledgement of their importance and contribution to the built form of the city and the region. The project team and process facilitators have invested significantly in hosting intentionally smaller-sized workshops throughout the process, so that voices may be better heard and also to encourage more meaningful and active modes of participation by stakeholders.

This mode of production, of working through small groups, requires a high degree of investment in set-up time, for everything ranging from the encouragement and logistics of organizing participation, to ensuring that meaningful content and activities are prepared in a thoughtful way for participants. Additionally, holding adequate time to process, include, and incorporate feedback, and scheduling these workshops to syncopate with production and editing schedules are of paramount importance.

8. Conclusion

In conclusion, developing this first phase of the Field Guide to Working With Lots has provided a range of opportunities for learning to DFC's Implementation Office. The clearest observation in the context of a consideration of top-down versus bottom up processes is that language is perhaps the strongest and greatest mirror for us when we embark into unexamined or unexplored territories, and that a reconciliation or dramatic shift of a paradigm must include a renovation of the language used by both targeted users and by actual process participants.

Research on Revival Mode of China's Traditional Settlements Based on "Bottom-up" Urban Design Method

(Revival mode of China's traditional settlements based on "bottom-up" urban design method)

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Abstract: In the rapid process of urbanization, with the phenomenon of machine production gradually taking place of natural production, China's traditional settlements faced the crisis of original space and traditional industry's declining. Deliberating the revival mode of traditional settlements at present has realistic significance. The paper firstly classified and analyzed the transformed settlements during industrialization in four types, including urban transformation type, function simplification type, mainly demising type and revival alienation type. And it was drawn that most settlements were declining, and the revival alienation type settlements needed the guidance of professional urban planning and design. Then, taking Cangshu, Mudu as a typical revival alienation type settlement, the paper analyzed the transformation features of the spatial form and traditional industry, and studied the settlements revival mode by specific exertion of "bottom-up" urban design method. Through theory and case study, revival settlements strategies were concluded: historical value and local feature of the settlement space should be sufficient unearthed by field investigation and interview, traditional industry should be revived by importing contemporary managing and applying mode, preserving and new-building strategies should be treated complementarily, together improving the space quality of settlements. The urban design idea and method shown through the paper can be reference to improving settlements revival mode.

Key Words: bottom-up, urban design, revival of traditional settlements, traditional industry, China, Cangshu in Mudu town

The industry mode of China's traditional settlements in pre-industrial society was the typical natural industry relying on agriculture and local handicrafts based on human and animal power, and reached to a subtlety of balance. However, in the rapid industrial developing process, machine production gradually took place of natural production. In global perspective, the machine industry development normally conduced the disintegration of natural industry and urban evolution followed with decline of countryside. In the same way, The decline of China's traditional settlements was also caused by the machine industry processing. Under the influence of industrialization and urbanization, the traditional industry of settlements collapsed by degrees, and mostly in the process of transition, decline and dissimilation. Accompanying by the fading of local industry, the settlements confronted with serious feature losing crisis. And in the same time, with the great importance attaching to traditional culture and industry, revival of traditional settlements became the common concern of the whole country and the world. Therefore, deliberating the revival mode of traditional settlements at present has realistic significance.

The "bottom-up" urban design method is non-artificial subjective "designing concept", but focus on the existing composing elements such as natural condition, human mentality and behavior habit, existent buildings and establishment, production situation etc, and the strategy accommodates itself to the needs of the elements. The features of regarding "the natural force " and "the impersonal force", following the growth principles of organism and respecting the intention of umpty individuals (WANG,1988) qualify it to be applied in the traditional settlements. The paper used the method of theoretical analysis and practice research, studied the historical developing features of China's traditional settlements and evolution type in the industrialization process. Then, taking Cangshu in Mudu town, Suzhou

city as an typical example to practice the specific exertion of "bottom-up" urban design method. Through this way to explore the efficient revival mode of China's traditional settlements.

1. Background of China's traditional settlements

Human and animal power were the main modes in productive process in the traditional settlements in pre-industrial society of China. Under such a presupposition, limited range, small scale, slow process and low efficiency were the typical characteristics of producing activities. Social living space and producing space were highly coincided in traditional settlements, and self-sufficiency was the main mode of subsistence. However, under the influence of industrialization, great changes appeared in the spacial and economic mode of traditional settlements.

1.1 Features of China's traditional settlements

Significant features of producing activities in settlements were as following:

Firstly, the supply of goods in countryside was in limited range. Normally the requirement of daily supplies of residents was relatively low, and it could be satisfied from the local production. The more complex demands could be obtained from the surrounding cities and towns. The local production was usually produced to supply for local people, so that the range of production was small.

Secondly, the production scale was usually very small, and it had single producing process. Family and small group were the unit of producing activities, and these activities were part of the family life. For example, the farming families would bring ripened grain to home for primitive processing, and handicraft families would separate parts of the living houses to workshops. The inheritance from the elder generation to the younger generation was the main method of learning skills, and the production techniques of one place usually very similar and unified.

Thirdly, the traditional production had slow process and low efficiency, and it had no uniform criteria. The human and animal power producing features determined the speed and amounts of production were limited by physical strength and experiences. While the ways of producing and trading were decided by the requirements of residents, the small production demands made the producing process a "not in a hurry" thing. The economic producing activities were random and accompanied with other daily activities.

Under the influence of unique production technique and local raw materials, many traditional settlements concentrated to develop one or some kinds of industries and gradually formed the characteristics industry. As FEI Xiaotong pointed: "different regions produced consumer goods relying on local products, day and month multiplying, nearly all kinds if industries had famous producing area... such as tea of Longjing, China of Jingdezhen, silk in Jili" (FEI, 1948).

In such producing and living mode, social living space and producing space were highly coincided in traditional settlements, different activities including education, socialization, political organization and consumption could be realized in a small range of area. "By "man farming women weaving" mode of cooperation, the lives of residents could nearly reach the level of "no hunger and cold"" (FEI, 1948).

1.2 Decline of traditional settlements in the process of machine industry development

In the late 19th century, modern factories were built in port cities by western countries. And gradually, the modern industry of China achieved great processing. Early in the 1940s, the influence of machine industries to economic balance in traditional settlements through the process of machine industry developing was found by FEI Xiaotong's research: "the decline of rural industry was the result of competition with Atlantic city industrial...imported products took place of local products and caused the unemployment in rural area" (FEI, 1948).

Since reform and opening up, with coastal export-oriented economic development and loosen of population flow control policies, the enormous energy of machine industry had further demonstrated, surplus rural labor rapid transferred from traditional settlements. In these days, nearly 25 million people left rural areas to live and work in urban area, and millions of people settled down in cities every year. So there was continued far-reaching influence from the developing of machine industry to traditional settlements.

2. Evolution type of China's traditional settlements in the industrialization process

Under the influence of industrialization, the highly coincided living space and producing space featured traditional settlements had transformation in different directions. With the collapse of original traditional industry, most of the settlements are experiencing the process of transformation, decline and alienation. In summary, they can be classified in four types: urban transformation type, function simplification type, mainly demising type and revival alienation type.

2.1 Urban transformation type

The urban transformation type settlements are the ones with strong industry competitiveness and employment absorption capacity by developing and upgrading industry on the base of original situation. They absorbed the nearby and external population and gradual changed to general towns of functional composite. This kind of settlements are usually found in Zhujiang river delta region and south part of Jiangsu.

Taking Huaxi village in Wuxi, Jiangsu province as an example, it is a typical pre-industrial settlement located in Huashi town of Jiangyin city with a population of 667 in 1961. In 1969, hardware products factories was built. And in 1984, the settlement swallowed the surrounding villages and became a larger scale of Huaxi village. By the year of 1988, the industrial production broke through 10 millions, and group corporations established in 1994. The construction area of the settlement at present is 35 km², and the population is 35,000, which prove Huaxi village a large scale town (Figure 1).



Figure 1: Huaxi village

2.2 Function simplification type

The function simplification type settlements are the ones have function simplified trend in the wake of promote industrialization and draining out of labor, capital and other elements. The living function of agricultural and part of non-agricultural population is the main accountability of the settlements. With the popularization of bicycles, electromobiles and cars, the radius of transportation activities expands, and the main activities of education, medical treatment and purchasing are taken in the nearby cities and towns. Now a great number of China's settlements belongs to this type.

For example, Shuangqiao village in Langxi, Xuancheng, Anhui was a natural village. The residents of the village can be clarified to three types of perennial outdoor- working residents, nearby working residents and village working residents, and only the village working residents do arable in the locality. The main public activities of village working residents are solved in towns and administrative services are settled in the central villages. The remaining leisure area and small convenience stores have low rate utilization (Figure 2).



Figure 2: Shuangqiao village

2.3 Mainly demising type

The mainly demising type settlements are the serious population outflow settlements. Because of the remote location, complex landform and poor transportation condition, the settlements cannot meet the requirements of modern life, and turn to be hollow villages with vacant houses. The settlements are usually located in the remote mountain area and west part of China.

For example, Xiangang village in Zhaoqing, Guangdong was built on a small hill. Climbing steps is the inevitable way to enter the village and the transportation condition cannot adapt the contemporary life. Many of the residents have transferred to surrounding regions with better terrain, transportation and industry condition. The original settlement is nearly a hollow village at present (Figure 3).



Figure 3: Xiangang village

2.4 Revival alienation type

The revival alienation type settlements are renewed vigor ones by developing ecological tourism, country life experience services and historical culture experience services. With the emboldening of industrialization and urbanization and enhances of residents income level, the country has stepped into after production stage (ZHANG,& SHEN,& ZHAO, 2014), and many characteristic elements of traditional settlements become new consuming points of citizens. The rural tourism and catering trade are promoted by new investment, and traditional living and producing mode has turned to be a kind of exhibition. Compared to original settlements, they survived by highly alienation, and became village spatial featured settlements serving for city crowd. These settlements usually have good natural condition and close to consumer group.

For example, Dashan village in Nanjing, Jiangsu is on the edge of the metropolitan district of Nanjing. It has created international brand of "slow city" and developing rural tourism and retirement property by taking advantage of natural condition (Figure 4).



Figure 4: "Slow city"— Dashan village

In the settlements of different developing directions, the revival alienation type settlements have the most potential of promoting traditional features, so they deserves attention. Transforming traditional urban space, planning related functions and developing new production and management mode of traditional industries through urban design is an effective way of reviving settlements. In the following chapter, the paper emphatically introduces the revival mode of traditional settlements through the way of "bottom-up" urban design method.

3. Study of Cangshu in Mudu town

Cangshu is a typical "Revival alienation type" settlement. In the overall planning of Mudu town, ancient town tourism and commerce evolution are the developing emphases in these years, especially enhancing traditional industry. Among them, the strategy of "fostering and normalizing the industry of inkstone and gardening" in the economic development strategy aims at the traditional industry in Cangshu. Therefore, updating the developing mode of the traditional areas in Cangshu by applying "bottom-up" urban design method has important practical significance at present (Figure 5-6).

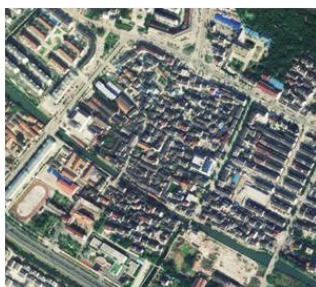


Figure 5: Satellite map



Figure 6: Current situation of Cangshu

3.1 General information of Cangshu in Mudu town, Suzhou city

Cangshu belongs to Mudu town, Wuzhong district in the city of Suzhou, Jiangsu province. Located at the west of Suzhou city and the east of Tai Lake, with 8km distance from the ancient town of Mudu, Cangshu is a small-scale historic town lies between urban and rural area. The region has several traditional industry such as mutton, gardening and inkstone.

Cangshu(The sound of Cangshu in Chinese means book storing) has a long history and culture. Through data processing and field investigation, four historical stages reduction was drawn as following (Figure 7):



before 1950s: the settlement original formed along the river, named after the historical culture of book storing, and flourished because of the industry of mutton, gardening and inkstone.



1950s-1960s: Part of the river was filled for streets and facilities construction. The community distended and earliest commercial appeared along the river.



1970s-1980s: Houses and pedestrian streets of river-side area were renewed. Industrial coast grew at south bank of river in the west part of Cangshu.



After 1980s: Transit highways were constructed, and commercial area transferred with transportation. river-side areas were gradually declined.

Figure 7: Four historical stages

Through the growing and transforming process of the area, it could be concluded that: "inhabiting by water" was the most important historical and spatial feature of Cangshu. The history streets and lanes on the riverside had important historical value for the reason that they were the oldest and most representative substance of the area, which witnessed the origin of gathering and business. The spatial distribution of industry of the area moved according to the growth of town. At the same time, the industry mode transformed from family workshop to public commercial and machine production. The historical featured space and contained family traditional industry were dying off.

3.2 Practice of "bottom-up" urban design method in the revival of Cangshu

Through investigation and research, it had a conclusion that the best value of the current situation of Cangshu were the multiple historical position and varied space of the riverside streets, old and new mixed architecture and abundant traditional industries of mutton, inkstone and gardening, etc. The design would pay special attention to remaining the historical position of each area along the river, absorbing traditional family workshop mode to functional planning and reviving the "remain in name only" book storing culture (Figure 8).

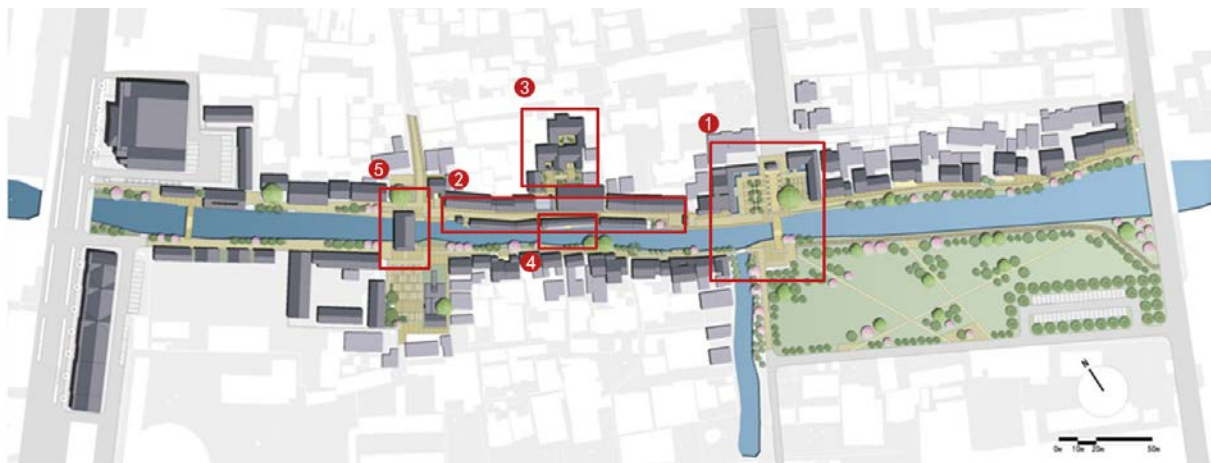


Figure 8: General plan and position of nodes

The specific designing contents were drawn as following:

1) Street corner remodeling

Being the road intersection and pedestrian street origin, the area by Huiyuan Bridge was the street corner of the pedestrian street in history. The design respected and kept the historical position of the area, and the entry special space was created by designing public plaza and a new inkstone expects gallery which exhibiting traditional inkstone industry. The new building added brightness and improved the vitality of surroundings, which also supported imply of the riverside area. The atmosphere reflected the feeling of tradition, and the measure and form of architecture expressed the transition of "new to old" (Figure 9).

2) Traditional pedestrian street repairing

Inheritance was the main designing strategy of the area, and the traditional image and riverside feature were kept relative intact. The ratio scale and spatial image were made few adjustment, and most of the old houses were only repaired by facade finishing and elements unifying. For the houses in poor condition, the outlook was remained, but the structure was reinforced and spatial partitioning was renewed. The bad structural quality houses were dismantled for the consideration of safety, and replaced by new light steel houses to express real time series (Figure 11).

3) Old houses transformation

The traditional featured and good qualified dwellings were transformed to new commercial spaces, including stores for inkstone and exquisite mutton inn. Organizing functional and servicing route, setting high-grade rooms and remodeling courtyard scene all catered to the living and consuming habit of modern city people. The spatial and functional planning of old houses supported the local traditional industry, improved the quality of consuming environment and unearthed the value of old houses (Figure 10).

4) Quays transformation

The quays on the riverside were designed to be new recreation attractions. Light steel pavilions were added to the quays to emphasize the image of wharf and extend the leisure space of riverside. Thus the interaction and experience of tourists and residents with water were strengthen, and the riverside space was exploited to be the scenery of traditional channel (Figure 12).

5) Book storing building construction

There were eight bridges on the river in history, which played the role of the only connection of two banks. Today most of the bridges were no longer existed, while the position of Shanren bridge rebuilt several times and kept the site of bridge relatively integrated. This area was also the central part of the region and the end of the pedestrian street. A built on bridge book storing building was designed on the river, which became the new brightness of space and revived the "remain in name only" book storing culture. The design continued the important significance of bridge in this area and solved the actual transportation problem (Figure 13).



Figure 9: Street corner



Figure 10: Old house



Figure 11: Traditional pedestrian street



Figure 12: Quays



Figure 13: Book storing building

3.3 Revival settlements strategies based on "bottom-up" urban design method

Through the specific exertion of "bottom-up" urban design method in Cangshu, the paper found the special points of the method was the way combining traditional industry with contemporary life, and designing the feasible space to accommodate. The specific revival settlements strategies were as the following:

1) Historical value and local feature of the settlement space should be sufficient unearthed by field investigation and interview. The top principle of settlements revival is to respect and protect the local historical culture and spatial setup. The designing strategy should be put forward based on the clarity of historical positions and stories of each area. The designing production should be the exhibit and spread of the place's historical position.

2) Traditional industry should be revived by importing contemporary managing and applying mode. Reviving traditional industry is not simply copying the traditional mode, but importing contemporary application considering the transformation of users and operating way. The experience of traditional industry can be found special and unparalleled in the unique local traditional space.

3) Preserving and new-building strategies should be treated complementarily, together improving the space quality of settlements. The essence of preserving and new building is not contradictory, but achieving better visual aesthetics and living comfort level through the way of "repairing" or "updating". Therefore, they turn to be supplement with each other and be considered one whole strategy. The improving of space quality will contribute to the satisfaction of local residents and attraction to the tourists.

4. Conclusion

1) The evolution type of China's traditional settlements in the industrialization process can be summarized to 4 types: urban transformation type, function simplification type, mainly demising type and revival alienation type. Overall, most settlements are declining, and the revival of traditional settlement has aroused extensive attention. Among them the revival alienation type settlements have the most developing potential of traditional industry, and need the guidance of professional urban planning and design.

2) Taking Cangshu in Mudu town as an example, the paper studied the specific exertion of "bottom-up" urban design method in the revival of traditional settlements. Revival settlements strategies were as the following: historical value and local feature of the settlement space should be sufficient unearthed by field investigation and interview, traditional industry should be revived by importing contemporary managing and applying mode, preserving and new-building strategies should be treated complementarily, together improving the space quality of settlements.

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- Figure1-2: Baidu pictures
- Figure 3: The author shot
- Figure 4: Baidu picture
- Figure 5: Google map
- Figure 6: The author shot
- Figure 7: The author drew
- Figure 8-13: Urban Planning and Design Research Institute of Southeast University(2014) *Conceptual urban planning and design of Cangshu,Mudu*

Generation mechanism research on landscape of traditional settlement based on folk ritual

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Abstract Traditional settlement is the inherited space of Chinese culture and history, the protection and renewal should not be confined to maintaining the current village environment, but should trace the origin to understand the development process of each village, focusing on people's ideas, belief, value and other factors. The paper integrates knowledge about architecture, folk ritual, sociology, history, geography and other related subjects, adopts basic methods of environmental aesthetics and settlement geography, and studies the correlation between Chinese folk ritual and the generation mechanism of traditional settlement landscape. The purpose is to explore the original basis for the protection and renewal of traditional settlement, and ultimately preserve the original charm of traditional settlement.

Keywords traditional settlement, ritual, landscape

1. Introduction

China has vast territory. The traditional rural settlements have been in semi-closed state for a long time, and they are hardly affected by foreign culture. The folk culture handed down from generations to generations has become the consciousness criteria of local people's life and production. It is precisely because of these criteria that traditional settlement becomes the epitome of ancient Chinese society.

Ritual is the most basic survival mode of community or ethnic group, it exists in people's daily lives, social and political life, forming colorful ritual space. Many anthropologists believe that the house and its environment in settlement are not only people's indispensable physical space, but also their thinking space, with certain geographical and cultural symbol. American anthropologist Cunningham, Clark E. said that: "Just like ritual, in the word without text, house is an effective means for people of different generations to directly exchange ideas." In the process of constructing traditional villages, people would subconsciously follow the local folk culture and traditions, specially construct or reserve some space for folk rituals. Besides, different space environments within the settlement inherit the contents of different folk rituals in their own way. According to different space environments, Chinese traditional settlement is consisted of outer ritual space, internal public ritual space and internal private ritual space.

2. Outer Ritual Space of Traditional Settlement

The outer ritual space of Chinese settlement mainly refers to the transition boundary region between settlement and external natural environment, it has a variety of presentation elements (such as memorial archway, old tree and village gate at the entrance of village, old trees, the village gate, etc.). These elements can influence people in the spiritual field. Besides, a series of ritual activities can enhance the separation between settlement and external environment (Figure 1).



Figure 1 memorial archway, old tree and village gate of traditional settlement

2.1 Memorial Archway and Ritual Space

Memorial archway is also known as decorated archway, it enjoys a long history in China, it is evolved from Lingxing Gate, which is initially designed for ritual purpose. Lingxing Gate originates from Lingxing, it is also known as Tiantian Star. Emperor Gaozu of Han Dynasty often offered sacrifices to Tiantian Star to pray for good harvest. In order to show respect to Confucius, people renamed Lingxing Star as Lingxing in Song Dynasty, built Lingxing Gate to worship Heaven, and set it in the Confucius Temple. With the replacement of years, more complex forms and functions emerged. Lingxing Gate gradually evolved into memorial archway, and was placed at the entrance of all kinds of temples, palaces and ancestral halls, other important places or entrance of residential places. In addition to offering sacrifices to gods or ancestors, it can also be used to honor "loyalty, filial piety, righteousness" and merit achievements. Besides, the memorial archway has local signs to partition residential areas.

Memorial archway has strong space features. When people bypass or pass through memorial archway to enter temple, shrine or certain village or place, they can obviously see the ritual characteristics of different environments. In existing traditional settlement, it is because of the particular organoleptic characteristics of memorial archway, people often carry out various ritual activities at memorial archway or its surrounding space environment.

2.2 Village Gate and Ritual Space

Village gate is an extremely important element of people's settlement in many ethnic minority areas, it is also an important place for many ethnic people to carry out various rituals. From the physical level, it is an important symbol that people enter the village; from the spiritual level, it is the transition process of the soul and mind.

Firstly, village gate has the most basic defense function from the perspective of material, it is an important mark to divide boundary, and separate settlement from external environment. Ritual activities reflect the interactions of people inside and outside the village. Secondly, village gate is the physical manifestation of defense in spiritual level, and has the most important existence meaning. Many ethnic people in minority areas consider that the village gate is the guard of village, it can protect the safety of people's houses. Japanese folklorist FUKUTA AJIO believes that the internal village differs greatly from external village. Internal village is "peaceful and safe space", external village is "uneasy space". If unclean things happen in village, they must be expelled out of the village as soon as possible. However, the critical point between internal and external village is the village gate, this has long been a consensus in the Oriental culture system.

2.3 Old Tree and Ritual Space

Nature worship plays an important role in folk ritual belief, many types of totem worship and worship of gods are derived from people's awe and veneration for nature. Old tree is an object of nature worship, many ethnical settlements have grand worship ceremonies, run through various important stages of people's lives, some villages even consider it as a symbol of village and pay worship to it. There are many ethnic minorities in Yunnan province, Nisu ethnicity is a branch of the Yi nationality, it holds ceremony to worship the "sacred tree"-evergreen tree in the village every year, and calls the ceremony Mikaha Ritual. Every year Nisu people spend three days to hold the ritual under the Mikaha tree, and Mikaha Ritual accompanies people's birth and education, it is a collective activity and common worship activity, and reflects the common belief of the entire ethnicity.

Some villages take certain old tree as the object of worship, some ethnic villages take the wood of old trees outside the village as ritual place. The settlements of Wa people in southwest China are surrounded by a lot of woods, which are called by local people as "sacred groves", "ghost forest" or "Muyiji" ("Muyiji" is the god of Wa people, who believe that god lives in the woods, and uses it to refers to the woods), Wa people hold various activities to worship the god. From the psychological perspective, it enhances people's sense of settlement and defense against foreign people. Besides, it separates the settlement from external environments.

3. Internal Public Ritual Space of Traditional Settlement

The internal public ritual space of traditional settlement refers to other public ritual space other than the private ritual space, it is a place for residents within the settlement to hold public ritual activities, and is the main space to inherit folk rituals of traditional settlement. It mainly includes buildings that have ritual functions, such as temple, ancestral hall, stage and street and square that connects these public buildings. (Figure 2)



Figure 2 Internal public ritual space of traditional settlement

3.1 Ritual Space of Shrine and Temple

Shrine and temple are the main public places for people to worship gods and ancestors in the traditional settlement, they have the most ritual atmosphere among public space inside the settlement. In the primitive Chinese social environment, people are linked by the most fundamental kinship, people from the same clan live in the same traditional settlement. In view of this, the ancestral hall that worships the family ancestors is undoubtedly the important space for folk ritual.

In addition, due to people's worship and fear for nature, and their belief in god and ghost, temple is also important space for folk rituals in traditional settlement. Due to different scales of settlement and beliefs, different kinds of temples at different levels are built. Different temples are characterized by people's different worships for Buddhism and Taoism, various ethnic totems and gods.

3.2 Ritual Space of Stage and Plaza

Stage and plaza are the most concentrated places for public activities in the settlement, they often connect each other, when there is a stage, there will be corresponding square space. It is worth noting that the square involved in traditional settlement does not refer to the large-scale square with specific functions in urban space. In traditional settlement, the square has different sizes, is closed or open, and has extensive functions. In large-scale settlement, stage and square are often connected with temple or ancestral temple, forming a concentrated public activity space; some squares are located in small settlement, they are just in the front or behind the house, forming a relatively open place.

Both stage and square are the public activity space built to meet people's requirements on folk rituals. Ancient people needed an open public space to carry out ritual activities to worship various deities, when people constructed the settlement, they subconsciously reserved some place to carry out these rites, houses were built around the space, thus forming different original squares with different sizes. Besides, the layout of these squares was closely associated with the local rituals.

3.3 Ritual Space of Streets

Streets are the framework for the entire settlement space, they are the medium to connect each public space within the settlement, the place for people within the settlement to carry out exchanges, and the space for ritual activities.

In many folk ritual course of the study, we can see that in addition to the completion of some ritual at a fixed location, the more so in a flow space, you need to stream a full line and path to reflect the ritual of the whole process, streets in this process plays a crucial role. (Figure 3)



Figure 3 Street of traditional settlement

4. Internal Private Ritual Space of Traditional Settlement

The internal private ritual space of traditional settlement refers to the place that takes family as unit and holds private ritual in the family, it mainly includes the main hall of building and the courtyard space. The space is mainly used to carry out rituals for individual resident, such as ancestral rituals and life rituals. (Figure 4)



Figure 4 Internal private ritual space of traditional settlement

4.1 Ritual Space of Main Hall

Main hall is an important part of building in the traditional settlement, generally it is in the middle and the bottom of building, it is the place to hold major rituals in family, and is the most open space in the building. Under normal circumstances, baldachine or memorial tablets of ancestors are put in the middle of main hall, so that people can pay worship and carry out rituals. In addition, in the main room of the main wall, there are tablets and couplets written on scroll about family teachings of our forefathers on the main wall of main hall. Main hall is usually an important place to worship ancestors, and is an important place for family members to hold important life rites.

The ritual space characteristics of main hall are more obvious in life rites, such as funeral rite of family member. If a family member dies, there will be white elegiac couplets and white curtains in the main hall, many articles of tribute will be put on the table. The coffin of the deceased is usually placed in the middle of the main hall, so that relatives and friends can offer condolences.

4.2 Ritual Space of Courtyard

Courtyard is a space enclosed by buildings. Due to different climatic and geographical reasons, courtyards in northern China and southern China have different structures and forms, and they usually are located in large living environment.

Because courtyard is a ritual space for large family, with the expansion of participates, the ritual contents in courtyard are more complicated when compared with main hall, the single internal family ritual behavior is expanded as the whole family's ritual. For example, the courtyard space of courtyard house is usually connected to the main hall, located on the central axis of the entire house, forming a larger ritual space; for another instance, the inner courtyard space of Tulou in province often connects the ancestral hall, in order to meet requirements of residents with the same clan to pay tributes to their ancestors. These are expanded ritual space environment.

5. Conclusion

Folk custom is an important part of Chinese traditional culture, ritual is the most direct manifestation of folk culture. The paper presents an in-depth analysis of the characteristics of folk custom in traditional settlement environment, and the corresponding space environment of folk rituals in the traditional settlement, and explores their relevance. In the process of research and analysis, it is found that the social life and natural environment in different regions have different cultural components, this directly leads to the unique features of different ethnic folk culture and beliefs, thereby affecting the settlement environment that encompass these features.

From the study on the correlation between different folk rituals and settlement environment, we can see that ethnic people show respect to nature, pay tributes to ancestors, believe that everything has a spirit, and take positive and optimistic life values. In addition to the settlement and the space environment with folk ritual characteristics (such as above-mentioned memorial archway, village gate, old tree, stage, ancestral hall and surrounding space environment), the association between folk ritual and traditional settlement is also reflected by the Chinese folk culture in the settlement:

5.1 *Respect Nature*

In primitive underdeveloped societies, people had limited knowledge about nature, many peoples had their own objects to worship. Animals, plants and natural phenomenon became people's worship objects. Many people of ethnic minorities live in sparsely populated mountain areas, they showed more reverence to nature than other people. Their settlements were built on mountains, along rivers. In addition to the factors of fengshui, this is mainly caused by their respect for nature. Generally villages are located by river, so that people can take water easily in daily life, and this can also increase the village's charm. In addition, the construction of the village is the local materials, fully adapted to the use of the unique geographical environment, keep a close interaction with the natural height relationship.

5.2 *Live with Gods*

The worship for various gods and ancestor worship take an important position in Chinese traditional folk beliefs, the idea that people and God live in the same world has run through the construction process of traditional settlement. Their selections of house location, spatial pattern, construction process and lifestyle are closely linked with the gods. People added "god" characteristics to everything inside and outside the house, such as the road outside the house, farm dam in front of the house, main hall and courtyard, they set Earth Temple in front of house, set baldachine in the main hall ... they set many places for various gods, and worship them one by one on particular day. Tujia people live in various rituals spaces every day, this is their value of life.

5.3 *Live with Clan*

Many minorities live together in specific villages, most of them are clan relatives with the same ancestors. On the one hand, family members live and work together, and gradually expanded the village and settlement pattern, on the other hand, it is a residential feature caused by worship for collective ancestors. In many large traditional settlements, clan relatives with the same surname and ancestors live together and form a large settlement. Some large settlements have ancestral hall, and family "patriarch" who have high status in the family, and regularly carry out various clan rituals on special day.

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Atnight project, designing the nocturnal landscape collectively

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1. Nocturnal landscapes: a main challenge in urban design

For decades, city lighting has been a highly complex task, subject to progressive technological limitations. Only specialists in this type of equipment could understand and therefore design public lighting. Cities still far from the dreamscapes imagined by Scheerbarth (1998). In his essay the 'Glass architecture', the contemporary metropolis showed its true face at sunset, when artificial light built an illusory perception of a highly artificial territory, the city.

After the advent of electricity, night gradually shifted from this variety of contradictions to represent urban recreation and social life beyond the productive hours of day. However, nocturnal streets have been, at best, designed by transcending technological constraints, reducing the environmental impact of electricity consumption, taking care not to pollute the night sky, providing uniform intensities along road routes and controlling the excesses of a few agents to impose their position and privilege under the dark.

In this context, the urban night has become a major challenge for urbanism and architecture. We need novel design strategies that should address relevant questions such as (a) security, (b) the existence of a night-time economy as opposed to nocturnal rest, (c) energy consumption and (d) nocturnal perception.

First, night-time has embodied antagonistic concepts as party and danger. Indeed, light is one important tool to strengthen security against criminality, although better lighting does not increase the perception of safety; this is not a linear equation. Understanding the role of light in the feeling of protection at the expense of comfort or other qualities is imperative to assess the civic use of public space. On the other hand, we must ensure minimum standard levels of lighting to guarantee pedestrian and road safety.

Second, night-time economy is an important driver of tourism, leisure and business growth within our towns and cities. Nocturnal hours became an important moment for nightlife and socialization in cafes, restaurants, clubs, cinemas and theatres. Simultaneously, logistic centres, markets and small business (bakeries, hotels, etc.) are in full operation and urban services are deployed (cleaners, maintenance staff, etc.). Nocturnal transportation systems, tube and night bus, enable a wide range of employees to move from and across the city to work. In contrast, some streets are no longer busy and residential areas repopulate again. Night-time activity may conflict with inhabitants' need for a peaceful night's sleep. Actually, balancing the competing demands of economic development and quality of life will require effective partnership working and engagement with residents and businesses.

Third, night is also the landscape of energy that fuels streetlights, industries or households. Energy is invisible but sometimes becomes apparent. Knowing where energy is consumed and for what purposes is essential to efficiently organize the functioning of cities. Can we optimize power consumption in urban areas according to the city's changing behaviour? Precisely, one key challenge is designing public spaces, defining densities and building types in accordance with consumption patterns.

Finally, cities are intricate organisms with changing qualities that require variable interpretations and representations. The image of the city by day is continuous and made up of traces of the past (monuments as the collective memory), raising awareness of a social order which is visible by means of architecture.

By contrast, at night evokes presences and absences, taking the shape of a discontinuous landscape where nocturnal reference points depend on the presence and absence of light. These illuminated elements not only configure the image of the city but also the background of social relations, common imagination and collective memory. Unfortunately, entire buildings occupied by banks, hotels and shopping malls emerge as landmarks, uncovering a hidden cultural, economic and political order while public realm is treated homogeneously, regardless of its use and its population. If we consider this visual structure as a collective construction, new questions come into play. Who are the actors responsible of lighting buildings and who actually look at them? Who has the capacity to execute urban lighting?

In view of the above, there is still some work to be done regarding the city nocturnal design practices. Many experiences are necessary to shine light over a significant night-time imagination despite meaningful attempts from the field of art, in the form of ephemeral lighting festivals, or the discipline of urban design. Good examples of Master Plans provide, at European level, urban lighting strategies both responding to technical and aesthetical complexity as Terzi (2001) in Rome, Antico (2011) in Antwerp and Narboni (2012) in Paris. However, a broad number of urban areas, especially in Spain, lack of nocturnal planning schemes that explore the complexity of the subject.

This is the particularly case of Barcelona where nightscape results from a series of regulations defining electrical consumption (organised by road importance) or meeting the requirements stipulated by the land register (generic and vague) -without providing a complete analysis of nocturnal urban question (*Figures 1-3*). Issues regarding the construction of the nocturnal space as a common background shaped by public and private stakeholders or direct participation of citizenship in the design of their immediate environment have been left aside.

This paper discusses the case of atNight, an ongoing research by the design studio 300.000 Km/s that addresses the question of nocturnal landscape as a necessary collective project. The project, in addition to developing hypotheses based on the city of Barcelona as a case study, seeks to propose new participatory design scenarios that are situated halfway between the traditional top-down planning and novel bottom-up new strategies. Before proceeding to describe the main results of the research, it will be necessary to go over a few cases of participation processes developed in the city in previous years. By contrast, these experiences serve as a starting point for constructing atNight project approach.

2. A new approach to participation

A large number of initiatives centred on citizens' participation have flourished in Barcelona over the past decades. Public authorities have organized several participation processes allowing residents to contribute with their knowledge and experience to major urban operations. Social dialogue and mediation between neighbours, technicians and municipal representatives has been widely practiced, although not without controversy.

The 'Ateneu of Nou Barris' is among the first experiences of citizen involvement in Barcelona. Within the framework of the increasing civic demands under democracy (1978), social movements and neighbourhood associations started to occupy abandoned industries to reconvert it in social and cultural spaces for the community. In Nou Barris, one of the poorest boroughs of the city, a group of neighbours occupied an ancient industry converting it into an Immigrant integration centre and an independent cultural facility, the Circus School. The self-management model, which was at the origin of the process, has served as an example of good practice for other communities. At present, the shortage of own resources has led to a loss of independence.

The case of 'El Forat de la Vergonya' illustrates a second aspect of participatory processes: the lack of consensus between social movements and public authorities. Between 2000 and 2006, the city council started a major urban regeneration in Santa Caterina neighbourhood. Along with the refurbishment of the existing market, various housing blocks were demolished

giving place to a new empty space that was occupied by local residents and transformed into a small park with a garden, playgrounds and stage for community meetings. Serious confrontations between police and neighbourhoods lead to the dismantling of the original communal space in 2006, ultimately transformed into an anodyne square.

At the other extreme, the example of the citizen consultation process for the transformation of Diagonal Avenue, one of the main civic axes in Barcelona, embodies the failure of participation policies. In 2009 the city Council launched a procedure in several steps (information, gathering opinions, feedback, draft of proposals and consultation) that was unsuccessful. The combination of a substantial reduction of cars with powerful articulated public transport system, and a strengthened and responsible use of cycling involved a qualitative leap forward in public commitment to sustainable mobility. Sadly, citizens rejected the proposal and therefore the possibility to considerably improve the quality of life and the city's long-term growth and competitiveness.

At last, the 'Pla Buits' (Vacant Sites Plan) is a recent illustration of the council strategies in line with European transparency and open governance directives. The initiative is aimed at getting public and private non-profit organisations to propose a use or activity and short-term management of 25 municipally owned sites for a period of one year (extendible to three). The interventions have to be reversible, and for social and environmental purposes. This case is a perfect example of the paradox that can emerge from participation processes. In a context of severe economic crisis and emerge of housing, the council is investing important resources in temporary interventions that will be deconstructed once the economic recovery will allow privates give these voids its planned use. Meanwhile, these traditionally abandoned and latent spaces offer a happy face instead of being occupied or showing a decadent scene. The owners of these sites also benefit from this transitory situation while waiting for the increasing of profitability.

In the light of the previous examples, we can draw useful conclusions regarding further experience. On the one hand, one of the main challenges of civic participation lies in citizens' capacity to take decisions against their own interest and work for the common good. On the other hand, it is also necessary to facilitate decision-making on issues concerning the future of the city and not addressing urgent needs. Another interesting line of action would be to mainstream alternative points of view to the classic duality of top-down and bottom-up approaches.

atNight project delves into this last line of research using new technologies and cartography to propose new collaborative design scenarios. Technical advancements over the past decade have completely changed the way we sense, seize, use, plan and build present and future cities. Besides architecture of stone and space, we should recognise an expanding landscape of invisible networks. While physically experiencing the city, inhabitants also generate a digital footprint, a generous amount of data which describes people needs, beliefs and reactions.

Mobile devices and the Internet have hybridised with social behaviours, enabling a more active role of citizenship in design process. We made the transition from traditional urban planning (passive model), based on big numbers and geographical/physical parameters, to new planning schemes (active model) that can actually take into account how citizens use and perceive the city.

This process, from a passive top-down to a more active bottom-up approach, should be leaded by architects and urban planners, playing a role of facilitators and translators of people needs. In this regard, we architects can use representation to mediate in the design process using drawing and cartography to empower individuals. Cartography permits a more conscious use of the territory, making citizens able to master space in their favour. From navigational charts to GPS, people have invented and used maps to help them define and order their world. Four hundred years ago in the Age of Exploration, cartographers employed compass lines to depict coastlines, rivers and harbours in the New World. Today in the Age of Participation, entities are re-envisioning mapping practices and adapting representation tools to the evolving need

of personal registers and micro geographies; at the same time, public bodies and private companies are opening Big Data for measuring the living condition of the city.

However, mapping should go beyond geographical illustration to unmask invisible urban relationships. atNight proposes to develop new instruments to capture the 'ephemeral' besides the geometry of urban plots and facades, taking information from citizens' interactions (actions, activities, emotions) as the basis for a better planning of urban environments.

3. atNight 2012-2013: Drawing the city with data

As explained earlier, atNight involves ongoing research and inquiry focused on the (re)definition of the nocturnal landscape of contemporary cities and the role of night-time in the construction of "urbanity". Since nightscapes rely on intangible elements, the project handles data analysis and cartography as fundamental tools for a better understanding of artificial milieu. The first phase of the research, developed during two semesters in 2013, resulted in a series of cartographies and registers of Barcelona nightscapes.

We aimed at designing, testing and deploying strategies to collect, analyse and represent information. Specifically, we used data visualization to set up a possible interpretation of night values by harnessing the immense power of visual communication to explain the relationship of meaning, cause and dependency established between citizens and their environment.

We classified the data into three main categories according to the source. First, we used information from Open Data and public geographic services regarding cartographic features and general statistics (demography, land use, streets layout, etc.). Second, we obtained mobility trends and energy consumption averages through agreements with public and private local agencies. Finally, we collected geo-social data sets by a systematic crawl of several location-based social networks API.

For example, we analysed geolocated Flickr, Panoramio and Instagram pictures, Twitter messages, Google Local markers or flow of movement across the city by taxi, bicycle or public transport. Availability of data collection in space provides an intensive and precise method of sensing citizen's activity in one to one scale.

The basic technological idea behind the project was to set up a platform that harvests data from geo-social streams and local Open Data providers, applies mining functionalities, extracts key elements and plots them on a series of maps. The research followed several phases -from the design of capture engines to the management of data via Geographic Information System, allowing parameters to be set and tuned in accordance with specific datasets.

From thematic cartographies, we identified hierarchies and relevant values, patterns and symbols, traces and absences, transforming data sets into meaningful urban stories. To illustrate, we highlighted the relationship between the busiest and populated streets, the most photographed sites in contrast to the most 'experienced' areas or the sentiment that swings at different time of day. The cartographies, classified in the three main guidelines of the project (visual structure, mobility patterns and activity), represented a first attempt to describe the uncharted territories of Barcelona.

3.1. Design opportunities at an urban scale

The elaborated cartographies draw conclusions with regard to future work. In terms of replication of the methodology, results suggest that the city can be represented using data from urban sensors and social networks. Unique architectural elements and most representative public spaces appear faithfully highlighted through many points of interaction that these places generate in the *Big Data*. Such approach denotes a direct relationship between the urban space and the data it generates (*Figures 4-5*), allowing interpretations that not only speak about geometry but also about value structures. In fact, certain singularities within the urban fabric require innovative viewpoints related to the subjective interpretation that citizens make of their own environment.

Cartographies also shed light on some very specific issues regarding nocturnal urban planning. First, we verified that places of diurnal activity correspond to a greater degree with visual structure (*Figure 5*). For example, synchrony between day and night appears to be dissimilar when comparing Twitter (short text messages expressing opinions, moods or reporting events) to Flickr activity (where the user uploads pictures). Visible city is directly associated to the places of daytime action –Twitter and Flickr match spatially (*Figures 9-10*). By contrast, nocturnal activity occurs regardless of the presence and absence of light. If massive citizenship interaction is linked to highly illuminated areas, inhabitants make also use of other spaces situated at the dark margins.

On the other hand, cartographies revealed certain patterns at a local scale, probably influenced by topography of the existing territory and the economic level of neighbourhoods. For instance, analysis of the use public bike sharing system indicates increased number of stop and go movement during day-time (*Figure 7*). The decrease of the journeys during night-time may be explained by the fact that people changes mean of transport or that certain neighbourhoods concentrate more activity. Similarly, the number of trips by private vehicle shape a mutable urban fabric, which remains fairly uniform during day as opposed to night, when road hierarchy is redrawn based on variable intensity of traffic -while lighting sources illuminate uniformly the streets regardless of its fluctuating character (*Figure 6*).

Briefly, urban fabric reorganizes at night: activity shifts from the city centre to the periphery, traffic flows change, activities giving order to urban plot diversify and citizens use the city differently (*Figure 8*). Places of meeting, celebration and citizens' interaction are non-identical from the diurnal ones. Take as an example Passeig de Gràcia, one of the main civic axes of the city. It is a very crowded street with a large number of social interactions and a constant traffic flux during the day. The activity drops dramatically at nightfall, as the ground floor is occupied by commercial activities and there are practically no residents. However, it concentrates a large amount of illuminated buildings, due to its monumental character, along broad and profusely illuminated sidewalks -trying, unsuccessfully, to translate the same visual structure from day to night.

In conclusion, we must realize the existence of two cities, divergent images of the same Barcelona, which has a "double life" as Keppes (1967) would affirm: one under the sunlight and another under cars headlamps, neon advertising and streetlights. Comprehending how these separate perceptions interact with each other is one of the main points of the design of nocturnal landscapes and, therefore, of atNight research (*Figures 11-12*).

4. Atnight 2015-2016: Understanding behaviours

As described on the previous section, the earlier stage of the project introduced the first steps towards the future research that will be conducted during 2015-2016 in partnership. We verified that data capture and visualisation is a valid and accurate methodology for urban analysis. We also developed data mining tools and workflows between different environments and explored the limits of graphic rendering of *Big Data* forcing a redefinition of the own tools. In addition, we tested and confirmed, from the first elaborated cartographies, the methods we will use to aggregate and cluster the data.

On this second stage of the research, we will develop a cartographic model based on the description of the road system according to various time slots and time sequences. We will incorporate data from social networks, public transportation systems, urban morphology and economic activity to road infrastructure in order to propose flexible and dynamic scenarios of public street lighting. We will develop a predictive model responding both to citizen's behaviour patterns and energy consumption assessment.

Finally, we will identify relevant public spaces with fluctuating activities along the day. Owing to its variability, these sites will provide the appropriate setting for an experiment of participative lighting. We will design the pilot experience and involve public and private actors needed for its implementation in a subsequent stage of the investigation. Participation strategies will go

from the design phase, as cartographies will again be constructed from the citizenship interaction perspective, to the direct involvement of inhabitants in a pilot experience.

It is important to recall the collective character of nocturnal landscape. For instance, power consumption derived from illuminating either monuments or streets should be a shared responsibility. It should be noted that the excesses of some actors may penalize the whole of society (as determined by the Kyoto Protocol): The use of energy resources must be consensual, since they are limited. Illuminating a facade of a building can be an individual decision. Yet, in a dark environment, it models our social background in a decisive way.

In addition, the nocturnal metropolis is neither the complement nor the counter part of the daylight city but rather manifests special conditions. There is a dependency (extension, reflexion or translation) between them despite their uses are divergent and its inhabitants have changed. They are two cities that share fragments of the same scenario. In this regard, nocturnal landscapes should be reinvented as a completely different but complementary landscape.

Eventually, nocturnal city exists devoid of the memory we have preserved as individuals, due to gross breaches in lighting directives. If monuments shape the identity of many contemporary cities, at night these main architectonic symbols fade into darkness. The cityscape that contextualizes us as a society no longer belong to citizens. Still, nocturnal planning may not only be based on the enhancement of historical buildings. As Berque (2008) “ states "landscape should be an environment in which we recognize ourselves, by means of a mutual identification”.

In conclusion, these issues are particularly relevant to the discussion on nocturnal urban design. Questions such as energy resources, the invention of new nocturnal symbols and the impact of lighting in the construction of historical memory will involve a transformation of traditional design processes and tools, enabling us to translate decisions from the realm of the subjective to the objective evaluation and finding new hybrid formulas of participation.

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Figure 1, 2,3: Barcelona under sodium lamps. CC: Julio Martínez <https://flic.kr/p/9mkhD6>. CC: @J_Martu <https://flic.kr/p/dmoqPj> CC: SpirosK photography <https://flic.kr/p/9chuvq>

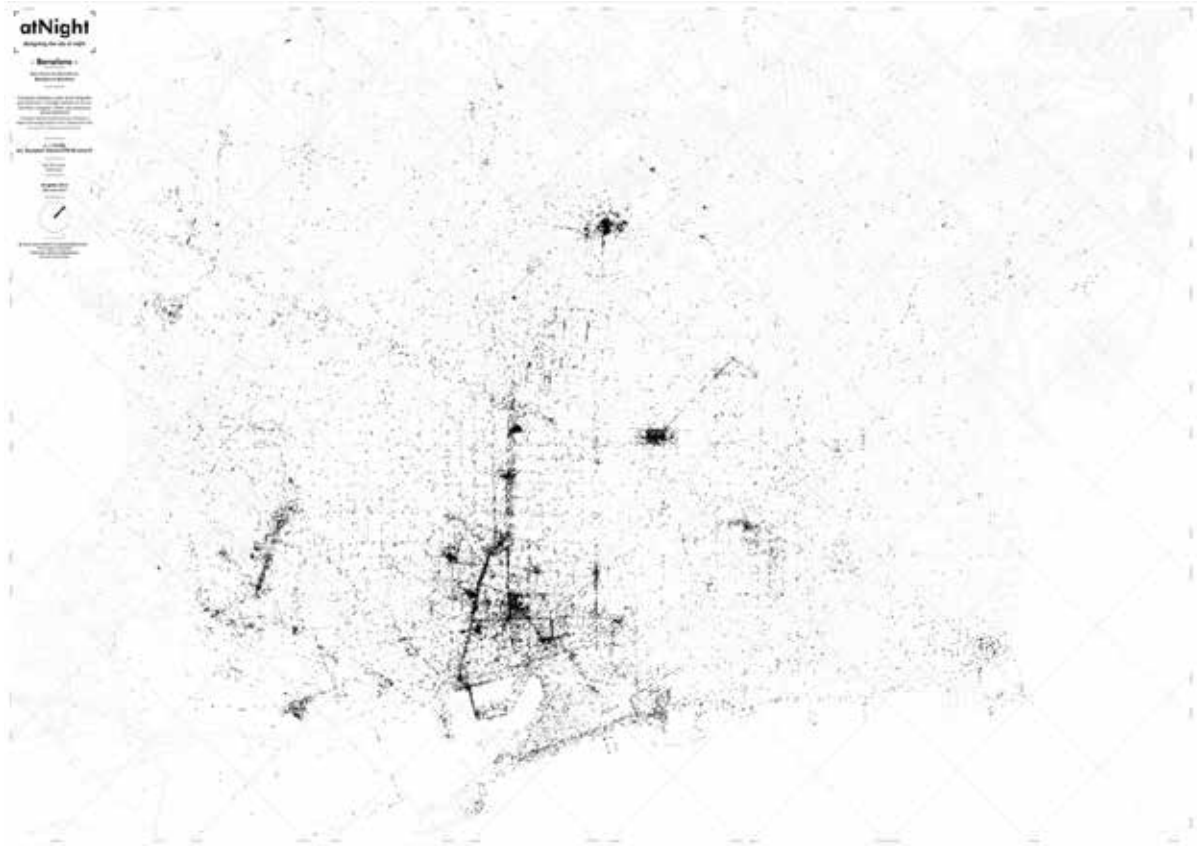


Figure 4, 5: cartographies Constellation Barcelona and Barcelona is Barcelona use Flickr and Twitter activity to define identity patterns.



Figure 5, 6: day and night behaviour patterns from Flickr and Twitter social networks and taxi.

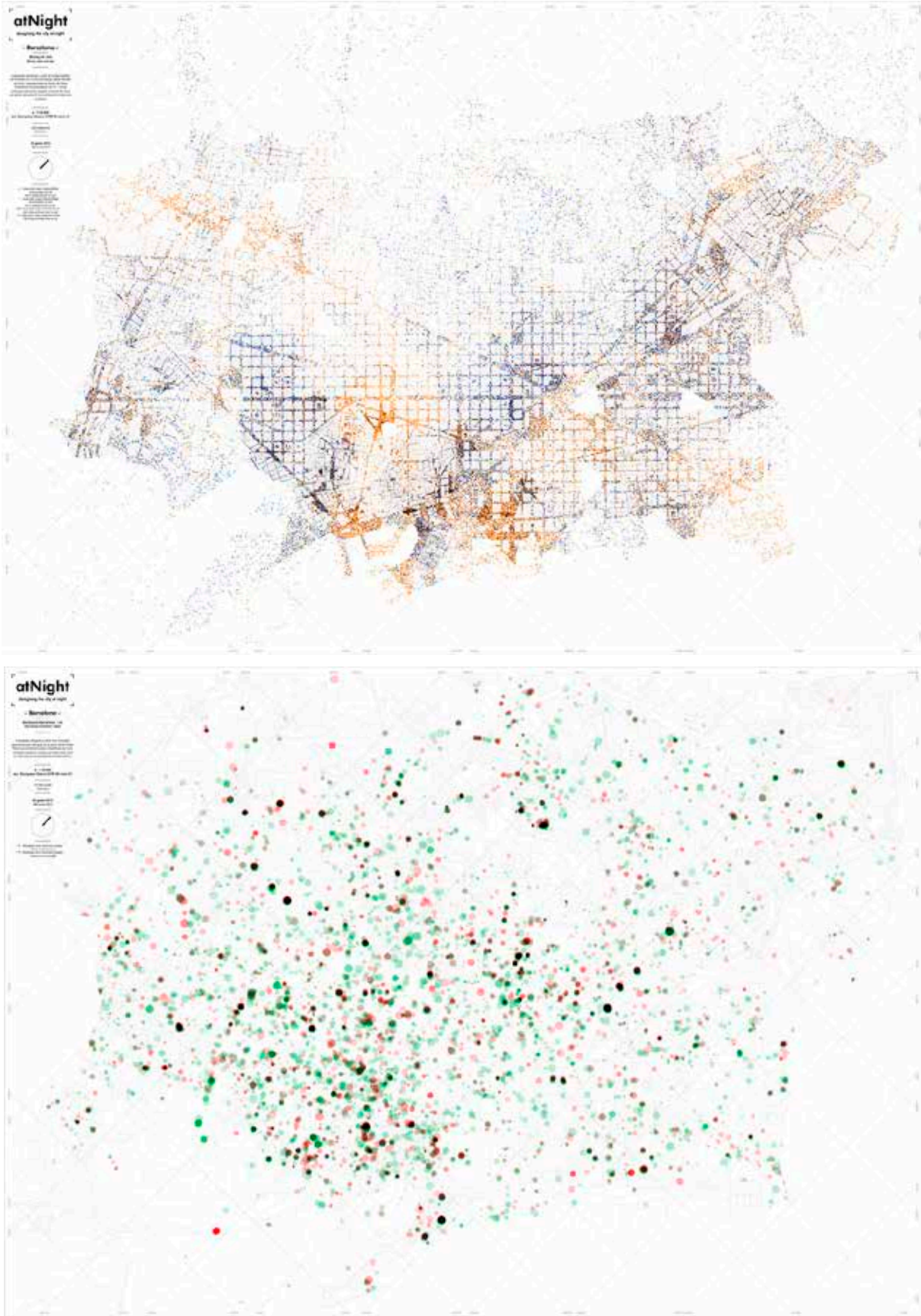


Figure 7, 8: mobility patterns of public bicycle sharing system; sentiment analysis via Twitter messages.



Figure 9, 10: comparison between Flickr visual structure and Twitter activity during daytime and nighttime.



Figure 11, 12: synthesis of social network analysis and Google Places.

REVITALIZATION OF BATIK BUSINESS AT THE TIME OF POST-DECLARATION OF LAWEYAN'S BATIK VILLAGE SURAKARTA, CENTRAL JAVA INDONESIA

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Conference topics: How to react when traditional industries move away ?

1. Background

Laweyan is an enclave-formed dwelling region. It was a fief of Pajang kingdom, developing since the 16th century up to present. Possessing houses with specific characteristics of Javanese architecture of its incomplete space (Javanese architecture has spaces; Pendapa (Gazebo), Pringgitan, Dalem, Sentong, Gandok, Pawon and Warehouse as well as Water Closed/Lavatory, with the Indisch Art Deco Style building shape.

Laweyan society has a typical characteristic namely batik entrepreneur center, Laweyan becomes well known. Even the origin of Laweyan name was assumed to derive from lawe or string as basic substance to make the mori cloth. Batik industry developed swiftly on Laweyan once stamped batik making technique, about in the mid of the 19th century and frequently started in 1870, marked with business hub in big scale, thus social and economy it was stronger and more independent.

The Laweyan entrepreneurs possess no respectfully cultural occupation in feudalistic Javanese society. They were equal to the poor, but all that differentiates batik entrepreneur, the Laweyan has powers of economy and wealth not seldom exceeding the noblemen and the aristocratic. They were not merchants but entrepreneurs producing batik cloths, their plants (factories) resided at one area with their residence. These entrepreneurs endured/bore all lives of their batik labors, therefore they were assumed as a respect dub such as "mbokmase and masnganten".

In 1970 batik business started to fade away or perish faintly. The latter was due to absence of governmental protection toward the price of batik standard substance price. In the end, batik business of housing were mostly at bankrupt, ones surviving were only a few, this decline was worsened with great entrepreneurs in monopoly motion. In 2003, there was a motion to move on businesses in order the Laweyan batik got going again. In 25 September 2004 District Administration stipulated Laweyan as Batik Tourism Destination in Surakarta. Since then, batik trade became advanced. Moreover Government necessitates

every Friday all employees, even the public or the private to be batik-dressed. Batik dress becomes all around the places therefore batik business develops rapidly.

Trend of batik dress all over the world are welcomed by entrepreneurs in Surakarta. They take advantage of Laweyan already well-known to open the showrooms all around the houses in Laweyan. They domiciled in Laweyan as traders not as entrepreneurs. Merchandise was taken from dealers supplying the merchandise to showrooms in Laweyan. Since there is price war, affecting the mass suicides. Whilst concept of “mbokmase and masnganten” is slow gradually and definitely starting to disappear.



Figure 1: Map of Laweyan (Privat document-2014)



Figure 2: Prototype of entrepreneur house in Laweyan (Trijoko document-2010)



Figure 3: Prototype of mbokmase and masnganten (Privat and Betty document-2010)



Figure 4: Alleys becoming the Laweyan traits (Privat document-2007)

2. Problems

Laweyan becomes world wide due to its uniqueness; region enclaved, having narrow alleys bordered by high walls, Indisch Art Deco style houses, with batik plants in one area with its houses. In the beginning, Laweyan batik businessman has individual characteristic on its batik motive, famous with a dub of “Laweyan batik”. Thus in the sale there was no need to compete.

Nowadays the businessmen opens showrooms in Laweyan mostly not native Laweyan inhabitant, thus “sense of belonging” to Laweyan does not exist. They don’t understand that Laweyan is a culture preserve area with living monument category supposed to protect. They are businessmen (concept as businessmen started to shift), with the same

merchandise, reciprocally dumping price, and a start of social conflict symptom among the businessmen. The latter if continued the Laweyan will undergo destruction as in period of 1970s.

3. The Method to Use

Seeing situation in the field, a research focused on change in viewpoint of a dub “mbokmase and masngantem” without being realized affecting on business deterioration, through actors getting involved namely; new businessmen opening batik showroom, Laweyan generation born in Laweyan but changing in perspective on Laweyan. Their analysis unit is businessmen in Laweyan. Respondents selected are businessmen still active and already retired, and following the process of business alteration in Laweyan. Data accumulated is “Investigation Focus” directed on actors affecting those changes either internally or externally. The to-do bases for investigation are its data without a guidance of a certain theory unit. There are two main flows of investigation as follows: 1) Accumulating physical data of Laweyan environment related to actors providing the change contribution in Laweyan: interview at depth, and direct observation to actors having a role in influence of Laweyan alteration, 2) Literature study in relation to a business in Laweyan.

Cara menganalisis; data investigasi yang terdiri dari hasil wawancara mendalam, observasi langsung ke aktor-aktor terkait, kajian arsip, disandingkan dengan data kesejarahan masa lalu Laweyan. Didapat kesimpulan tentang kemerosotan usaha, sehingga perlu adanya solusi berupa revitalisasi usaha.

Ways of analysis: investigation data consisting of interview outcome at depth, observation is direct to the pertained actors, archive study, coupled with historicity data of the past time Laweyan. It result in conclusion on a business deterioration, therefore it is necessary for solution of business revitalization.

4. Field Data

Based on history data written by Sarsono and Suyatno (1985:12) “...Laweyan society knows social groups called as wong saudagar or (businessmen or merchants), wong cilik (the haves not or the majority), wong mutihan (white group or Islam or Clergymen) and wong priyayi (the noblemen or the officer). Also known is merchant group as owner of enterprise with a female as stakeholder in batik trade. Therefore, a term of mbokmase or nyahnganten signifies the female as main actor in batik trade, whilst for a husband called as masnganten acting as completion of the intact family”....

Based on an interview with Mr Edi Kurniadi (June 2015), said that batik production controller in the factory/plant was masnganten whilst marketing part was mbokmase. Batik products were sold at houses with buyers from outside towns, as well as Klewer market

(batik market in Surakarta city). Relation of inter-production and a sale are very harmonious, as likewise in relation of mbokmase and masnganten, including relation with batik labors. Couple of mbokmase and masnganten as patron of their labors makes them comfortable since all livelihood is fulfilled. Therefore there is no negative flush in Laweyan.

Stamping process.....Yet type of batik cloth produces is written batik cloth with a process of batik-making with a writing tool named canting, stamp batik cloth, and also in combination. Latter on there are some businessmen using batik ways with printing. Each businessmen has individual batik motive, market share is also individual so that there is no conflict among the businessmen in Laweyan.



*Figure 5: Stamping process and product
(Privat document-2014)*

Batik process.....First, boil mori (cloth), if the cloth is still unrefined, we can use chlorine. Then dry the cloth, and then “dikemplong” (blowed by wood hammer in order to be solid and smooth). After that, the cloth is ready to be stamped. The stamping process is : put “grangsang” on flat bronze wok. Grangsang is flat thin with a hole about 0,25 cm. Then put “serak” (rough cloth, space between one to another thread is 0,03 mm). Then put wax that has been boiled with paraffin and gondorukem at certain amount. The next step is to heat the wax until become liquid, and then press the flat bronze with certain design to the serak and then stamp the cloth. After that, put the cloth on cotton bed, then wipe the cloth with water in order to clean the wax. We can put it on low table if the stamper is it. Is a second stamping process that is on kelengan cloth. This drik stamp is just for certain part in order not to get “soga”

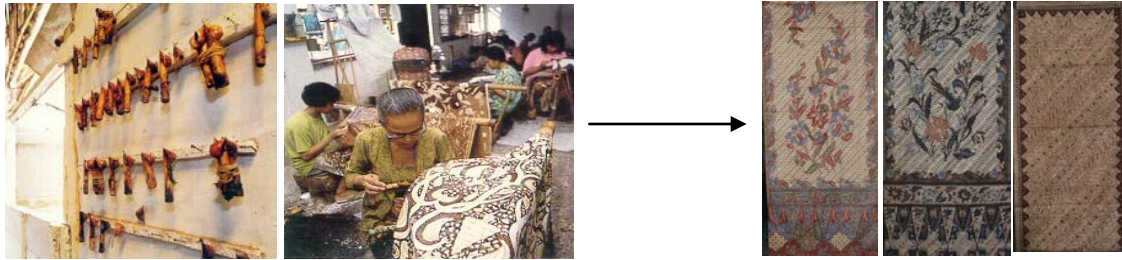


Figure 6: Batik process and product
(Privat document-2014)

Design the cloth (with a pencil) that is ready to be “loyor” (loyor process is cooking the cloth in order to be smooth), then do the batik with “canting”. The wax in this process is the same with the wax in stamping process. Then put the cloth on to “gawangan” (tool that is made from bamboo).

Printing Process..... Put white cloth into hot water that is mixed with starch. Then dry it. And the process of batik is finished

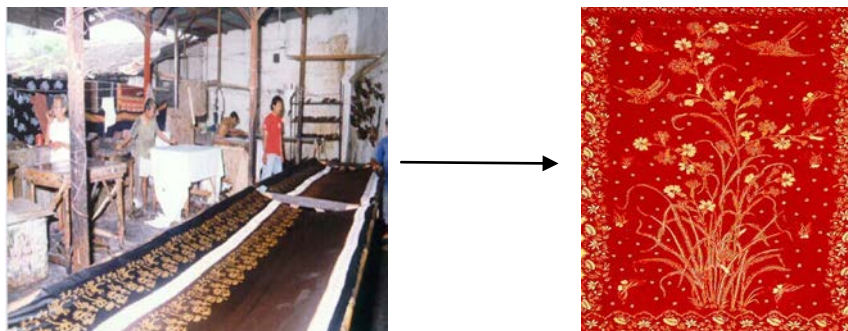


Figure 6: Printing process and product
(Privat document-2014)

First Coloring Process.....After stamping or batik process, the next step is coloring the cloth. Partial coloring is called “tolet”. Whole coloring is called “celup”. Coloring with celup uses chemistry materials such as : naphtol, indigosol, rapid and so on, or we can use “wedel nila” if we want black color.

Second Coloring Process.....After covering the certain part, cover the other part is different in color with the first part. If we do not want to add different color, so the coloring process is finished.



*Figure 7: First and Second Coloring process
(Privat document-2014)*

In 1970 up to 2012 batik businessmen in Laweyan were 11 persons left. Yet their businesses were not big only sufficient to survive their families. In 2012-2013 Laweyan society started to re-open batik business therefore according to interview with Mr Edi Kurniadi, aged 58 (June of 2015) there were 33 businessmen in the house selling its batik produce. Batik business in Laweyan started to blossom slowly. In 25 September 2004 Laweyan was inaugurated as Kampong of Laweyan Baik Tourism by Mayor of Surakarta (Mr Slamet Suryanto) and it started that the businessmen from outside Laweyan buying or hiring houses on Laweyan. In the first stage building countenance were converted from Indisch Art Deco to stores for their batik showrooms. Based on observation result there were 70 showrooms today able to change Laweyan character slowly. The businessmen and same native Laweyan inhabitant only sold batik produce not open business of batik making. These deteriorates Laweyan order with concepts of mbokmase and masnganten. Laweyan changes into the second Klewer market, with bad price competition.

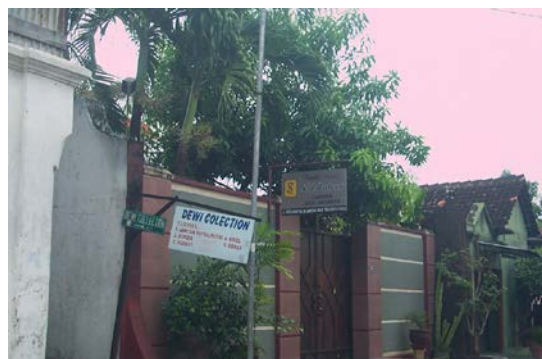


*Figure 8: Inauguration of Laweyan Batik Kampong
(Privat document-2004)*

In different side, Mr Rahman Haryanto, a native son of Laweyan born since 55 years ago is a scholar of machine engineering. As a professional he worked at foreign office where its disposition placement was not permanent either abroad or domestic. Less than 5 years of

early pension plan, he pioneered furniture business with reason that this business was promising for future. One a bit interesting was he opened a business in Laweyan, his reason was after getting all around places thus Laweyan where he had been born was a very comfortable place. His factory (plant) occupies ex-batik factory of great-grandfather uniting with the residence of his great-granfater, established in 1850 (now not used as residence). Besides the working ethos of labors were better than in Jepara, Serang, and Bekasi. Some of nephew and his brother also get involved to work, but management applied was not traditional but modern management. Therefore this plant developed favorably. From interview at depth with Mr Rahman Haryanto (June 2015). He has obsession to be a batik businessman with modern system either his instruments or managements, and Laweyan remains to become his main option.

Mrs Istiqomah aged 32 was native daughter of Laweyan, she was scholar of education, ever teaching at primary school but after having two children she quited teaching. From her parent she has a house heritance half of house given by her grand mother to her mother. (Isti and her mother are each firstling). Isti and her mother had the same choice namely dividing frontyard of her house into lot or kavling for small kiosks for rent used to showroom. She and mother were not willing to continue batik business of her grandfather since laziness and fright of busy activity. By hiring kiosks she could live appropriately. Isti's showroom was full of batik merchandise taken from batik businessmen outside Surakarta city, where all other kiosks also took merchandise from that place. A sale of competitive price was very tight. Isti was one of how to make herself as market trader not as bussinesswoman.



*Figure 9: Prototype new fasade in Laweyan
(Privat document-2015)*

Laweyan has Association named Forum of Laweyan Batik Kampong, since in the beginning it was established to gave agenda to make Laweyan like the past time glory namely re-liven batik factories (batik plants) at hand with concept of mbokmase and masnganten. Besides Laweyan has a cooperative named cooperative of Sidoluhur

possessing a destination to help provide standard substance of batik with cheaper price than at market place, as well as assisting in the marketing. Two channels are in fact not able to accommodate the early plan. The latter is due to non-professional treatment, the managers or providers open showrooms individually so that conflict of interest occurs. The manager or provider is not able to control the community from various sides of interest.

5. Conclusion of Field Data

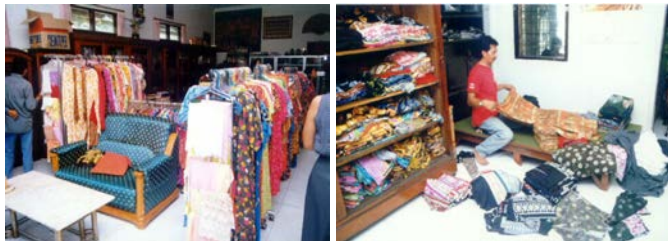
1. Today Laweyan has lost of its "spirit" as batik business place famous of concept of "mbokmase and masnganten"
2. Laweyan is still potential as a business place, business atmosphere is supported by labors still increasingly better in comparison to other districts.
3. Mindset alteration occurs in conduct of business. Pride is no longer as mbokmase and masnganten besides as businessman, getting big profit at other side can become a patron of labors (society of labor is secured from his live). What today occurs an advantage is only for the self (character of trader or merchant) not perspective of other persons.
4. Mostly society living in Laweyan have no any longer pride living in region of Culture Conservation (Culture Preserve) holding historicity value as well as special trait buildings. The latter proves with building countenance swiftly converts into rows of stores having no high sense of taste.
5. Society in the skirt (the poor) do not enjoy the advantage of converting Laweyan into Batik Tourism Destination. They are not involved into that batik trade business. It was period that they were batik labor secured in livelihood when there were most batik factories in Laweyan.

6. Solution

An interview result with Mr Solichul Hadi AB, aged 58 as Chairman of Yapertib (June 2015) and my solution of my research that some improvement able to do such as:

1. FKBL (Forum of Communication and Development for Laweyan Batik Kampong) is revitalized into an early concept, namely a think tank of inter-residents, listening complaint of residents either young men or elderman. It is to liven up pride to become mbokmase and masnganten, also It is to grow a share concept in a mutual living. It is to re-grow concept of mutual work (*gotong royong*) nowadays fading away.
2. Cultural activity in 2003 already pioneered by Widayati of researchers whose dissertation was on Laweyan, re-livened as stabilizer between social, economical and cultural activities. The latter turns society to be friendly. Not different between the poor and the rich.

3. Improvement in signate in some places will enable people to visit.
4. There is coach for guide (visitor escort) about hospitality, language, data, information, and history of Laweyan.
5. Cooperative Sidoluhur was revitalized to the real function of ccoperative, such as; asking businessmen together in giving mori cloth (as basic substance of batik) directly to its factory, batik medicine. The latter was done in order to have price cheaper than the price in the market place.
6. Establishing The Enterprise or Business Entity incollaboration with District administration, functioning to give input for society going to revitalize their homes as business places. Therefore region character as “Laweyan” can be sustained.
7. Asking District Administration immediately make PERDA (District Regulation) on Laweyan Area as Cultural Conservation Area since Ministry Decree Letter
8. It is necessary to diversify employment in sustainability of batik business and tourism goal namely; homestay establishment in area of houses of those businessmen without changing the buildings. Therefore those hiring will feel as batik businessman, sleeping well and learning how to make batik, and so forth.
9. Eachmonth during two nights there is one road block closed for cultural event, sale promotion, batik event, food event and so forth.
10. It is necessary to have protection on opening of big stores in Laweyan not only selling but producing.
11. Laweyan businessman already established is hopefully asked to open branches at other places by joining Laweyan small businessmen not established or advanced.



*Figure 10: Prototypr Batik Sale
(Privat document-2015)*

12. As one of deterrence way; giving entrepreneurship skill coach to the businessmen, emphasizing managerial aspect, encompassing; marketing management, finance, and production. It is necessary to perform production skill coach in batik sector to young generation encompassing production knowledge, motivation reinforcement, and entrepreneurship basics. It is necessary to bridge the entry of capital to the

businessmen, either banking credit, aid fund, including skim of strengthening Middle Credit Business so that the access are enabled.

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Reinventing Eindhoven from within: Exploring outlines of a new approach for urban fieldwork

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1. A city in transition

In a time when cities are increasingly becoming the focal point for societal change, through the process of developing sustainable living environments, it can be said that cities have become places of transition. Eindhoven, once an industrial city where currently traditional industries have moved away, is one such example of a place that is increasingly exploring its new post-industrial potential as an innovative and creative contemporary city. This results in manifold (local) initiatives that enhance and contribute in different ways to the transition towards becoming a more sustainable city.

Observing the societal debate around the creation of sustainable cities, the practices of fellow social designers around us and the manifold of local initiatives in Eindhoven, it seems as if at certain levels the city is vibrating and 'bubbling' by an energy desiring change. Local, small-scale, bottom-up, green, sustainable, organic, (social) design and social innovation are in that context terms that are often used when describing and characterising these changes, or rather aims and objectives of change. However, to reinvent the city of Eindhoven and to see the city in a 'complete' way, that is, to take circular relations between socio-ecological as well as socio-economic aspects into account, the (methodological) debate about observing the city and approaching its future may require revision and a change of scope. To be able to 'make' and undergo the transition towards a balanced, sustainable city and to connect the diversity of subjects that are being addressed, new ways of investigating the city are urgently needed. By exploring the city from a more 'holistic' point of view, we aim to add to this investigation, while starting in the everyday reality of the lived city in process. This enables us to include local practices, energies and potential as well as the actors changing our sight.

In this context, through this paper, we propose a new way of approaching urban research and aim to explore and present an (alternative) perspective on, in our case, the city of Eindhoven. As such, next to sketching an observation or perception of the current city in process of change, we will present introductory, exploratory steps towards this new scope and way of working when reflecting on the recent process of developing a summer school program, as well as the experiences of change makers in the field of our research area Doornakkers.

1.2 Seeing the city 'from within'

Currently, both in practice and in public discourse, a shift is taking place in which traditional conservative top-down views and approaches are placed next to, or are even replaced by new explorative, often unconventional and (more) empowering bottom-up initiatives, causing what is often referred to as a 'turning movement' (a 'kanteling'¹ in Dutch), towards awareness of the need for more balanced and sustainable systems in society. As places are in transition, seeing the 'social layer' of happenings and developments in the city is needed to broaden and deepen the debate about the conception of Eindhoven as a city in transition.

Therefore, our point of departure in this approach is the cross-disciplinary connection between the fields of social design and human geography: in-between science and design.

As, in our understanding, the scale of everyday practice serves as a means of reinventing urban fieldwork, forming a fertile ground for cyclic thinking. The scale we aim to focus on is that of the neighborhood as an everyday lifeworld consisting of tangible practices. Hence, as a concrete outcome of this cross-disciplinary connection through which we aim to reinvent urban fieldwork, we are currently developing a summer school, titled 'The Wise City'. During the summer school, we aim to develop outlines inviting the reinvention of approaches to urban fieldwork. Through this, we as writers of the article will ourselves try to bring in practice a synthesis between the qualities and skills of both social design and human geography. As such, we strive to connect design thinking to scientific research in order to gain insights about sustainable urban development, investigating the scope of Eindhoven as a Wise City.

In our view, both the fields of social design as well as human geography are fertile disciplines from which we can tap. Therefore, in the summer school, we aim to establish cross-disciplinary connections between these and additional fields. Moreover, with the summer school program we aim to move towards approaching the city as a whole, by exploring new meanings and understandings of urban processes and by connecting various domains. To do so, we believe, we need to leave behind the contra-positioning of top(-down) and bottom(-up), or, in terms of de Certeau (1984), the 'city from above' versus the 'city from below' when investigating, acting in and building the city. Rather, we would like to work towards a starting position inside the city, that is enabling to observe and create it from inside-out in a process that we see as iterative and interactive. This is why we prefer to speak of the 'city from within'.

When observing the city from within, without being led by assumptions of power relations such as implied by notions of top and bottom, the city can be perceived as a constellation of a multiplicity of elements, that in their assemblage together shape the city². Through this perspective, elements can be perceived to be of equal meaning that are empowered through their relations with others. This way of approaching urban fieldwork provides opportunities to 'cross', 'weave together' and connect different disciplines, as well as different actors in the urban landscape in an open way. As such, the focus shifts from the power of single elements to what happens in the space 'in between' them. When including these 'inbetweens' in the constellation of places and lifeworlds that a city consists of, a transition space arises in which new ideas can emerge, enabling the transition towards a renewed understanding of urban living while making new (meta-disciplinary) connections. As such, investigating the city 'from within' can open up this space for exploration and transition, whilst renewed meaning can be given to the city in transition by reinventing Eindhoven from within.

In the following section, we will set out the outlines of a theoretical breeding ground for our methodological steps which will be outlined in section 3. Then we will 'synthesize' in section 4, coming closer towards the steps that are to be taken to reinvent urban research.

2. Towards urban transition

In order to shape and guide the transition towards becoming the sustainable city, a new understanding of urban fieldwork is needed, which facilitates the transition process in the city. This transition process can be seen as an ongoing movement, a 'transition landscape' in which 'tipping points' take place, that are 'moments' and 'movements' that accelerate or broaden the transition momentum. The practice of doing urban fieldwork in a new way, for instance, can be or lead to such tipping points. To give form to this process, 'transition experiments' (van den Bosch, 2010; Rotmans, 2005) can be done. These can be seen as "practical experiments (...) that can make a potentially large contribution to a transition process" (Rotmans, 2005: 50). Such transition experiments can for example be done by making a place, an intervention, a process and / or a set of 'tools' that can guide a transition process.

As mentioned above, the transition process is seen as a ‘turning movement’. In this movement, various transition experiments happen or take place simultaneously, thereby often strengthening each other. In the transition landscape, such experiments or movements can (together) contribute or lead to tipping points. The active creation of new methods, places and objects can contribute greatly to creating such tipping points. What may seem like small steps taken by active local ‘changemakers’ (both groups and individuals who are actively contributing to urban transition, often on a local level such as the neighborhood), may actually lead to valuable insights in how to operate from here as active urban professionals. Creating tipping points, or contributing to let them happen, can already be done on a small scale. Later on this might be incremented by building off of (small) impulses. Reflecting on steps taken is important in this process, as only then the transition towards a sustainable city can be deepened in a meaningful way. As an explorative step, in the next section we lay out a possible new approach for doing such experiments.

3. Outlines of a methodology: iterative stepping stones

In the context of urban design and development as well as in that of sustainability issues we often tend to think at a large and abstract scale. However, in order to reinterpret these processes and themes and to see the city in a more ‘complete’ way, a change of scope is required. To see the city from a more ‘holistic’ point of view - that is, taking into account different domains (social, ecological, economic) - we, as argued above, would rather start within the reality of the everyday lived city, including a smaller and tangible scale of the already existing everyday life. These human scale practices can be connected to in the form of an iterative (design) process that does (more) justice to actually existing problems, qualities and opportunities present in the local context, while bringing ‘solutions’ into a human scale and scope. When looking at it this way, everyday practices present themselves as containing key actions, moments and processes to which we can connect and develop what can be called ‘bottom-up’ ways of urban development. To be able to find these connections, we will need new ways of investigating the city that thoroughly include local practices, energies and potential in order to find grounded design questions as well as strategies to digest and distil the findings of these investigations into highly interactive and iterative design processes that connect rather than produce. These strategies for new ‘fieldwork’ will need to combine creative processes and skills with a more theoretical understanding of research and (the ability of) reflection.

In exploring and sketching possible methodological outlines for such strategies, which inherently will never become fixed, we as writers of this article aimed to position ourselves ‘within’ a living case: the Doornakkers neighbourhood in Eindhoven. Eindhoven is a perfect case study as there is plenty of space for innovation as traditional industries have now (almost) moved away. Seeing the writing of this paper and its underlying research as a possible example of the iterative processes we are aiming for, our approach to actually set up a (locally embedded) summer school gave us the opportunity of a participatory approach, enabling us to get to know (active) people in the area (both geographically and professionally) and to be involved in the organisation of the summer school and the development of the program and methodology. As such, developing the summer school ‘the Wise City’ can be seen as part of a participatory research process, an active case study.

In organising this summer school, we closely collaborated with the locally embedded social designers from Corner Spot (Minsung Wang and Conor Trawinski). In their position as such, they are the actual ‘changemakers’ on the local scale of the Doornakkers neighbourhood. Corner Spot, as a local ‘social design hub’, is a place where the city obtains new meaning. As a team of social designers, Wang and Trawinski actively participate with and in the local community to activate change in a practical way. They organize all kinds of hands on practices through which they strive to (re)shape the city on a local scale, creating a fertile ground for social innovation. Explaining the participatory process approach they call ‘co-design’, Wang states, that “traditionally, design is a lot about problem solving, but we don’t

work as problem solvers, the conclusion is always open". Hence, he states, "it might not solve the problem, it might even fail, but because we put a lot of focus on the participatory process, whatever outcome comes out of it, it becomes something that everyone takes ownership in, embraces".

Therefore, working in such a way creates a new role and position for the citymaking professional. Wang explains: "in our case, being rooted and based here in the neighbourhood, we try to find an interdisciplinary connection that rarely happens by itself. We have to have someone in the middle to connect and to mediate, to bring the professionals at one side and the good will, motivation and manpower of the community on the other side together". Trawinski adds: "it is really about connecting all these levels and making sure that they are able to see each other. So in a way we are acting a bit as a translator as well, it is important to have that role in between". Hence, in the framework of the Corner Spot, Wang and Trawinski are located in between different lifeworlds, of different actors, connecting, moderating and translating between them. This new in-between role of the citymaking professional is as such explored and given form along the way through the hands on practices they collectively shape with neighbourhood inhabitants.

By doing this in such way (such as in the summer school and Corner Spot) small steps towards urban transition are set in practice. The summerschool can hence be seen as a transition experiment that is a valuable frame in the chain of events that together create societal tipping points towards the becoming of a sustainable city. Through this collaboration, a new in-between space of doing urban fieldwork arises, connecting both social design practice with human geographical scientific theory, and as such we collectively develop a new participatory methodology.

In this methodology that forms the guideline of the summer school, our first step is an inventarisation of a wide range of findings in the local context in order to get a feeling of the lived reality of the area. Embracing a practical but detailed, in-depth 'qualitative' approach is an important part of it. Through this process the current situation and presence of (social) material and potential can be mapped, while exploring a new place and meeting its inhabitants, visitors or users inspire to become engaged. In the situation of the summer school, we expect this inventarisation best happens in a visual, dynamic and accessible way, making it more tangible and interactive. At a certain point, essential qualities and issues can be distilled, forming elements to build with towards a contextualised strategy or scenario. To get there, possible connections and relations between these elements need to be explored (in the local context of the neighbourhood). The selection or distillation has brought together various elements which form a collection. Now, possible relations and connections may be probed or tested, to create a new constellation of the selected elements, or a meaningful whole of these parts, leading to the development of a scenario. When the (new) constellation of elements is set, the ingredients are there to create a 'storyline'. This storyline can be seen as a scenario for future 'possibilities' for developing the neighbourhood in a more sustainable way. These scenarios are thus visualizing a vision. The outcome and results of the summer school will be presented in the form of these developed scenarios for the future of the urban environment.

4. Reinventing the city from within

As we explored in the former section, in order to 'make' and concretize the transition towards a more sustainable city, we believe that improved synergy between disciplines and active 'transition fieldwork' is needed to interpret and give meaning to this new space for social and urban innovation. As we are leaving the era of blueprint thinking behind, through this new way of doing fieldwork urban transformation becomes not only more contextual, but also more personal. In this process, synthesis and reinterpretation of 'from above' and 'from below' is needed, leading towards citymaking 'from within'.

Through this paper, we strove to point out our view on developing this new way of doing urban fieldwork by outlining the first stepping stones that we are taking. We are currently exploring these steps to actively contribute to a tipping point in the transition towards a more sustainable city. Eindhoven proves to be a perfect case study as there is plenty of space for innovation as traditional industries have now (almost) moved away. Renewed meaning can as such be given to the city in transition, as we have yet given an impulse by developing and 'doing' the summer school The Wise City, as we introduced above. Our next steps into this ongoing process of exploring and designing will be to continue to develop the theoretical and practical framework into a comprehensive (methodological) toolbox for doing urban fieldwork for citymakers; social designers, human geographers, urban planners, among other (urban) professionals. This we will do on the basis of the outcomes of the summer school the Wise City: the scenario's for a Wise City. As said, what will continue to be our point of departure, are everyday cycles in lived space, that may serve as starting points for new ways of doing, making and being in the Wise City.

When including as well the awareness of inbetweens in the constellation of places and lifeworlds that a city consists of, a transition space arises, in which new ideas can emerge that enable the transition towards a renewed understanding of urban living. To collectively give form to these new spaces and ways of sustainable urban living, new roles are needed. While reinventing the ways urban space is looked upon, the role as urban planning professionals gradually adapts simultaneously. Cross-disciplinary placemakers and changemakers, connectors and transition coaches are among these new roles of urban planning professionals, able to connect various scales and actors. What binds this 'new' group of citymakers, is that they collectively think and do outside of known pathways, but invent and develop renewed ones which guide us towards the sustainable city. By doing transition experiments as described in this paper, 'eco-wisdom' may be created, as 'transition philosopher' Henk Oosterling³ indicates. Along this exploratory journey, every transition word, -place, -process or -object that is created, guides us further in the right direction. As such, collectively we create opportunities to grow towards a sustainable future.

¹ Further reading: Rotmans, 2006

² Further reading: McFarlane, 2011; Farias, 2010

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Analysis on the “Integrated Development” System in Grass-roots Villages in China--Example of the Practice of “Rural Planning and Rural Planner” against the Backdrop of the Transformation of “Sunan Model”

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Abstract

This paper explores and studies the “Integrated Development” approach of the rural planning in the new era, based on the sample of the Zhangyang Village in South Jiangsu(Sunan) region and the successful cases of rural planning and rural planner in other regions. This paper specially analyzes the way to integrate the needs of people at grassroots level, encourages the cooperation among villagers, designing teams, and “rural planners” for the whole process of project designing, planning, developing and maintenance, and defines the codes and focus of each stage. It combines both the “Top-down” approach and “bottom-up” approach, filling the gap of the “Sunan Model” with professional operation. It forms a new type of theory and practice that can be copied and promoted in the dynamic planning of other villages.

China is country with long agricultural tradition. The rural community is the foundation of the larger Chinese society. The rural issues are the always the key issue at any stage of the development of the country. During the 12th Five-year period, China have been optimizing the development philosophy, growth model and growth orientation. Given that China’s urban-rural pattern is changing from opposition to unification, the existing planning theory and practice with a primary focus on urban area does not always work in the vast rural areas. Therefore, it is necessary to explore and study the rural planning theory system and specific practices against the new backdrop. The writing of this paper is accompanied with the on-going project in Wuxi city, Jiangsu province. The purpose is to seek the perfect combination of the “tangible planning” and the “intangible planning” through the study of the practical issues. The intention of this paper is not about the interpretation of the highlights of the plans but about the exploration of the planning methodologies of the rural area.

1. Two Practical Issues

1.1 Growth Dilemma of Villages in South Jiangsu Region at this stage

“Sunan Model”refers to the government interference to stimulate the growth of companies in rural areas, with an aim to achieve non-agricultural growth in southern part of Jiangsu province in the 1980s. With China’s urban-rural pattern moving from opposition to unification and the industry transfer from east to west under the “New Normal” of the Chinese economy, the flaws of the “Sunan Model” in the governance of villages are beginning to emerge.

The subject of this paper is the Zhangyang Village, located in Hufu Town, Yixing City, Jiangsu province (Figure 1). It is a typical village of the “Sunan Model”. It is the result of the merging of “Zhanggong Village” and “Yangquan Village”. It has a population of 2,394 and covers 14.1 square kilometers, governing 14 sub-villages. The village is located in the mountainous area in the south part of Yixing. Rural collective industry was emerging in this village at the beginning of the “Reform and Opening-up Policy”. Now the whole area is faced with the challenge of economic transformation. Our team has designed some basic questionnaires for the villagers

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regarding their feelings on the growth of the village during the past two decades and found three major problems (Figure 2).

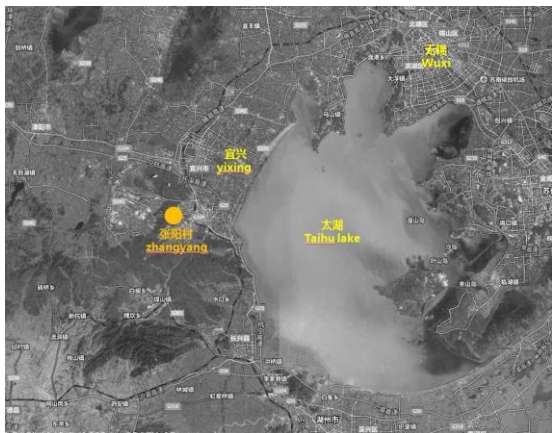


Figure1:Location of Zhangyang Village

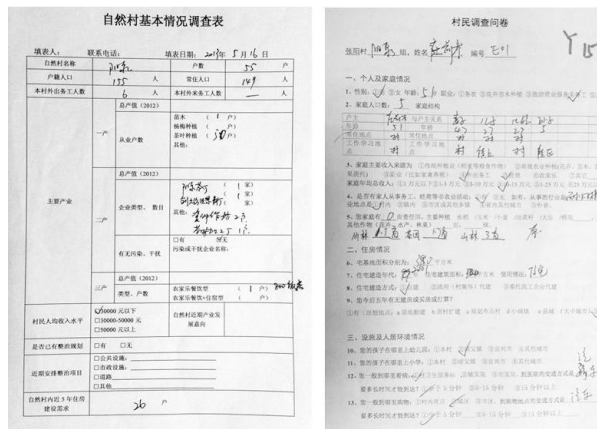


Figure2: Questionnaire for the villagers

1.1.1The Hollowing of Population and Industry

Due to the after-effects of the global financial crisis in 2008 and the gradual disappearance of the population dividend, the basic industries in the traditionally economically developed regions have been moving to the western regions because of the increasing land and labor cost. Industries in towns and villages in south Jiangsu region are the main force of moving west. Through the evolution of the industrial layout of the Zhangyang village from 1990s to 2000s (Figure 3), we found that the whole village is having a sense of loss due to the industrial transfer from the condensed layout of cable companies, machinery companies, electronic companies and light industries to the sparse layout of the individual companies (Figure 4). Taking the opportunity to develop tourism in the Yangtze Delta Region, Zhangyang Village is expanding to the rural tourism, with an urgent need of industrial transformation and upgrading.

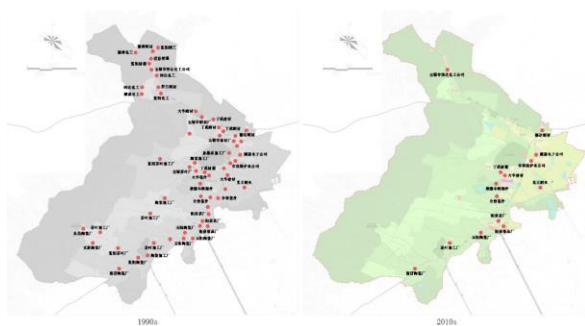


Figure 3 : Evolvment of Industrial Space in Zhangyang Village

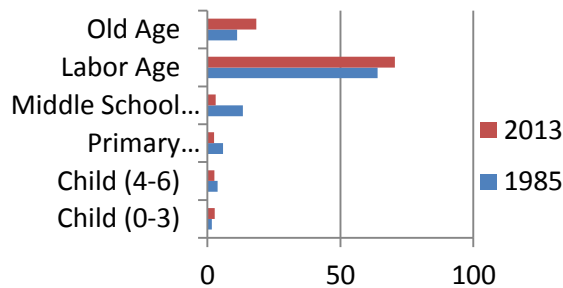


Figure 4 :Analysis of the Population of Zhangyang Village

Meanwhile, the basic data reveals the imbalanced proportion among different age groups. It lacks the momentum to increase population and yet population aging is emerging. There is a lack of dynamism in its population due to the outflow of population.

1.1.2 The Fragmentation of the Space

Due to the fact that villages in South Jiangsu region has been through different stages such as household contracting responsibility system, reform and opening-up, surge of companies in rural areas (Figure 5), influx of foreign investment, acceleration of urbanization, and land circulation, the rural space in this region has its unique complicity and diversity compared with other regions in China.

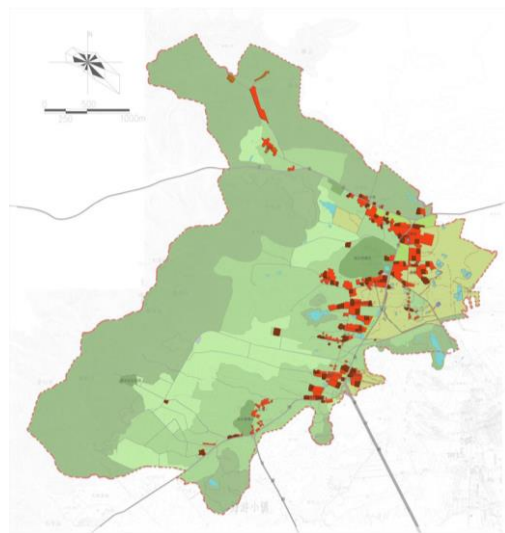


Figure 5 : Current Layout of Living space and Industrial Space of Zhangyang Village

The complex collective land ownership and the vague ownership have led to the low-cost compensation for collectively owned land and the low-cost expansion of the urban areas. Meanwhile, the land in the rural areas are beginning to be developed in the name of “growing rural economy”, creating a situation of mixed layout of agricultural land and construction land. It is a significant situation in Zhangyang Village with living space mixed up with industrial space (including deserted industrial space). The boundaries of the land ownership are very complicated and are in a disordered manner, bringing huge difficulty to the overall future planning of the village.



Figure 6: Current Landscape of Zhangyang Village

1.1.3 The Extensive Construction in the Village

Because of the dense mix-up of the manufacturing space, living space and transportation space, villages in post-“Sunan Model” are growing in a more extensive way. Take Zhangyang Village as an example, the industrial space along the road were mixed up with the living space. When the industries moved out, problems like the lack of cleaning facilities, outdated public facilities, and scattered public space were beginning to emerge. According to our research, we found there is a gap between the current village development and the future diverse needs of the villagers (Figure 6).

1.2 The Dilemma of the Rural Planning in the New Era

A sound development of the village cannot go without rigorous planning and research. Before our team went to Zhangyang village, it had also entrusted other parties to conduct the planning but the result was not so positive. This is a common phenomenon of the Chinese villages. We have come to the following conclusions after interviewing the professional village planning people who have been working in this field for quite a long time.

1.2.1 Institutional Issue: Lack of Specific Technic Regulations

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Over the years, the planning and development of our urban and rural areas in China are deeply influenced by the urban-rural dual pattern. Urban and rural areas are treated separately. Different laws and regulation apply to urban area and rural area respectively, which is not conducive to the overall urban-rural development and also forms some loopholes. In some regions, there is a lack of organized planning and management, which, to certain degree, has hindered the development of new rural area. Differences exist in terms of land ownership, governance model, and living& production model between urban and rural areas. The village is faced with social issues and upgrading issues due to the shrinking industries. These different aspects have led to different prerequisites and principles regarding the planning for urban and rural areas. Many urban planning criteria with a focus on concentration cannot be applied to rural areas directly. We need to develop a technical system that is consistent with the development patterns in the rural areas. Meanwhile, the existing regional planning and urban planning theory cannot explicitly solve the specific problems in rural planning. Also there is a lack of a centralized and complete technical regulation for rural areas, so each province would provide guidance for its own rural planning. Over the years, the development of rural areas in China has been in dire need of effective integration.

1.2.2 Roadmap Issue: Disconnection between the Blueprint and Grassroots Needs

The existing planning at various levels is virtually the space implementation of governments' economic growth, which involves breakdown, control and realization of growth target at different levels. It is considered as a “top-down approach”. Rural planning is no exception. But as an important plan that will exert deep influence on the development of rural areas in the long run, it should involve public participation. In the “top-down model”, it is difficult for the top levels and bottom levels to have effective interaction and communication in terms of setting objectives or optimizing the plans. Government is the decision-making body while villagers are not involved and sometimes they are kept in the dark. Gradually, the decision-making process becomes a government-dominant and closed system which cannot satisfy the needs for future development. In our survey, we found that most villagers have expressed their dissatisfaction to the existing rural planning. They complained that the existing planning does not serve their practical needs and has many obstacles in implementation such as the discrepancy between the space and the actual land ownership as well as insufficient supply of everyday life facilities. In a word, the innate flaw of the “top-down” technical path has led to the poor feedback of the implementation of the plans, which are unable to meet the needs for the future development of the village.

1.2.3 Designing Issue: Lack of Clear Target and Copying

There is a Chinese saying which goes, “Winds that are ten miles away from each other are different while places are hundreds miles away from each other have different folk cultures.” Its core meaning is that villages are different from place to place. Each has its own unique culture and features. China is a vast country with close to 700,000 villages. But giant differences exist among these villages due to different economic level, folk culture, geographic landscape, location, and climate. However, the majority of the planning staffs are urban planners, who rarely give serious consideration to the actual needs for the development of rural areas. That's why the rural planning in China have the same pattern which pursues the orderliness of buildings and the copy and standardization of the architectural styles. “Thousands of villages with the same style” becomes increasingly common in the development of new villages. The diversity of the rural planning is being gradually stifled. Rural planning is becoming more and more formularized and singularized.

1.2.4 Implementation Issue: Inefficient ManagementStructure and Lack of Implementation Mechanism

One problem lies in the infrastructure which is the backbone of the planning. Rural infrastructure development is the key factor in restricting the economic growth in rural areas. It is the important elements that provided public service in rural economy, community and cultural development. At present, government coordinates with various departments and agencies such as agricultural, land, electricity, transportation, irrigation, forestry, and environment departments. Projects could be planned or supervised by multiple government agencies, which lacks a unified supervisory body and implementation body. It has a great influence on the reasonable arrangement and investment effectiveness of the rural infrastructure. Each government agency has got the mind of its own and only cared about the areas in its jurisdiction, which caused lots of unnecessary loss and waste.

Another problem lies in the landscaping architectures which has an impact on the details of the planning. Even when a good plan reaches the village level, it can still be poorly implemented due to the lack of stringent supervision of authorities from the village level and the lack of expertise and experience of the staff at the village level.

2. Two Excellent Cases

2.1 Practical Experience: Haotang Village, Henan Province



Figure 7: Design Sketch & Development of Haotang Village

Haotang village is located in southeast part of Wulidian Town, Pingqiao District, Xinyang City, Henan Province. It covers an area of 16 square kilometers. It is situated on the extension of the Dabie Mountain range thus it is a mountainous village in nature. In the rural planning and

development practices, this village has very thorough implementation and received the most positive feedbacks (Figure 7). The reasons are as follows:

1) Development Plan with good combination of long-term concrete work and the real needs

The planning team spent almost all of the time in the village since the launch of the project. Their conclusion after 10 years of village development is to set the principle of “building a village as a real village”. The planning of Haotang village keeps its original space pattern which manifests the harmony between village buildings and nature, the merging of villagers’ life with the landscape. It has formed a special space pattern for the village and designed public facilities such as the guesthouse, happy rural home, kindergarten, schools, nursing homes, clinics, public restrooms, sewer systems, and libraries. It has achieved all the functions of the public facilities while maintaining the same style and atmosphere.

2) Experience of growing with the villagers and the Sense of Master

In the planning process, the team has shown respect to the villagers’ idea. They have designed original and stylish houses based on the location of each villager’s house and got the agreement from the house owner before implementation. Meanwhile, they also nurture the construction

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skills of the villagers in the rural development process. The rural development training center is located to the east of the village committee. It is functioning as the training base for the rural development. From time to time, designers and architects would teach the local villagers the construction skills with strong local features. In this way, the villagers can participate in the long-term development and maintenance of the village. These are all important features of Haotang village’s experience.

2.2 Institutional Experience: “Rural Planner” in Chengdu

Among the exploration and reform of rural planning practices, Chengdu is the first city to launch the rural planner system, in an effort to lay a solid foundation for rural planning, improve the management efficiency, foster a professional team at the grass-root level and establish a planning system that suits the needs of urban-rural development.

There are 223 villages in Chengdu. Aside from the 27 villages that are under direct administration of the city municipal government, the rest 196 villages are assigned 150 rural planners. Since 2010, rural planner were recruited every year for three years in a roll with a tenure of 2 years.

A rural planner’s job includes 6 aspects: to participate in the research and decision-making process of the planning concerning local government; to formulate the rural planning; to put approval signature on the government-invested projects; to offer comments on the plans of the village projects; to offer comments and advice on the implementation of the village projects; to offer advice on the improvement of the rural planning.

It is acknowledged that the “rural planner system” in Chengdu acted as an important bridge which solved many problems in rural planning and development. It has gained wide recognition through the sound implementation.

3. One Breakthrough: From tangible planning to all-around governance

By studying the above-mentioned successful cases, we must be aware of one thing: China’s urban-rural planning is at an important transition from the tangible planning with a focus on project design to the all-around governance with an emphasis on public service and guidance on planning. This requires the urban-rural planning to actively guide and control the stakeholders, to coordinate different needs, and encourage the participation of private sector through effective allocation of public resources, so that we can ensure that the overall benefit, public welfare and long-term gains of urban-rural development are shared by the people.

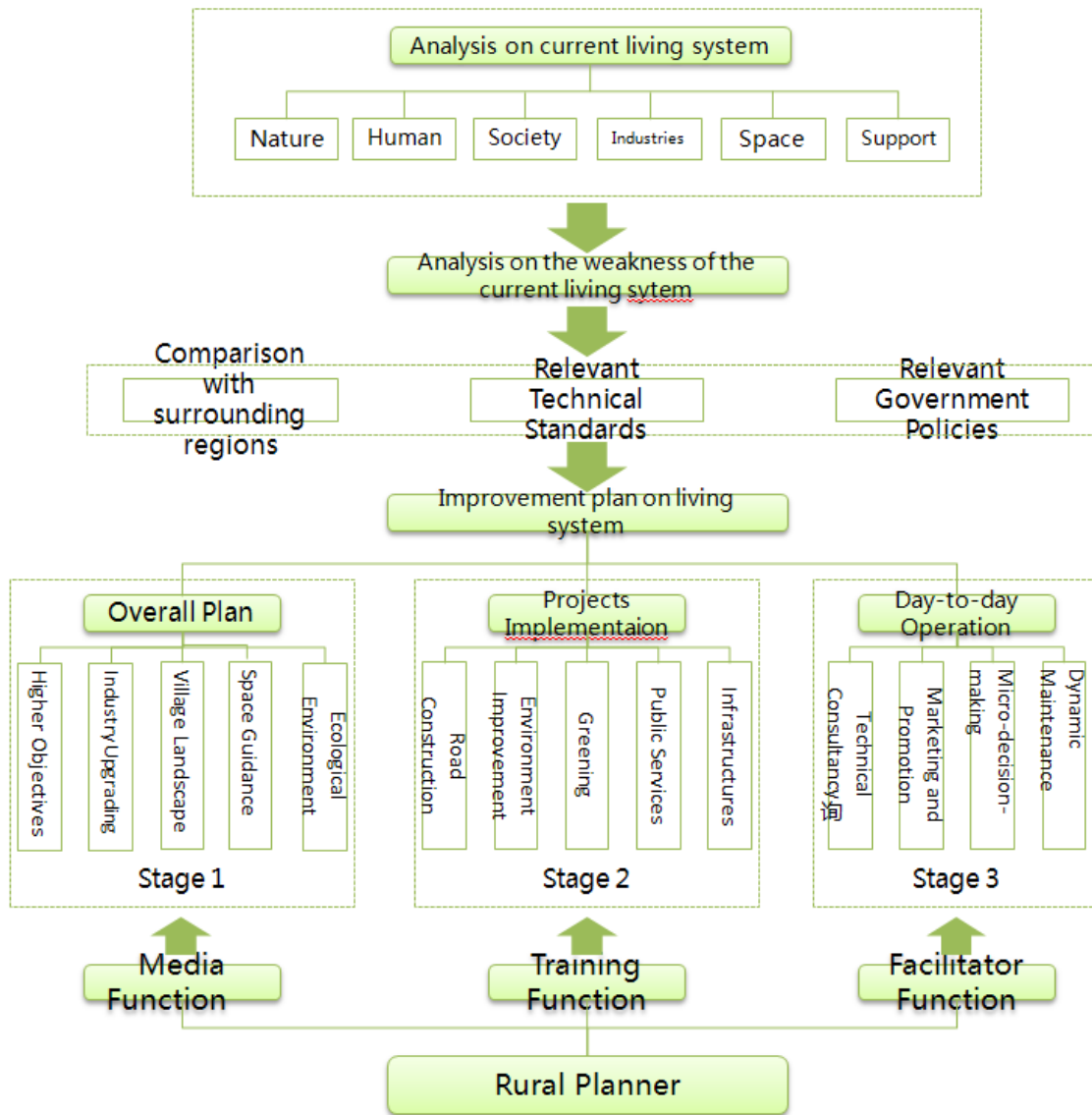
Dave Doff’s advocate planning is a means to ensure the consistency between the subjects and objects. Only when the villagers, government and market have the same view on value could we ensure the effectiveness of public choices. Public participation can at least offset the flaws of public choices, especially when the level of villagers’ participation can directly influence the result of group choices. On the basis of value recognition, the policy feature and social networks feature of the planning will be more reasonably revealed through the tangible environment.

Therefore, the rural planning practices this time are different from the previous ones. In short, it is an “all-around governance” which involves the collaboration of people and environment. Firstly, we must abandon the idea of “once and for all” planning. We should be aware that it is a dynamic and ongoing process. Secondly, this planning practice is built on the basis of the village

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recognition theories. We need to start with the community features of the village, strengthen its innate orders, identify the key points that have major impact on rural development and understand the characteristics and the significance of rural space. Finally, we need to mobilize all the manpower and resources and work effectively with the local planning department to design the integrated plan. In the latter stage of the implementation, the third party should pay more attention to nurturing the planning awareness of the grass-root villagers. This kind of innate mechanism can improve the overall landscape of the villages step by step.

Figure 8: Planning Technical Route Based on the Three “Integrated Development”



4. The “Synchronized Practice” of Three “Integrated Development”

Henan and Chengdu Cases have offered us pretty good idea. Although it still adopted the “top-down approach”, Henan case still emphasized the importance of villagers in whole process of the projects. Chengdu case tried to adopt the “bottom-up approach” with an emphasis on the

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role played by the grass-root planning in the implementation of projects. Given the special conditions of villages in South Jiangsu region, our team has come up with a dynamic “integrated” idea (Figure 8).

Considering the planning cycle by the government, we decided to set 2 years as one unit. The first two years will be used as planning formulation and improvement. After that, we will follow up and provide relevant service with 10 years as a whole cycle of planning.

The short distance between Wuxi and Shanghai where our team is based provides a favorable condition for the frequent communication between our team and the target village. During the preparatory stage of the project, our team has offered advice to the local government of Hufu town, the governing body of Zhangyang village: the professionals from the third party will act as rural planners to involve in the project planning formulation. We have selected our long-term partner: Urban Planning Technical Consulting Center of Jiangsu Provincial Housing and Urban-rural development Department. This center will provide planning professional. We will evaluate these rural planners every two years. Under this model, rural planners do not belong to the local government any more. Their primary perspective is focused on the maximum realization of the villagers’ ideas rather than just finish his or her duty as a local government employee. They will also communicate with multiple parties in the process.

In practice, we have abandoned the traditional “Survey-Analysis-Design” approach and adopted the “working camp” approach. We have selected some villagers to work with the rural planners to make mutual decisions for the beginning stage of planning. Although the whole process is still going on, the specific technical roadmap has already been determined. It is reflected in the following three aspects. During the three stages, “professionals” and “grass-root villagers” have different roles to play. Basically we have gradually turned this “integrated development process” from a “top-down approach” to a “bottom-up approach”.

4.1The Integration of Planning and Designing—The Livelihood-oriented Overall Principle Study

Task of Rural planning: Identify the development orientation and overall guiding principle

Task of Rural planner: Collect the needs of villagers and reflect the government’s needs

Duration: 0.5 year

The primary goal for this planning is to identify the future development direction for the village, which is also a bit difficult for villagers to fully understand. Therefore, a professional team should make the decisions at this stage. In the part of “data analysis and identifying objects”, the planners and villagers work together to identify the planning objectives for the village; The team also communicated with villagers on important aspects such as “Controlling indicator of the village development” or “Overall space pattern for the village”.

We have learned this from the “Participated development” idea originated in 1960s. It refers to the model where the subjects actively participate in the decision-making of the development. This model believes that outside support is important for local development, but the local people’s awareness and competency to solve real problems are even more important. The subject of development should be people with an active attitude. Only when people’s role are reinforced in the implementation process can this kind of development be sustainable and beneficial.

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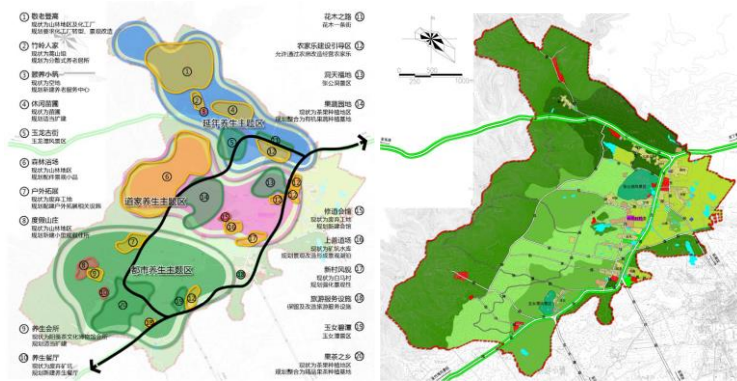


Figure9: Tourism Planning and Land Control of Zhangyang Village

At this stage, the rural planner acted as “media” who have translated villager’s needs into professional language, and presented the planning team’s idea to the villagers in a simple and explicit manner. The rural planners are involved in the discussion all the way and coordinates the differences between the two sides. All of

these efforts are helpful to build the villagers’ basic planning awareness.

In the end, we came up with the overall guiding principle of “Coordinated development for the primary sector; Emphasis on the transformation and upgrading of the secondary sector; great efforts to boost village tourism for the tertiary sector”, which is based on the strong will of both the local government and villagers. We have conducted overall plan according to this principle and designed a number of key projects. We have identified the development control area and key environment control area based on sufficient consultation, turning the overall guiding principles into concrete measures (Figure 9).

4.2The Integration of Development and Facilitation—Study on the mutual development of Multiple parties

Task of Rural Planning: Provide Specific Plans for the Implementation

Task of Rural Planner: Include villagers as planners for the mutual decision-making and nurture their professional awareness and skills

Duration: 0.5-1.5 years

Survey Items on living environment	Zhangyang Village			
	Very Satisfied	Average	Not Satisfied	Don't care
Housing Space	70.8	22.9	6.3	-
Lighting, Ventilation, Building orientation	75.0	22.9	2.1	-
Utility Service	62.5	31.2	6.3	-
Sewage Disposal	27.1	35.4	37.5	-
Trash Storage Facilities	50.0	35.4	14.6	-
Convenience to Town Market	45.8	45.8	8.4	-

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Educational Facilities	27.0	54.2	14.6	4.2
Leisure facilities	12.5	29.2	37.5	20.8
Nearby Shopping Facilities	31.2	39.6	27.1	2.1
Nearby Clinics and Pharmacies	31.3	45.8	20.8	2.1

Table 1: Survey on the living environment of Zhangyang Village

The villages are developed for the villagers. For the parts that would be definitely implemented, we treated them differently. Villagers are strongly involved in the discussion for the planning of the facilities they would use in their everyday life (Table 1). They talked to the planners and reached consensus on the development and the details.

In the follow-up collaboration, we have further developed this joint-team model, combining villagers’ everyday life experience with the planners’ theory and knowledge, such as discharging flood, designing sewage system, arrange public transportation to fit the production and living schedule, and the renovation of the cottage. These were the issues that villagers concern most. They offered their flexible solutions and worked with the team to reach a consensus.

The plan has explicitly identified each party’s responsibility. Local government provided funding for the planning and development of public facilities and infrastructure. Villagers would be responsible for the supporting plans that fit the public facilities and infrastructure. They should also be responsible for the process, size and quality of the supporting development. For example, the road project in the plan, is designed based on the villagers’ will, so that it added featured facilities like the “Green Path”. In the environment cleaning project, the plan is based on the villagers’ life habits and professional guidance from planners and falls into three major aspect such as “cleaning”, “consolidating”, and “optimizing”. The renovation of public facilities and resident houses is totally based on the villagers’ will. We have classified the buildings into different categories after careful survey. Then we designed each individual building with great attention to details. The public facilities are deployed based on the above-mentioned experiences (Figure 10). Finally we made detailed plans on major areas and formed the integrated development plans (Figure 11, Figure 12).



Figure10: Control Chart of the Individual Building in Zhangyang Village

In this process, rural planner has acted as a “trainer”. They taught the villagers the basic planning and designing skills, which is very helpful for future communication and maintenance. Meanwhile, they gather each party’s idea in the open group discussion and combine the government’s comment so as to engage in mutual decision-making and improve the efficacy of the team.

More importantly, in the designing process at this stage, the team has acted as “designer trainer”, teaching villagers the technical skills that might be useful in future maintenance and upgrading. They also showed villagers the way to understand the drawings, thus creating room for future dynamic maintenance. The villagers can conduct the maintenance on their own.



Figure 11: Design Sketch of the Renovation of the Village Council



Figure 12: Design Sketch of the Individual Buildings in Zhangyang Village

4.3 The Integration of Management and Insitution—Study on the “Self-governed” Daily Operation and Maintenance

Task of Rural planning: provide specific implementation plans for the maintenance

Task of Rural planner: Facilitate the establishment of Villagers Self-governance Body and help improve its working mechanism and coordinate the daily operation.

Duration: 2-10 years follows the cycle of the village planning and development

The rural planner system in Chengdu has acted as a bridge between the villagers and governments at various levels, providing a good solution to the lack of communication previously between the two parties. It is believed that the rural planners have given full play of its role as the bridge. However, after careful examination, we found that the “bridge” does exist now but the ways of communication remains simple. Namely, the rural planners convey the message from the government to the villagers and then get their feedback to the government. There is no effective and sound interaction. Also there is also strong government bureaucracy. It is always a “top-down” approach when it comes to planning formulation, implementation or supervision. We hope to optimize this model in Zhangyang village by including the villagers and village-level organizations. We wanted to empower the villagers to actively participate in the planning process and become the backbone for the governance of their village in the future.

In the whole process, it is necessary for the government to organize the planning professional to visit villages regularly so that they candisseminaterelevant planning knowledge, educate the villagers about the laws and regulations of urban-rural planning and provide guidance to help the villagers participate in the planning. All of these efforts are meant to improve the professional level of the villagers. To give the self-governance role of the villagers to full play, local government should delegate power and offer more authorities and resources to the village-level organizations so that they can enjoy technical and human resources. The idea of “rural planner” we proposed is aimed at providing representatives for the self-governed planning in the village.

At this stage, rural planners are acting as “facilitators”. With the efforts of the rural planners and the villagers, the self-governed planning body is established and relevant rules and regulations are set according to the real circumstances. The rural planners are also entrusted by the villagers to coordinate everyday operation and communication for self-governed planning body, gradually transforming the villagers from pure “users” to “maintenance provider”

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The village-level organization will play a leading role in the self-governed organization. The third-party social organization will be responsible for the operation of the rural planner platform. This can ensure the leading role of the village-level organization. By making use of the rural planner platform, the village-level organizations can truly participate in the implementation and supervisory process of the rural planning.

The most ideal case is that the social organization will eventually manager and operate the rural planner platform. They have rich resource of planning professionals and are capable of recruiting, training and managing the rural planners. This has provided a new path for the practice and development of the Chinese rural planners (Table 2).

5. Conclusion

The author is participating in an on-going project and has provided relevant ideas for the current issues and future development. Although many of the ideas will meet obstacles and would possibly be reconsidered and adjusted, we firmly believe that at this historic juncture, the rural planning in south Jiangsu region or even in China need a thorough transformation. The role of the planners will change from the “blueprint” designer to witness and participants of the “development plan”. Only when we motivate the people at grass-root level, can we rejuvenate the vitality in the villages.

Major responsibilities of the rural planning	Stage 1: Overall Principle	Stage 2: Projects Implementation	Stage 3: Routine Maintenance
Major Tasks	Act as media between technical team and villagers	Train villagers and teach them the basic technical terms and theories in planning. Play the role of coordinator.	Facilitate the formation of villagers’ self-governance system. Establish the codes od conduct. Provide the follow-up implementation and coordination.
Key points for working with local governments	Work with government at higher levels and inform them about the development objectives for the region and the development need for the villages. Work with the village council to learn about the villagers’ need for development.	Coordinate with the government agencies like land, agriculture, planning, forestry, tourism, and infrastructure and so on. Communicate with these agencies regularly. Have regular meetings with the planning committee at the township level. Have regular meetings with the village planning committee.	1.Coordinate with the planning department of the government, village council, and all the villagers. Select and appoint the members of the villagers’ self-governance body. 2.Have regular review and communication with the higher level government departments.
Key points for working with the planning Team	1.Inform the technical standards and building codes. 2.Inform the villagers need	1.Coordinate and set up the Designing Camp. Select 2-3 villager representatives to join the team. 2.Collect the comments	1.Learn about the experiences and advice of the planning formulation department 2.Facilitate the

XU Wei , LI Juan, CHEN Chao, SU Liangtao ,Analysis on the “Integrated Development” System in Grass-roots Villages in China, ‘51st ISOCARP Congress 2015’

	3.Inform the higher level government target for the village development.	from government agencies 3.Provide professional advice	maintenance staffs' job
Key points for working with villagers	1.Learn about and summarize the needs of villagers 2.Inform the planning objectives to villagers	1.Teach the villagers knowledge on road, public facilities, environment and buildings 2.Teach the villagers basic designing skills 3.Keep track of the villagers' need	1.Coordinate formation of the self-governance body for the villagers 2.Send staffs to participate in modification of the planning and work with the planning formulation department for the long-term. 3.Learn about the updates of the planning from the higher level government agencies
Duration & Process	0.5 years Meet with the planning formulation team once every two weeks Meet with the villager representatives once a week Meet with government agencies once every 3 weeks	1.5years Meet with the planning formulation team once a week Meet with the villager representatives twice a week Meet with government agencies once every 3 weeks	2-10 years (planner change every two years) Meet with the planning formulation team once every 8 weeks Meet with the villager representatives once every two weeks Meet with government agencies once every 8 weeks

Table 2.: The process of rural planners' participation in rural planning

Note: This paper is based on the “Comprehensive Plan for Zhangyang Village”, which is a period achievement of the team.

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Picture 1-5 & Picture 7-14 from “*Plan for Zhangyang Village*” Picture 6 taken by author



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How to sustain energy resources?



Planning for Sustainable Water and Energy: A perspective from housing and urban development policy making in Mexican cities.

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Abstract

During the last 10 years, several references and guidelines for sustainable urbanism have been issued all over the world (Beatley, 2000; Farr, 2007). In addition, UN Habitat program has defined a baseline about the quality of human settlements in terms of sustainability (UN-Habitat 2009) and the role of the planner in the *status quo*. As the world population settles predominantly in cities, urban planners should implement new tools to improve sustainability performances of urban areas in general, and in water and energy in particular.

This paper aims at presenting a proposed planning tools to improve water and energy sustainability in Mexico, and as a result, propose arguments to discuss ways to improve performances of public policy in other regions of the world. The focus of this tool is on housing developments, under the premise of looking for compact, denser cities. The proposed planning tool comes in the form of a local government initiative to certify "Green Development" as a response to large water and energy consuming developments. Implementation of the tool considers that inefficient housing development patterns compromise water and energy sources in the territory, and implementation of *carrot and stick* approach in policy making could modify developmental behaviours, and therefore saving resources. Certification allows developers to apply for fiscal incentives such as building permits exemptions and property tax discounts. Certification also acknowledges energy production transition from fossil fuel to cleaner technologies in order to address climate change and reduce carbon footprint; as well as considers concepts such as Low Impact Development, Sustainable Urban Drainage Systems, and Water Sensitive Urban Design in order to save water. The unit of analysis is the community development within a municipality, as a result the certification applies to the development and the developer.

The paper concludes with content guidelines of a certification system which is intended to be implemented by local governments.

1. Sustainable Urbanism

The process of urbanisation which encouraged humans to live in cities has many variables to address. Water and Energy processes in housing urbanizations are definitively part of that group. This paper attempts to build on their understanding by understanding a planning tool which strives to improve performances of new developments and renewals in urban areas from a sustainability approach to be implemented at the local level: A municipal standard and certification for sustainable urbanism. The standard and certification have their roots in sustainable urbanism theories, as well as good practices case studies, and are yet at an implementation stage.

Implementing the ideas of sustainable urbanism raises serious challenges and dilemmas. There are some pitfalls registered by literature when implemented literally without a proper contextual integration. For instance, by promoting dense and compact development patterns in several cities in Europe, a gradual loss of vacant green areas have been registered (Beatley, 2000). Nevertheless, some successful concepts derived from sustainability may be the foundations for new planning tools. Concepts such as *urban metabolism* and *the shift toward renewable energy cities* can shape those new tools. Urban metabolism means that cities should be considered as organic wholes, as they require substantial environmental inputs, such as water and energy; and generate substantial outputs such as waste. Some cities in Europe have showcased the shift to renewable energy in entire districts, as in the solar city in Linz, and Nieuwland in Amersfoort (Beatley, 2000).

In addition to those concepts existing in European cities, sustainable urbanism standards have a reference in the Leadership in Energy and Environmental Design Neighbourhood Development certification (LEED-ND). According to Farr (2007) there are three steps of sustainable urbanism: 1) Agreeing to weights and measures; 2) Dismantling petroleum era barriers to sustainable urbanism; and 3) A national campaign to implement sustainable urbanism. LEED standards followed those steps as a process, but also in substance addressed three questions regarding performances of projects for new developments and renewals: Where it is? What will be on the site? And How is built and managed? These questions aim at analysing projects for fulfilment of two particular prerequisites: Smart location and Compact development (Farr, 2007).

In 2009, the UN-Habitat Programme published by seventh time its global report on human settlements called "Planning sustainable cities". This report discussed the challenges faced by cities in the world, it refers to the fact that in the cities, there are new and powerful forces that are impacting directly on the cities, for which the actors involved in planning processes must be prepared, including the public, private and social sectors. These forces are: climate change, the depletion of natural resources, food insecurity, and economic instability; which seek to unbalance the three pillars of sustainability: economic growth, environmental protection and social equity. To achieve sustainable development, planners must reconcile those conflictive concepts and prevent any unbalance among them (Campbell, 1996).

Urban planning as a discipline must face these new issues, but in order to attain that challenge, should be revisited and reloaded to understand and learn about the forces that have come to modify the context in which urban planners perform, as these forces should be considered for planning sustainable cities, ergo cities environmentally safe, economically productive and socially inclusive.

The environmental challenges related to climate change are concerned with access to water, food production, health and the environment and the oil supply that produces the constant increase in the prices of fossil fuels. Most of these challenges are common to every country, but some are specific to developed and others to developing countries. The first group includes: climate change, the global economic crisis, the impacts of sources of fossil fuels, food security, the changing urban demographics, income inequality, cultural diversity. While the second group is comprised by informality, poverty, and sprawl (UN-Habitat, 2009).

Urban areas require two actions in response to the impacts of climate change: mitigation and adaptation. Mitigation refers to measures designated to reduce greenhouse gases emissions; while adaptation refers to implementation of activities aimed at reducing the vulnerability of cities against climate change effects.

In almost every city in the world, there is a generalised economic crisis generating scarcity of funds for infrastructure projects promoted by the State; as a result, private and public sector associations have become fundamental to funding new projects. Fossil fuel-based energy sources have shown great price volatility; therefore cities should not only rely on gasoline but on alternative energy sources to operate, and should also consider alternative public transportation infrastructure such as walkways and bike paths. Food security depends on agricultural production; since food is not produced in the cities and has been subjected to substantial increases mainly by transportation costs, cities should provide areas for urban agriculture to provide food for urban residents. Demographics are drastically changing in cities, while growth is still true in developing countries, population is shrinking in developed regions. Income inequality requires new strategies to promote wealth redistribution, as well as social cohesion policies. Increased migratory flows in the world are building up multicultural cities, which demand to accommodate different cultural expressions within the cities (UN-Habitat, 2009).

Environmental	Improved air quality
	Groundwater and aquifer recharge
	Soil preservation and erosion control
	Improved aesthetics
	Wind and noise reduction
	Energy-related pollution and emissions reduction
Ecological	Habitat creation and increased biodiversity
	Provision of critical links in hydrologic and nutrient cycles
	Restoration of water balance
	Reduction of discharge volumes to local waterways
Economic	Lesser installation expense than conventional management systems
	Energy savings in the elimination or size reduction of conventional systems
	Energy savings through the stabilization of local climate and avoidance of urban heat islands
	Increased property values
Social	Increase patronage to businesses
	Traffic calming
	Passive recreation
	Increased urban green space, shade, and meeting and resting places
	Provision of evaporative cooling that hydrates and freshens air quality
	Mitigation or masking of urban noise via sound of trickling or running water and waterfalls
	Natural gathering points provided by fountains and ponds foster community interaction
Educational opportunities in sanctuaries and other green spaces	

Table 1: Benefits of LID. Adapted from Sarté (2010).

As a result of the implications of these challenges and governmental responses to them, urban planners have proposed new approaches, such as strategic planning; public and

private sector associations; regularization of land and management; participatory processes and partnership with social actors; standardization through international agencies; or new concepts such as Low Impact Development (LID), Sustainable Urban Drainage Systems (SUDS), and Water Sensitive Urban Design (WSUD).

LID seeks to repair hydrological and ecological functions of urbanized watersheds, in an alternative stand to centralized pipe solutions that treat stormwater as a burden and conduct it off-site as fast as possible (Sarté, 2010). LID provides urbanizations with several benefits that improve developments performance, such as environmental, ecological, economic and social (see Table 1).

In sum, sustainable urbanism goals include the rational use of natural resources, as well as the improvement of buildings quality and the environment where they are built.

2. Proposed tool: Sustainable Urbanization Standard and Certification at Municipal Level in Mexico

A recently formalised national urban and housing policy in Mexico attempted to respond urgently to many problems associated with the country's process or urbanisation, which in last decades, has been marked by a dichotomy between urban growth and population growth. Dichotomy is directly related to disproportionate, irrational and unsustainable models of territorial expansion with high impacts on social, economic and environmental matters. Those models have resulted in urban segregation, decay of the built environment, increased vulnerability to natural disasters, depletion of natural assets in several metropolitan areas, social exclusion and inequality related to provision of infrastructure, as well as of services and facilities in most Mexican cities, particularly for low-income population.

In order to straighten unwanted trends and to comply with international environmental policies to prevent greenhouse gases emissions, local governments in Mexico are looking forward to implementing new tools for sustainable urban development. Standards and certifications are currently been explored as means for turning sprawl and high water and energy demanding urban housing projects into green urbanisations.

The Municipality of Zapopan is a 1.2 million inhabitants settlement which is part of Guadalajara Metropolitan Area (4 million inhabitants), located in central western Mexico. During the last three years local government has been working on putting together a standard system to certify certain urbanizations with a green/ sustainable label, in order to promote sustainable practices among local and national developers. Sustainable practices include water and energy consumption savings in municipality's territory.

The certification process consists of the analysis of executive projects, according to the sustainability criteria required in the municipal sustainable urbanization standards. The certification is intended to encourage the use of technologies and procedures that seek to improve the quality and efficiency of the resources both in the construction process and its operation. Certification of sustainable urbanization allows developers of certified projects to obtain fiscal incentives such as construction permits exemptions, as well as substantial discounts on property tax.

Certification includes three levels of performance: basic (level 1), efficiency (level 2), and excellence (level 3); and considers three main matters to review: 1) Minimum requirements of integration, land use, and urban development; 2) Urban compactness, habitability, and metabolism; and 3) Co-benefits of sustainable urbanization. Each of them is comprised by several items, which are considered areas of interest for the standard; and are also disaggregated in indicators which measurements account for project's certification (see table 2).

In addition, certification includes a strategy to recognize co-benefits in order to capture both, the development and benefits for the climate in a single policy or measure. In this context, certification is intended to focus on the idea of co-benefits, ergo, an intentional hybrid conception aimed at specific objectives in different issues with strategies of co-control that reduce global warming pollution and promote conservation of vital resources such as food, water, energy. Simultaneously it considers other specific benefits of great importance such as the improvement of housing and town planning, reduced impacts on health, as well as an improved economy.

Co-benefits on climate change are divided into six groups: clean air, green land, safe energy, reduced waste, stronger economics, and life styles (well-being). Every one of them poses an objective, technical references and methodologies for calculating the indicator that measures efficiency. Objectives attainment results in good evaluation and subsequent certification.

Certification standards indicators are supposed to be measured by an *ad hoc* institution responsible for sustainable urbanization compliance at local level. This institution should be comprised of representatives from diverse non-governmental organizations, therefore the "Municipal Institute of certification of construction and sustainable development of the municipality of Zapopan" should be established with legal personality as a Civil Association, in which may take part the following institutions:

- Higher Education Institutions such as Universities
- Town planners, architects and engineers professional associations;
- Chambers of Commerce, Builders and Housing Developers

The Institute will be charged with the following responsibilities and powers: 1) Accepting proposals that stakeholders carry out to obtain the certificate in sustainable urbanization; 2) Designating those responsible for check, and meet compliance with the criteria and indicators of sustainability presented for analysis based on the standards of building and sustainable urbanization issued by the municipality for the purpose; and 3) Verifying compliance with the criteria and indicators of sustainability presented during the project as well as execution stages of the development.

In the event of non-compliance with the criterion of sustainability and/or alterations to the accepted project, the Institute may suspend the authorization of certification of sustainable urbanization and is mandated to inform local government of such actions. Consequently, local government will reject any applications for incentives coming from delinquent developers.

Among 24 variables to be measured, certification standards address specifically water and energy at the urban metabolism and the energy efficiency items. These variables require the following elements from projects to be evaluated:

Water Efficiency of Urban System

In urban renewals and new developments the water cycle should be assessed having the basin/ region as the unit of analysis. Resulting strategies and specific actions are supposed to consider urban metabolism. The purpose of this regulation, shall be to ensure the efficiency of water consumption by optimizing the demand for commercial, public and domestic water based on the effective implementation of cost-saving measures. Efficiency of water consumption is intended to be measured by contrasting the average consumption with average optimal consumption, including both, correspondence with various types of buildings and with the reference of potable and non-potable water. The proposed standard requires that the percentage of efficiency of the total water consumption projected for new developments or urban renewals, in relation to a medium optimized consumption established as a referential, could register at least 65% savings in volume.

Safe energy

Cities continuing dependence on fossil fuels poses a risk for energy security. Oil production is closer to reach its peak, and the largest reserves are concentrated in a small number of countries. Climate change oriented policies seek to reduce dependence on fossil fuels and attempt to increase energy security by reducing energy demand and developing sustainable resources. As a consequence those new sustainable sources offer co-benefits, including lower prices as well as safer and cleaner energy.

Planning of new developments should improve local supply of energy through implementing decentralized systems from renewable energy sources. The standard requires an energy generation equal to at least 50% of the projected consumption.

Issue	Item	Variables
MINIMUM REQUIREMENTS OF INTEGRATION, LAND USE AND URBAN DEVELOPMENT	Integrated and connected Urbanization	Location of Urban Project
		Non-motorized connectivity
		Proximity to transit stations
	Land use	Dwelling density
		Sustainable mobility
		Pedestrian dedicated areas
		Bicycle parking
	Planned Urbanization	Climate oriented urban plot
		Vegetation as climate control
		Green area per capita
URBAN COMPACTNESS, HABITABILITY, AND METABOLISM	Urban compactness	Absolute urban compactness
		Straightened urban compactness
	Urban habitability	Spatial perception or urban green
		Accessibility
	Urban metabolism	Water Efficiency of Urban System
		Recycled construction outputs
CO-BENEFITS OF SUSTAINABLE URBANIZATION	Clean air	Improved CO2 absorption
	Green land	Urban agriculture and Permaculture in buildings
	Safe energy	Increased energy supply
	Reduced waste	Valuable assets preservation, Cost savings, Clean planet
	Reduced footprint of materials	Indirect emissions reduction by reduced energy footprint of construction materials
	Recycled materials	Savings by recycling construction materials
	Strong economy	Competitiveness, innovation and new business opportunities
	Life styles	Opportunities for social interaction and recreation

Table 2: Summary of Sustainable Urbanism proposed Standards for the Municipality of Zapopan, Jalisco, Mexico

3. Concluding remarks

In order to balance cities impacts on social, economic and environmental systems, planners must come up with new tools to overcome and mitigate those impacts. Although local standards proposed in this paper have not been tested yet, they establish for the first time a benchmark for new developments performance, and make local administration in Mexico accountable for water and energy savings. By doing so, this tool is an important contribution to ameliorate climate change and greenhouse gases effects in our cities. Despite the fact single tools are not silver bullets, it is a remarkable effort undertaken by a local government to be commended by urban planning professionals, and sets an example to be followed by other municipalities in the future.

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Corporate Social Responsibility as a Trajectory to Actualization of Corporate Governance Strategy: Case study of Nairobi City Water and Sewerage Company

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Corporate Social Responsibility as a Trajectory to Actualization of Corporate Governance Strategy: Case study of Nairobi City Water and Sewerage Company

1. Abstract

Incorporating various stakeholders in the business ecosystem to ensure success and attainment of strategic objectives forms a fundamental part for ensuring amble environment for the business thriving and sustainability. Incorporation of CSR concepts has witnessed the re-engineering of business identities. Corporate Governance is the process and structure used to direct and manage the business and affairs of the corporation with the objective of enhancing shareholders value. This paper examines the link between Corporate Social Responsibility and Corporate Governance and the bearing of the later in influencing the Corporate Governance Strategy in the context of Nairobi City Water and Sewerage Company

Key words: Corporate Governance, Corporate Social Responsibility, Water Act 2002, Nairobi City Water and Sewerage Company

2. Background

Corporate Social Responsibility is increasingly being identified as part of the overall businesses corporate strategy. Incorporating various stakeholders in the business ecosystem to ensure success and attainment of strategic objectives forms a fundamental part for ensuring ample environment for the business thriving and sustainability. David Vogel (2005) argues that “when corporations make a serious commitment and infuse substantial funding in a socially responsible strategy, then along with the increased risk, comes a bigger potential for payoff”. The World Business Council for Sustainable Development in its publication “Making Good Business Sense” By Lord Holme and Richard Watts (2002), defines Corporate Social Responsibility (CSR) as the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large. Internationally, incorporation of CSR concepts has witnessed the re-engineering of business identities. In addition, adoption of the ISO standard 26000 on Social Responsibility which is broader than CSR as it goes beyond corporate bodies, gives an impetus to the framework of CSR concept. Bakker (2003) defines corporate governance as a process by which stakeholders articulate their interests, their input is absorbed, decisions are taken and implemented, and decision-makers are held accountable. According to Loughlin (2004), governance refers to the configuration of relations between the three basic institutions of

political or social administration viz., state, market and society. It can therefore be argued that, from the stakeholders' point of view, Corporate Social Responsibility plays a critical role to the actualization of Corporate Governance Strategy.

Responsible business practices can in many ways contribute to sustainable development. Within the concept of CSR, companies consider the interest of society by taking responsibility for their impact of their activities. In 2009, GIZ finalized an impact assessment of the status of CSR in Sub-Saharan Africa. In particular, the study revealed that, the concept of CSR is still at its infancy although quickly gaining roots. The study recommended that, the governments should play a central role in promotion of the CRS by way of effectively utilizing policy dialogue with other players such as the civil society organizations and the private sector.

3. Methodology

Considering the characteristic of this research, which is an exploratory analysis, the study followed a descriptive quantitative and qualitative approach. Exhaustive literature surveys regarding the topic and related concepts have been done. Secondary data mainly quantitative was collected through literature review from books, research papers and website. Primary quantitative as well as qualitative data was obtained from Nairobi City Water and Sewerage Company policy documents with clarification being sought from the Corporate Affairs Department, a department that is charged with the roll out of CSR activities in the company.

4. Corporate Social Responsibility and Corporate Governance Nexus

Lawrence E Mitchell, (2007), observes that there is an evolving interplay between Corporate Governance and Social Corporate Responsibility. Both mechanisms hold economic and legal features. He avers that although Corporate Governance and Corporate Social Responsibility are closely linked, their objectives are not concurrent; they may act as tools for attaining each other's goals though their setups as corporate frameworks are different. Whereas Corporate Social Responsibility Operate in a free- form manner, Corporate Governance issues operate within a well –defined and acceptable structure. According to Water Service Regulatory Board of the government of Kenya, Corporate governance refers to the establishment of an appropriate legal, economic and institutional environment that allows companies to thrive as institutions for advancing long term shareholder value. Environmental and Social Report (2014) of Tokyo Electronic Limited highlights that Governance is decisive element of an organization without which Corporate

Social Responsibility measures cannot be undertaken. Corporate Governance is concerned with holding the balance between economic and social goals and between individual and communal goals. According to the Global Water Partnership (GWP), the current water crisis is a crisis of governance (GWP, 2003). This means that improving governance can easily solve water problems facing many countries worldwide. The corporate governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals, corporations and society. As earlier indicated, the World Business Council for Sustainable Development defines Corporate Social Responsibility, in part, as the continuing commitment by business to behave ethically and contribute to economic development. The phrase “continuing commitment” used in this definition indicates that Corporate Social Responsibility is not a temporary issue that a company considers only in certain situations. Rather, it is a permanent issue that should be placed strategically within the policies and programs of companies.

The evolution of the concept of Corporate Social Responsibility, suggest Moura Leite and Padget (2011), has a long history associated with how it influences organizational behavior. It can be argued that Corporate Governance designs and shapes a corporation’s behavior patterns. Ntim and Soobaroyen (2013) asserts that there is a connection between the two in that better governed corporations, on average, are more likely to pursue a more socially responsible agenda. Basing on this assertion, overtly then, Corporate Social Responsibility programs are not just incidental to management, but are core aspects of management principles and policies.

The approach of business organizations to CSR has transcended from merely displaying social concerns to being sensitive and alert to the constituents in the internal and external business environment. These constituents, known as stakeholders, are potent forces to accelerate or decelerate a firm’s performance. With globalization and information technology revolution, companies are under tight scrutiny from multiple stakeholders including regulators, customers, pressure groups and the public at large.

5. Background and Context of Corporate Social Responsibility and Governance in Water Sector in Kenya

The Kenya Constitution provides for public participation in the management of resources. Section 69(1d) states “the state shall encourage public participation in the management, protection, and conservation of the environment.” Further, the same constitution classifies provision of water and sanitation services as a basic human right. In 2002, the Water Sector

Reforms momentum in Kenya culminated in the enactment of the Water Act 2002. This Act offers legal frame work of water sector operations in the country.

An essential aspect of the reform in the water sector outlined in the Water Act 2002 is the separation and decentralization of roles and responsibilities of water services and water resources management, creation of new institutions and stakeholder participation. The new governance structure was meant to remove bottlenecks in the water administration and improve efficiency in service delivery which was inherent in the old state centred water sector administration. The separate institutions under the 2002 Water Act are, Ministry of

Water and Irrigation (MWI), Water Service Trust Fund (WSTF), Water Services Regulatory Board (WASREB), Water Services Boards (WSB), Water Resources Management Authority (WRMA) and the Water Appeals Board (WAB). Others are Water Service Providers (WSPs), Catchment Area Advisory Committees (CAACs) and Water Resource Users Association (WRUAs). Figure 1 below indicates the current pyramid structure of the water governance in Kenya

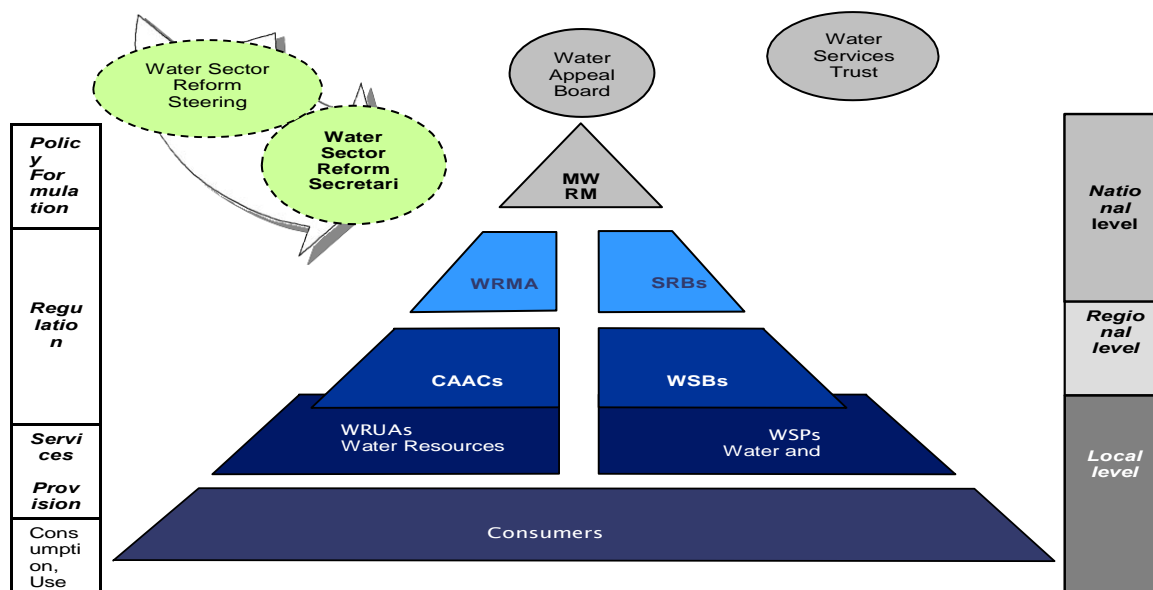


Fig 1. Institutional Framework for Water Sector under Water Act 2002:

Among the key principles underlying water reforms is the stakeholders' involvement and participation. Indeed section 49 of the Water Act, (2002) provides provision of formulation of National Water Service Strategy by the ministry through public consultation. Its principal objective is to ensure that any time in Kenya; every area is catered for by a water service provider. The other objective is to design a programme to bring about the progressive extension of water and sanitation in Kenya. In formulating the strategy, as provided in section 107(2) of the Water Act(2002) the minister is directed to consult with the members of the public who are thus given opportunity to articulate their water needs. Formulation of the National Water Service Strategy is therefore an all-inclusive and participatory exercise that promotes good governance. In the context of the water Act (2002), it is the only system that creates channels of interaction between the minister at the top of the chain and the consumer at the bottom.

The concept of Corporate Social Responsibility is amplified in the National Water Service Strategy, which underscores among other key principles its commitment to promote and develop capital project where feasible, through Public Private Partnership, sustaining water services through a cost recovery by taking into account a pro-poor pricing policy, meeting equity as well as economic and environment concerns and creating a linkage between water services and economic development.

The national regulator of water services sector in Kenya, Water Service Regulatory Board (WASREB), as mandated by the Water Act (2002) under section 47 (h), has developed governance guidelines to provide advice on the effective and efficient management and operations of water services in the country. In this guideline, WASREB observes that, Cost effective and efficient management of operations of water services can only be realized if the leadership in water sector institutions is guided by tenets of good governance. In the institutional set-up, good governance is embedded in the tenets of corporate governance.

The WASREB governance guideline emphasis that, besides being accountable and striving to achieving corporate objectives, the Water Service Providers, should equally focus on their conduct in regard to factors such as business ethics and the environment for example, that may have an impact on legitimate societal interest (Stakeholders) and thereby having influence on the reputation and long-time interest of the water sector enterprises.

The WASREB governance guidelines further postulates that, the principle of corporate governance need to be embedded in the water sector so as to improve the relationship between water enterprises and their various stakeholders comprising shareholders, managers ,customers, suppliers, labour unions, communities, Providers of finance and other players. By recognizing all these listed groups of stakeholders, overtly, the role of Corporate Social Responsibility in actualization of Corporate Governance is significantly demonstrated.

5. Corporate Governance and Corporate Social Responsibility in Nairobi City Water and Sewerage Company Ltd

Nairobi City Water and Sewerage Company (NCWSC) is a private company which is owned 100% by the County government of Nairobi, the capital city of the Republic of Kenya, one of the countries within Sub-Saharan Africa. In accordance to the Water Act (2002), the NCWSC is regulated by WASREB. Clause 43 (1) (d) of the Kenya constitution under economic and social rights, promulgates that ‘Every person has the right to clean and safe water in adequate quantities.’ Further, section 69 (1d) of the same constitution provides for public participation in the management of resources. The Water Act (2002) provides for the

participation and involvement of stakeholders in water service provision services. WASREB through its Corporate Governance guidelines on the other hand places emphasis on the principles of corporate governance need to be embedded in the water sector so as to improve the relationship between water enterprises and their stakeholders. This by implication emphasizes that, the concept of Corporate Social Responsibility and Corporate Governance in water sector in Kenya is broadly a constitutional, legal and regulatory requirement.

NCWSC corporate governance is anchored on the corporate governance guidelines of its regulator (WASREB). Within these guidelines in particular, WASREB advises that Water Service Providers shall endeavour to ensure that their organizations are responsible corporate citizens and that they have due regard for the interest of all stakeholders and the community within which they operate. The Water Service Providers Boards of Directors are tasked to monitor the social responsibilities of the company and promulgate policies consistent with the company's legitimate interests and good business practices. In particular, according to WASREB, the Board of Directors of Water Service Providers shall:

1. Promote fair, just and equitable employment policies.
2. Promote and be sensitive to the preservation and protection of the natural environment.
3. Be sensitive to and conscious of gender interests and concerns.
4. Promote and protect the rights of children and other vulnerable groups.
5. Enhance and promote the rights and participation of host communities.
6. Publish a Social Responsibility report every year indicating how it has dealt with its social and environmental responsibilities.

To ensure compliancy to these guidelines, the Water Service Boards, conscious of their responsibilities to investors, suppliers, creditors, employees and the society, issue a certificate to WASREB, at the end of every year confirming that among other requirements, they have conducted their affairs in accordance with the best principles and practices of corporate governance.

In line with water sector statutory and regulatory requirements as envisaged in the Kenya constitution, Water Act 2002 and the WASREB corporate governance guidelines and as a best business practice, NCWSC has been involved in Corporate Social Responsibility Activities. Fig 2 below outlines a graphic impression of the annual budget for Corporate Social Responsibility activities since financial year 2005/06 to the current year 2015/016. In a

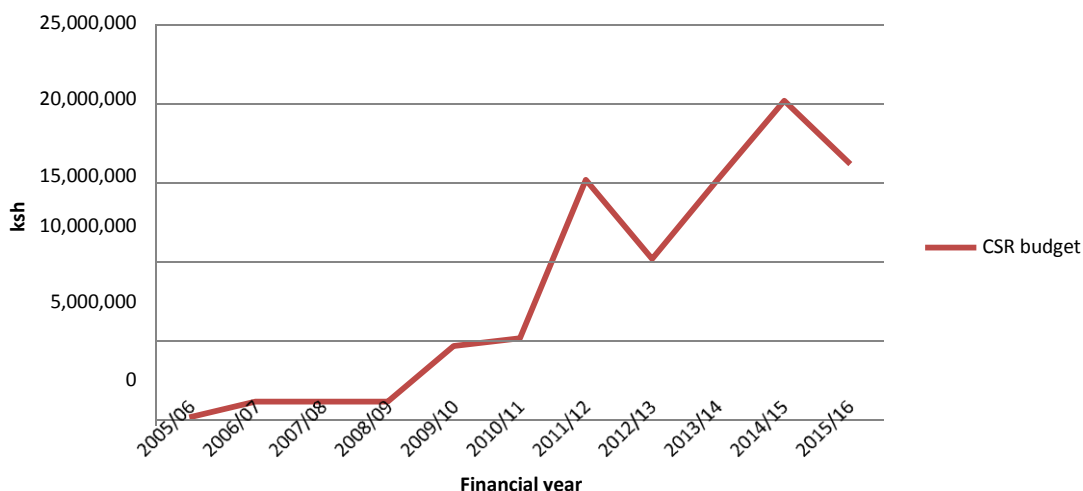


Fig 2: NCWSC CSR Budget

As the graph indicates, there has been a gradual increase in funding of Corporate Social Responsibility activities since the financial year 2005/06. To Streamline the Corporate Social Responsibility operations, NCWSC has formulated a Corporate Social Responsibility policy guideline draft awaiting adoption. This Policy is to provide a widely agreed framework on how NCWSC plans and manages Corporate Social Responsibility activities as a strategic input to both internal and external publics, in a manner that is both appropriate and effective and best supports NCWSC vision, mission, goals and strategic business objectives. It also identifies and prioritizes key activities that are deemed critical to the success of the Corporate Social Responsibility engagements. Indeed, NCWSC Strategic Plan 2014/15 – 2018/19 identifies eight strategic themes that form the basis for setting of the planning objectives during the set period. Specifically, strategic theme No. 8 “brand equity and institutional strengthening”. This theme among other issues focuses on improving the level of brand equity from 35% to 100% by 2018/19 through enhanced public image.

The NCWSC Corporate Social Responsibility draft, seeks to ensure that Corporate Social Responsibility activities across NCWSC are well coordinated, effectively managed and responsive to the diverse needs of the stakeholders.

NCWSC Corporate Social Responsibility policy guideline proposes that the budget for Corporate Social Responsibility activities shall be 0.1% of the company’s annual projected turnover. This proportion may be reviewed from time to time depending on the prevailing circumstances.

The Company may also seek partnerships to fund certain activities viewed for the wider publics and not necessarily only benefit the target group. Funding may be in form of sponsorship or agreed contribution relating to the activity. As indicated in fig 3 below, the draft identifies specific areas of focus for NCWSC’s Corporate Social Responsibility programmes to be undertaken by the company. Funding propositions for these activities is prioritized on their impact to the society and the environment as indicated.

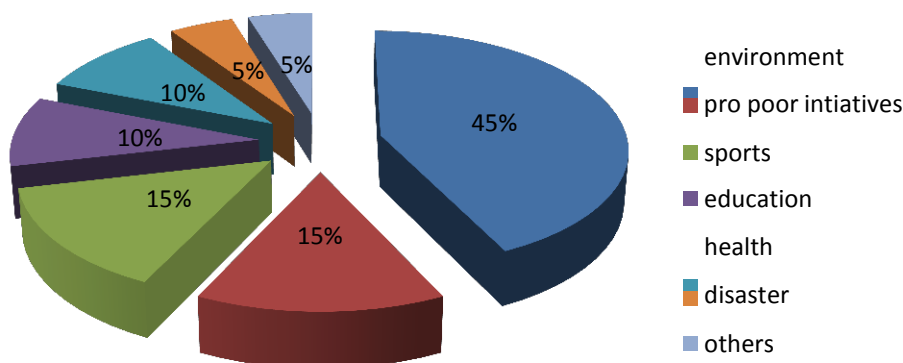


Fig3: proposed % proportion of NCWSC CSR budget per activity

In addition, the company has been the chair of the Kenya National Mirror Committee for the development and uptake of the ISO 26000 on Social Responsibility since 2009. Since then Kenya is spearheading the ISO 26000 uptake and has mentored other East African countries including Tanzania, Uganda Burundi and Rwanda.

6. Conclusion

Corporate Social Responsibility programmes is “Strategic” when it yields substantial business related benefits to the firm (Burke and Logsdon 1996). The Kenya Constitution, Water Act 2002 and the water sector regulatory board in Kenya places emphasis on stakeholders’ participation in overseeing the dispensation of water services by water service providers. Against this backdrop, NCWSC maintains a Board and management philosophy that places emphasis on improving corporate value for all stakeholders. However, CSR activities focused on addressing key NCWSC corporate strategic challenges such as reduction of Non- Revenue Water, illegal encouragement on the wayleaves, and vandalism of water and sewerage appurtenances should be given a priority positions on the list of CSR activities.

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Wind power in urbanised regions: towards a comprehensive approach for renewable energy and spatial planning

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1. Abstract

Since the adoption of ambitious statutory targets concerning the future share of renewable energy, urbanised regions all over Europe are confronted with high ambitions to increase wind power. Comprehensive spatial planning for wind power should address diverging concerns, should have a clear, territorial strategy and succeed in governing these concerns in space and time. At the same time, in practice, there it is no ready-made approach, but an interactive process that frequently has led planning authorities to change course.

2. Introduction

The implementation of large-scale wind power production is widely considered unsuitable for urbanised environments. It can bring along a great deal of unwanted spatial impacts such as physical disturbances (noise, shadow, lights), landscape blight and land-use repression. In consequence, it has often been argued that the best locations for large wind power lay far away from settlements and other vulnerable land-uses, leaving sparsely populated regions and urban hinterland as the main carrier of wind power deployment.

At the same time, since the adoption of ambitious statutory targets concerning the future share of renewable energy, urbanized regions all over Europe are confronted with high ambitions to increase wind power. Similarly, regions are facing equally on-going urbanisation processes. Regional planning has to ensure sustainable (urban) development, while, at the same time, it has to keep in pace with wind power capacity growth objectives. In a context of high land-use pressure, urbanised regions therefore increasingly seek for suitable landscape categories that match in scale and function to large wind power, hereby placing the aim of preserving and strengthening regional landscape characteristics on the highest level. Expressions like that of Sijmons (cited from: Ministerie IenM 2014 : 20): “*Wind turbines need a landscape story.*” describe this new, landscape-based approach. Similarly, Nadaï (2012 : 122) calls for a “*relational approach*” to wind power planning that “*allows planning to re-open territorial data and explore ways in which wind power can become part of new landscapes.*”

In consequence, wind turbines have not only become a prominent feature in the outskirts of towns and villages, but also are increasingly to be found within built-up areas. Various examples illustrate the combination of urban, infrastructural and industrial land-uses with wind power. In the Netherlands, large alleys of wind turbines accentuate important mobility lines and go alongside port areas and business parks started to equip themselves with turbines. In Germany, cities like Hamburg are experimenting with large-scale wind power generation in urban renewal areas such as *Wilhelmsburg*. In Belgium, the province East Flanders decided to explicitly allocate wind parks on “typical landscapes” along the motorway.

This new “coziness” of energy planning and urbanism can be called a trend-change in wind power planning that has risen during the last decennium. It shows, that it is an increasingly important task for regional planning to organize renewable energy growth in an space-efficient way and to find an “optimum” spatial solution for the various social, environmental and economic concerns related to these technologies. According to Szarka (2007:11), the integration of these concerns is a hall-mark of the sustainable development approach.

The main question that is addressed in this paper is: *which planning approaches have been developed in the urbanized regions of Lower Austria and South Holland to deploy onshore wind power, and how successful have they been so far?* To answer this question, this paper is structured in two parts. The first part describes the main planning concerns related to the implementation of wind power and outlines the concept of a comprehensive regional planning approach. The second part presents the results of an institutional analysis of two European regions faced with comparable onshore wind power growth objectives and comparable instruments (regional wind power zoning plans), but with diverging planning strategies concerning the location of wind power: firstly, implementing wind power within built-up areas and, secondly, installing wind power in the urban hinterland. The province of South Holland represents the first approach, focusing on the Rotterdam city region. The province Lower Austria, with focus on the outskirts of the Vienna city region, illustrates the second approach. The analysis both case studies is structured in two main parts: the national *context* (1), the regional planning *strategy* and the local planning *practice* (2). Finally, the last part draws conclusions from the case studies with respect to the research question presented above.

3. Wind power planning concerns and approaches

This chapter introduces the theory of comprehensive planning for wind power. In the first part, main planning *concerns* in relation to large-scale wind power generation will be presented. According to the “three pillars” (Szarka 2007 : 11) of sustainable development, they will be divided into three dimensions: environmental, economical and social concerns. The second part introduces concepts of comprehensive wind power planning and discusses different theoretical approaches of *bottom-up* or *top-down* planning and introduces wind power implementation problems. The chapter will conclude with benchmarks which comprehensive planning for wind power should achieve in the eye of the author.

3.1 Planning concerns

3.1.1 Environmental concerns

Environmental planning concerns address general spatial requirements for wind power generation. They can be subdivided into geographical and functional concerns. Geographical concerns are local weather conditions, the terrain structure (whether a site is exposed to wind or not) and the existence of natural and artificial hinders (e.g. trees, high buildings or other wind turbines) which determine the *wind conditions* of an area.

On the other hand, functional concerns are limiting the *available area* for wind power generation. Functions that exclude wind power are, for example, highly protected natural areas, water reservoirs, residential areas, military areas, airports, airfields or heritage sites.

3.1.2 Economical concerns

Economical concerns can be technical or financial. Technical concerns relate to the efficiency of the wind turbine technology, the capacity that can be installed and the amount of energy that can be generated and distributed. One concern is that planning has to keep pace with technological improvements. Modern large wind turbines are increasingly efficient but also have become significantly larger, exceeding pole heights of 120 metres or more. Beside turbine technology itself, the power network accessibility and connection capacity and the distance to a possible feeding point is an important impediment for wind power developments

On the financial side, one may consider the economies of scale of wind power technology, the availability of capital (lender behavior) and site-related investment costs. Besides, the feasibility of wind power investments still mainly depends on incentives guaranteed by governments. To increase competitiveness with conventional energy sources, most countries offer operational support in form of higher purchasing prices for energy supplied by a wind power facility. Amendments of support schemes highly influence wind power investment.

3.1.3 Social concerns

Next to environmental and economical concerns, social concerns are an important driving force behind wind power development. Social concerns may vary in time and place and can be expressed twofold: *public and local community concerns*. Public concerns are represented by formal agreements; *norms or conventions* that are set up to ensure public aims with regard to wind power, e.g. the wind power growth policy a government pursues or the formal rules and practices that are set up to restrict development.

Local community concerns address changes of use and perceptions of landscapes; e.g. landscapes that are used for farming, recreation and solitude. According to Pasqualetti (2012 : 146), they can be largely reduced to considerations of quality of life rather than individual complaints. These comprise aesthetic (e.g. landscape blight), environmental (e.g. preservation of wildlife), health and safety concerns (e.g. noise, shadow flicker).

3.2 Planning approaches

In theory, a comprehensive planning approach for wind power should address all three dimensions of “concerns”. This is confirmed by Power and Crowell (2012 : 63) who have described a spatial planning approach for wind power as follows: *“The basic concept of a ‘spatial planning approach’ (...) is intuitively simple (...) often centred on the construction of maps, which assesses an area’s potential for wind energy against an array of environmental, social and resource criteria, and uses this to guide future actions.”* Hereby, Power and Crowell indicate two important benchmarks in relation to regional wind power planning: Firstly, a spatial planning approach involves a territorial indication (maps) where wind power is considered desirable and where not. This incorporates that, eventually, choices have to be made in relation to conflicting interests and land-uses to be able to draw the boundaries between wind power and other functions in a specific, geographic context. The way *how* these choices are made, is equally important. Schöne et al. (2008), for example, criticised the common technocratic approach to map wind power areas: *“In the current situation the ‘exclusion’ - approach is dominant. Because of technical and environmental reasons such as safety and noise there are, on a provincial level, designated areas where wind turbines must*

not be sited. When all exclusion causes are summed up, minimal left-over areas remain for wind power.”

Secondly, the ability of a strategy to “guide future actions” is important. Comprehensive wind power planning constitutes more than a mere “mapping” exercise, but is also a strategy to govern wind power planning concerns in space and time. In this respect, Szarka et al. (2012) concludes that the current approach of ‘governmentality’ of energy is hindering a more rapid deployment of renewable energy. Similarly, Power and Cowell (2012 : 63) argue that ‘*the capacity of the state effectively to steer the actions of governmental, market and civil society actors through spatial planning devices is often contested*’. Thus, even though maps are precise devices of governmental strategies, they do not always successfully steer actions.

4. Planning for wind power in urbanised regions in Austria and the Netherlands

4.1 Implementing wind power within built-up areas: Case study Province South Holland with focus on the Rotterdam region

4.1.1 National context

To understand the regional planning approach to wind power of the Rotterdam urban region, it is necessary to present some facts about *national context* in relation to wind power and the organisation of the planning system.

Despite favorable wind conditions and an elaborated subsidy scheme, the country lags behind with renewable energy growth. In 2014, on midway to the 2020, the share of renewable energy of the total Dutch energy consumption is only 5.6 percent (CBS 2015). The Dutch target is 14 percent by 2020. This is surprising for a country that had been a pioneer in harvesting wind energy to drain the wetlands, saw logs for building, grind grain for food, and many other industrial purposes. The contribution of onshore wind power to the national target of 14 percent renewable energy should be approximately one fifth (Ministerie van Infrastructuur en Milieu en Ministerie van Economische Zaken 2014 : 7). This share is translated into a national target of 6000 MW installed capacity until 2020. The country therefore has to accommodate three times the (in 2009) installed capacity on its territory by 2020.

Next to a strong historical tradition in harvesting wind energy, the Dutch Planning System has served for a long time as an almost perfect example for a comprehensive integrated approach towards spatial planning. The Netherlands have a three-tier hierarchical planning system with a national, provincial and municipal planning level, each level being monitored for consistency with higher level goals (Evers 2006 : 212). However, since the mid 2000s, the planning system has changed course under the slogan “*central what must, de-central what can*” (own translation). Spatial qualityⁱⁱ is not considered anymore a national interest, but a provincial and municipal planning matter. National spatial planning has widely retreated from influencing lower levels of government, is no longer comprehensive, but has moved towards a “economic development approach” (Zonneveld and Evers : 76)

It is therefore interesting, that, in the matter of wind power, the government changed course from de-central to central planning. Until 2014, national planning was mainly monitoring installed capacity growth. Two main national spatial policies were put into effect; each one addressed long-term national capacity growth targets and the distribution of these targets on provincial territory. The first, the BPWⁱⁱⁱ (1991) failed by far to meet its objectives (in the year 2000). Wind power implementation was too much in the hands of local planning authorities.

The second, the BLOW^v agreement, was more elaborated, giving provinces clear growth targets and a more powerful role to coordinate wind power development. BLOW succeeded in meeting its 2010 target already by 2007. A main driving force was the new monetary support system, which was, according to the Dutch Minister for Economy, “*too successful and therefore too expensive*” and, subsequently, abolished in 2006. In consequence, capacity growth stagnated between 2008 and 2010.

Re-accelerating wind power capacity growth therefore became an important governmental issue. By an amendment of the electricity law, the coordination of wind power projects of at least 100 MW became task of the federal government by 2009. In 2014, finally the third national planning agreement called SvWOL^v re-established strong national stage direction in spatial planning. Instead of mere capacity growth agreements between provinces, it presented a national structural visionary plan with eleven designated zones for large wind parks to accelerate and ensure the growth of wind energy until 2020. Equally remarkable is the shift to comprehensive planning that places spatial quality once again in the centre of national interests:

“The most important reason for the development of the SvWOL is the wish of the government to concentrate large scale wind power capacities on most suitable areas. In doing so, landscape fragmentation and disturbance can be minimized.”

(Ministerie van Infrastructuur en Milieu en Ministerie van Economische Zaken 2014 : 1)

The designated areas for wind parks in the national structural visionary plan (SvWOL) incorporated provincial plans for wind power by, at first, assigning ‘chanceful areas’ that were later stripped down by environmental impact assessment. The areas were primarily chosen on the basis of favourable wind and landscape conditions such as large-scale cultivated landscapes, port- and industrial areas, large-scale water engineering works (embankments) and other infrastructural landscapes.



Figure 1: Zones for large wind parks of at least 100 MW in the Netherlands

Source: Dutch Ministry of Infrastructure and Environment and Dutch Ministry of Economy

4.1.2 The regional and local planning approach of the Province South Holland

After the SvWOL, the provinces had come up with comprehensive wind power planning strategies and to keep in pace with implementation. The province South Holland has to accommodate 735,5 MW wind power on her territory until 2020. In 2014, around 270 MW is installed. Assigned areas for wind power are set down in the provincial visionary plan “*Space and Mobility*” (Dutch: *Visie Ruimte en Mobiliteit*) and are called *VRM* (wind power) zones. The leading principle was to avoid the sprawling of wind turbines, especially in rural areas and to keep the character of open, green landscapes which has been a key issue in Dutch planning ever since the *Green Hart* concept. The Province South Holland (2015) followed this famous Dutch planning doctrine by stating: “*Next to restrictions relating to wind power technology, the main starting point is the landscape. The province decided to keep the open character of the landscape in areas such as the Green Hart, Cultural Heritage Areas, Natura-2000 areas and the Main Ecological Structure.*”

Subsequently, wind power has to be combined with other landscapes, including the built-up area. The chosen locations combine wind power with industrial and commercial areas, roads and water edges. In line with national spatial planning, the concept of “concentrating” wind power in large-scale parks has been adopted. In addition to large wind power, the province permits changes in the land-use plan for the erection of medium-sized turbines with a pole height up to 45 metres in urban areas, including the greenhouse areas. The province also gives guidelines concerning the layout of the wind park, giving preference to the placing of turbines in “singular lines” or “clusters” alongside infrastructure and water edges. (Province South Holland : 75). The legislative framework makes this possible by relatively moderate

distance regulations to other functions. For example, the distance to residential functions is regulated in by a national noise standard that admits, depending on the type of turbine, relatively short distances of 0,3-0,5 km (Nederlandse Vereniging Omwonenden Windenergie 2015). Concerning road infrastructure applies a minimum distance of 30 meters.

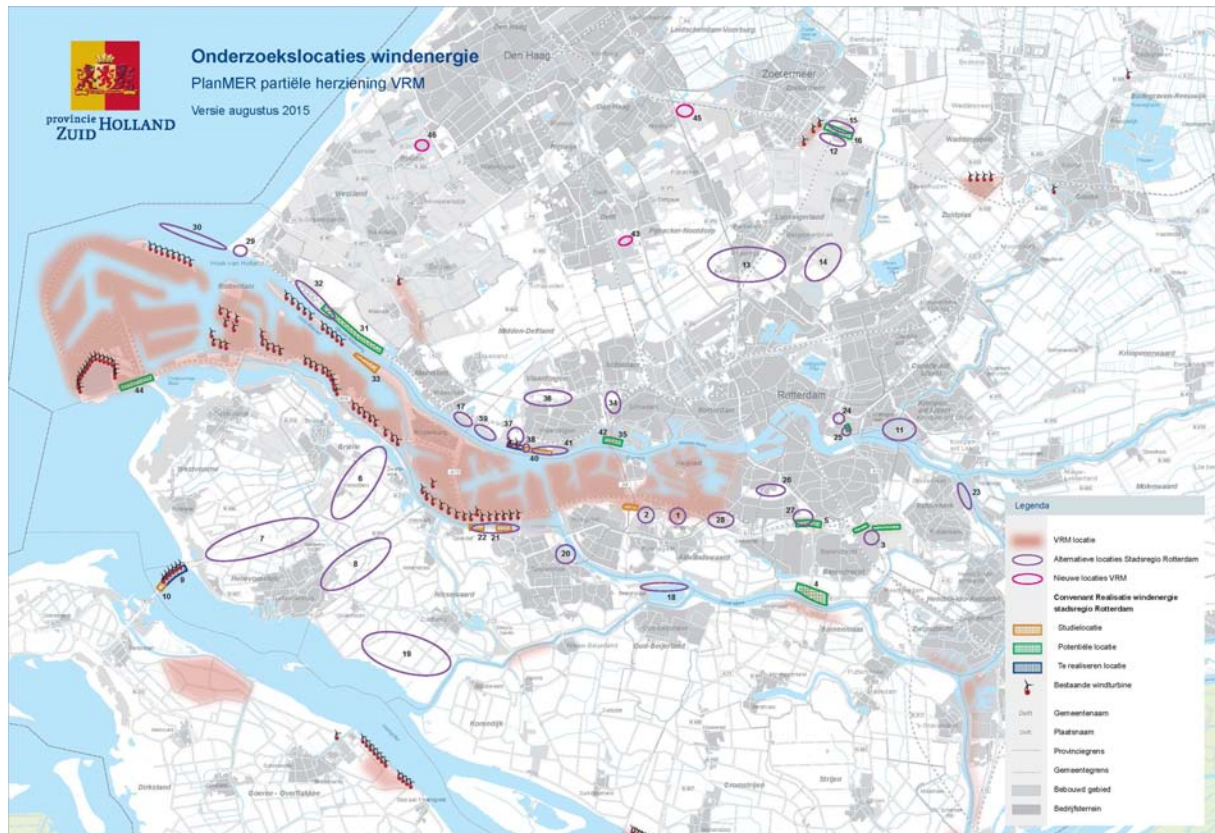


Figure 2: Adopted and search locations for wind power in the Province South Holland
Source: Province South Holland, 2014.

A main part of the provincial wind power growth target should be realised in the Rotterdam urban region. To find locations, the strategy of the province was to create wide support of affected parties in the area. This involved a participatory planning procedure between important private and public stakeholders such as the municipalities, the port company, the Nature- and Environment Federation and the Netherlands Wind Energy Association. In 2012, a formal agreement, *the Covenant Realisation Wind Energy* was adopted by these stakeholders and the province, fixing an installed capacity target of 150 MW by 2020 on a selection of “potential locations” (Rotterdam city region 2012). The potential locations, however, had to be further investigated by environmental impact assessment. Most locations lay alongside the banks of the river Maas on commercial areas, port areas and water edges, combining wind power with motorways and other line infrastructure, though there are also locations in the suburbanised areas between the urban cores of Delft, Zoetermeer and Rotterdam on commercial areas and greenhouse areas.

So far, the Rotterdam wind energy covenant achieved to realise approximately 50 MW. In 2015, the province announced that the selected locations proved widely insufficient to meet the 2020 target, exceeding only 80 MW. Hence, the city region is currently studying alternatives. A recent map published on the website of the province shows alternative locations both in the built-up and unbuilt areas in the outskirts of Rotterdam, which is less in line with the ‘open landscape’ strategy.

4.2 Concentrating wind power in the hinterland: Case study province Lower Austria with focus on the Vienna region

4.2.1 National context

Austrian wind power potentials were underestimated for a long time. An extensive alpine environment and a high degree of suburbanization on flat areas characterize the country's landscape. The alpine environment is for a large part considered unsuitable for wind power development. However, the eastern parts of Austria have excellent wind conditions on flat, open landscapes. These "far east" areas include the provinces of Vienna, Lower Austria and Burgenland and accommodate more than 90 percent of Austrian wind power capacity. At the same time, the eastern part of Austria comprises of the most populated parts of the country as it includes the city core of Vienna and surrounding, highly suburbanised areas.

Wind power growth in Austria has accelerated since the mid 2000's. In 2009, Austria has adopted a national target of 3000 MW installed wind power capacity by 2020. This target is enacted in the national *Eco Power Act* (ÖSG) of 2012. The ÖSG adopts the wind power growth objective under the condition that there is "enough availability of sites" (ÖSG 2012, § 4). However, no formal agreements were made on the division of the national target on provincial territories. This has caused little worries. Current capacity growth prognosis of the Austria Wind Energy Association indicate that the country is likely to pass its target and exceed 3500 MW or more. This success story is mainly ascribed to the attractiveness of Austrian monetary support scheme, which consists of an obligation to take off renewable electricity supplied to the national grid by fixed payments (feed-in tariffs).

In Austria, the juridical framework for spatial planning is defined on the level of the nine provincial governments (*Bundesländer*) as the national government has no regulatory land-use planning role except of infrastructural tasks of national importance. This means that there is no formal requirement to integrate spatial planning activities from all three levels into one comprehensive spatial development scheme. However, one of the key elements the coordination in the field of spatial policies is an advisory body - the Austrian Conference on Spatial Planning (ÖROK) - that calls for more sustainable planning strategies on the national, regional and local level (ÖROK, 2011). The ÖROK cannot take legally binding decisions – it can only make recommendations.

4.2.2 The regional and local planning approach of the Province Lower Austria

The ÖSG imposed no formal wind power growth obligations for the Austrian provinces. Austrian provinces can act relatively independent concerning renewable energy growth agendas. In Lower Austria, in 2011, the provincial government adopted a desired target of 1.900 MW installed capacity by 2020 and 3.200 MW by 2030 ((Office of the State Government of Lower Austria 2011 : 14) In the end of 2014, installed capacity on provincial territory was 963 MW (IG Windkraft 2015).

Until 2014, site-allocation of wind power was decided on project-level and was mainly in the hands of municipalities. The land-use designation for wind power applies to wind power technologies of more than 10 KW. Designation was embedded in local land development plans, but land-use could be rededicated. If applications for wind power projects were to fall outside of these areas, changes could be made if a landscape concept was provided. At the same time, attractive governmental incentives enacted by the ÖSG, this caused were quickly

stimulating wind power initiatives. This caused an overflow of wind power project applications.

Reacting to the quick wind power growth on its territory, in 2004, the province imposed, by amendment of the provincial regional planning act, strict distance regulations to conflicting land-uses. This should ensure landscape preservation and minimize aesthetic, health and safety concerns with regard to sensitive functions. The regulations comprise large distances to residential functions: 1,2 km to residential areas, 0,75km to singular buildings, allotment gardens and campsites and 2 km to residential areas of neighboring municipalities. As main parts of Lower Austria are highly suburbanised, these regulations significantly restricted potential areas for wind power in built-up areas and the more remote landscapes on the outskirts of towns and villages came into focus. In addition, though not formally regulated, large distances (minimal pole height) are applied to road infrastructure.

In 2013, it became clear that the strategy of regulating regional wind power deployment by distance regulations and local land development plans, failed its target of landscape preservation. The provincial governor, faced with the problem of landscape blight by sprawling of turbines and a growing opposition of citizens, stopped temporarily the building permission procedure for wind power projects, stating that there has been an *“uncontrolled growth of wind power in the region which has to be stopped”*. (Der Standard 2013). The provincial government decided to develop a binding, regional zoning plan for wind power.

In 2014, the current regional binding wind power zoning plan was adopted by the provincial government. The areas for wind power were severely limited to 2 percent of the provincial territory, which caused the Austrian Wind Energy Association to remark that Lower Austria will not achieve their future growth objectives. Guiding principles to assign the boundaries where the strict distance regulations to “wind energy sensible” functions and the protected landscape and natural areas: *“The designation of these zones is essentially based on the distance regulations to wind power sensible land-uses, the interests of nature conservation, ecological value of areas, the appearance of towns and landscapes, the tourism, the protection of alpine space, the network infrastructure, the expansion possibilities of existing wind parks and a regional balance of wind power.* (Amt der NÖ Landesregierung 2014 : 1). In consequence, zones for wind power concentrate on less populated areas in the northern and eastern parts of the province. In comparably more urbanised parts in the southern and eastern area of the Vienna region, this has led to the effect that wind parks fill up gaps of open, agricultural landscapes in-between the cores of small towns, villages and suburbanised areas.



Figure 3: Distribution of areas for wind power in the Province Lower Austria
Source: Province Lower Austria, 2014.

5. Conclusions

The main question that is addressed in this paper is *which planning approaches have been developed in the urbanized regions of Lower Austria and South Holland to deploy onshore wind power, and how successful have they been so far?* In the first chapter crucial elements of a comprehensive spatial planning approach for implementing wind power in urban regions have been introduced: it should address economic, environmental and social concerns, should have a clear, territorial strategy and should succeed in governing these converging interests in space and time.

The case studies have shown that comprehensive planning for wind power is no ready-made approach to deploy wind power on regional territory, but an interactive process that frequently has led planning authorities to change course. Dutch planning has switched from a regional bottom-up planning approach to a top-down approach to designate wind power zones on a national level, mainly because wind power growth seemed to get too little ahead. The province of South Holland has developed an ambitious approach to combine wind power with infrastructural areas in the Rotterdam area, but seems to fail its growth target in these areas. Alternative locations have to be found elsewhere, including rural areas.

In the province of Lower Austria, the implementation of wind power has been in the hands of municipalities for the longest time. Financial incentives on the national level quickly accelerated wind power growth, but the national government did not interfere in site selection. Provinces with good wind conditions were overwhelmed by a wave of wind power project applications. Though strict distance regulations were imposed on projects, the lack of an overall, regional spatial concept caused citizen opposition and landscape blight, which was publicly admitted by the provincial governor in 2013. The provincial structural plan puts an end on sprawling by introducing binding zones for wind power. However, it has the effect that open landscapes in-between town and village cores and suburbanized areas cannot be sustained. In the neighboring province of Burgenland, which has binding wind power zones

for more than ten years, this has led to the unwanted side-effect that some municipalities cannot expand anymore because they are surrounded by wind parks.

Relating to the formerly introduced theoretical concept of comprehensive spatial planning for wind power, both regions have assigned a wind power zoning-plan as a binding device to implement wind power on the long term. Both strategies received criticism (Lower Austria) or experienced a draw-back (Province South Holland) on the subject of the capacity of the selected areas to meet long-term growth objectives. Finally, on the subject of long-term realization, the implementation strategy of the province South Holland (matching locations on regional level and getting *support* from local communities) seems a more flexible approach that comes closer to the concept of a comprehensive planning strategy.

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7. Endnotes

i I chose to call them concerns instead of more neutral terms, e.g. “structures” “parameters” or “factors”, which are usually used in institutional analysis. Concerns relate to quantitative and qualitative objectives that regional wind power planning usually has to address.

ii Examples are landscape quality, cultural heritage quality, leisure quality and spatial quality.

iii Bestuursovereenkomst Plaatsingsproblematiek Windenergie

iv Bestuursovereenkomst Landelijke Ontwikkeling Windenergie

v Structuurvisie Windenergy op Land

Spatial, mobility and energy planning: a cross-sectorial and actor-relational approach

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1. Introduction

The complex reciprocal influences of the spatial pattern of human activities and mobility patterns on energy consumption have been the subject of a great deal of theoretical and policy research: the nature and availability of energy resources have always influenced spatial distribution of activities and mobility behavior, and vice versa. At the moment many questions arise with regard to the conditional (f)actors of this triple interrelation, because of some structural changes occurring such as the depletion of fossil fuels and the climate change, the transition towards more sustainable and equitable transport systems and the on-going economic crisis. Another important changing condition is the shift from a high centralized and fossil fuel based energy system to a more decentralized and renewable one which give the spatial dimension a crucial role in the allocation and utilisation of energy sources. Some cases of integrated spatial and energy policies are developed within the “Energy landscapes” approach (Normann and de Roo, 2011) and include for example energy domestic production or (self-) governance “community energy” initiatives (Avelino et al. 2014). Policies that integrate mobility and energy sectors regards solutions for the optimization of energy in the transport sector and include for example energy saving technologies for the automotive industry or tools to support transport systems users reducing their energy footprint (Gautama et al. 2014). Moreover, even land-use and transport integration is often evocated as a solution towards sustainability. Nevertheless most of the current energy policies are not integrating the space and the mobility fields at the same time or are putting these into practice by sectorial measures. Because of these separated knowledge and research domains, in planning practice the multi domains and cross-sectorial dimension of the issue is often neglected.

With a view to the shifting social circumstances, this paper reflects on how to integrate the spatial-mobility energy domains in the energy transition, from the viewpoint of the planner. Indeed, as stated in other studies (Stoeglehner et al, 2011), we argue that a radical shift in energy provision can only be achieved if its spatial dimensions are taken into consideration. To give answer to this question, this study presents a framework of approaches and applications developed in the last 15 years, based on a literature review and contributing to understand how the crossovers between the domains of spatial, mobility and energy planning have been faced and have recently evolved, in order to identify intersecting issues and not yet covered themes. The research demonstrates that only in few and more recent studies and applications the full integration of the three domains is covered, with not still an integrated perspective.

Starting from this, the study argues that to make a shift towards integration between space, mobility and energy a new planning approach is needed. Planning should address the multiplicity and fuzziness of different actions in time and space concerning discursive, collaborative, informal and post-policy planning, as well as relational geography, multi-planar, non-linear and actor-relational approaches (Boelens, 2010; Boelens and de Roo, 2014). In other word, the new planning attitude should be post structural, co-evolutionary, actor relational, situational and departing from specific transitions and ambitions. The interpretation

of the space, mobility and energy domains should be seen as an arena's of changing (f)actors-networks in order to understand and create new links beyond the existing borders.

2. Crossovers between spatial, mobility and energy planning between 2000 and 2015

2.1 Spatial and mobility planning crossovers

The milestone of the spatial and mobility planning literature in the last 15 years is the sustainable mobility paradigm's article (Banister, 2008). This paper defines a new approach in which transport and land use are integrated and co-joined to reach sustainability goals. Main conclusion is that space and mobility should be linked and embedded in fundamental ways (Geerlings and Stead, 2003). This new approach inspired a consistent body of empirical research. In particular, several studies, continuing the previous and rich literature on this issue, question on the relation between mobility behavior and the density of development, proximity and quality of development, and local neighborhood and design factors. As a result, the debate whether a particular shape, a density threshold or a specific activities distribution can have an impact on the mobility behaviour and on cities sustainability is still undergoing (Echenique et al., 2012). Many studies have been produced focusing on the impacts of the urban form on mobility behaviour and the relative environmental and social impacts (Boarnet and Crane, 2001). In particular three specific urban structures have been assessed and studied with different approach and methodologies: the compact, the polycentric and the sprawl urban forms (Boelens, 2011; Coppola et al., 2014; Neuman, 2005). In more recent literature, a specific focus on Transit Oriented Development (TOD) raised, based on corridor developments along transit lines and on concentration of higher densities in stations areas (Cervero et al., 2002). In the most recent literature some new studies focus on the concept of "mobility environments" based on the spatial footprint of mobility and the possibility to define in space the specific mobility modes and behaviour (Bertolini and Dijst, 2003).

Another relatively recent concept in the transport and spatial planning cluster is the accessibility planning literature: researchers from various disciplines highlighted the benefits of adopting an accessibility-based approach in urban transport planning (Straatemeier, 2008). The focus on accessibility rather than mobility (Bertolini et al., 2005) results in a shift toward a more active involvement of spatial issues in the discussion (Curtis and Scheurer, 2010; Papa et al., 2016). The objectives of resource efficiency maximisation related to the notion of sustainability in transport planning are very much in line with the idea of improving accessibility with lower carbon-resource consumption.

2.1 Spatial and energy planning crossovers

The links between spatial planning and consumption of fossil fuels have been of interest since at least the 1940s, but in the last 15 years it evolved significantly. Indeed, in the last 15 years renewed and more situational research was executed with regard to this space and energy interrelation.

Spatial planning decisions have major impacts on the energy demand of the built environment as well as mobility connected with the spatial structures. One of the most cited study on the interrelation between energy and urban form is the Newman and Kenworthy (1996) publication on the relation between energy consumption and city form. The Mindali et al. (2004) study replies and criticises the original study that was then adapted and improved in the 2014 according to which density has a less role in energy use, as stated in the first analysis. On this subject, also other contributor has enriched the discussion in the last years and with application in different spatial contexts (Boussauw and Witlox, 2009; Marique and Reiter, 2012). The area of study is quite new, perhaps explaining why geographical studies into energy use are still largely descriptive. The studies are primarily concerned with describing the variability of energy costs at geographic and individual levels.

The received attention from researchers also has a specific regard to the building scale. Studies explored the effects of urban structures on building energy consumption. It highlights

that decisions made at the neighbourhood and city levels regarding built volume and surface, orientation of façades and obstructions have important consequences for the performance of individual buildings in heating, ventilation and cooling. In more recent years, the scale of analysis changed from the building to urban and regional, as scientific findings show that the achievement of a low carbon society depends not only on the energy performance and sustainability of the building stock, but also on the energy performance and sustainability of the urban organisation and infrastructure networks (Kenworthy, 2003). Several initiatives of urban planning point out, that energy-efficient settlement structures also lead to a high quality of life and have several features in common like decentralised concentration, multi-functionality, nearness within walking and/or biking distances as well as certain densities. Besides spatial organisation, spatial planning decisions also influence energy demand by choosing sites with a certain topography and exposition as well as by framing the built structures in building schemes.

Another group of studies is more focusing on a new emerging theme related to on-site energy production from renewable sources by means of thermal and photovoltaic panels, and the access to district energy supply and distribution technologies and the impacts of this transition towards spatial systems (Timmerman et al., 2014; Vansteenbrugge and Van Eetvelde, 2014). Sustainable energy systems, their generation as well as their utilisation are intrinsically linked to spatial planning. The reason for this prominence of space is that all renewable resources, solar radiation, wind and hydro power as well as bio-resources are area-dependent resource. Indeed, the theme attracted much attention because of the development of different forms of renewable energy, which is much more dependent on space than the use of fossil fuels (Sijmons et al., 2014). Another aspect of renewable resources is of importance when analysing the link between spatial planning and resource provision: renewable resources are de-centralised resources. This is of course a logical result of their dependency on space for their generation. This energy transition could influence spatial systems largely and challenges the urban as well as the rural environment to include the energy dimension in the spatial planning processes (Noorman and Roo, 2012). Finally, another specific field of research seems to focus on the role of urban planning at different geographical scales in achieving energy policy goals (Zanon and Veronesi, 2013). They try to clarify the question if and how climate change and energy saving issues are to be included in urban policies and in planning practices. A large literature has been produced on the single country cases and study cases policies across the world in facilitating both household and commercial energy efficiency improvements and distributed energy generation, with the aim of providing affordable, secure and low-carbon energy service provision.

2.3 Mobility and energy planning crossovers

In mobility studies, energy use and its environmentally impacts are increasingly becoming a focus for transport researchers (Chapman, 2007; Schwanen et al., 2011). Nevertheless, the topic has largely been confined to the following fields: climate impacts of transport, usually quantified through estimates of the quantity of CO₂ directly emitted by vehicles, or energy costs of transport modes, quantifying which modes of transport use most. Much of the investigation has focused on the technical characteristics of energy-using technology such as vehicles, and industrial processes: the relation between energy and mobility has been studied mainly with a techno-economic approach, focusing on the supply-side of vehicle technology efficiency gains and fuel switching. A specific focus, from 2005 onwards, has been dedicated on electric mobility (EM). Typically, the diffusion of advanced vehicle technologies is perceived as the central means to decarbonise transport. To this group of studies belong researches oriented at the study and the test of advanced vehicle technologies, proposing a variety of technological solutions, including greatly improved vehicular fuel efficiency, alternative fuels and propulsion systems, and carbon capture and storage (citation needed). Almost all studies suggest that technology's long-term contribution to decarbonisation is likely to depend on macro-economic conditions – fuel prices in

particular – and policy decisions regarding carbon taxation and cap-and-trade schemes and land use policies.

The transport-energy nexus has also received attention from disciplines not traditionally associated with either issue, such as computer science, physics and psychology and transition studies. This group of studies also questions on how to implement transition management for a low carbon transport system; including new approaches for understanding innovation adoption processes and alternative business models through the modelling of the car market trends.

Another aspect which is studied in the mobility and energy literature is the “demand side” to reduce energy consumption and mobility, and regards car owning and car-sharing in the context of sustainable mobility (Ornetzeder and Rohrer, 2006). In these studies a new type of actor has emerged in the field of transport: mobility providers or operators, according to the MaaS, Mobility as a Service approach. Their business is to provide mobility services rather than a vehicle or a ride. Examples of new mobility providers are car-sharing organisations (CSO) offering car services in combination with public transport use. Some public transport companies are developing into mobility companies, by adding mobility services to their portfolio. This is a small but significant development for the future of sustainable, low energy demanding mobility.

2.4 Spatial, mobility and energy planning crossovers

Within the literature in the last 15 years on the crossovers between the three domains space, mobility and energy some clusters can be identified.

The first one includes researches that analyse relations between the mutual influences between energy provision, location and distribution of activities in space and mobility, analysing the reciprocal impacts of urban form on mobility energy consumption. These researchers investigate the link between spatial structure and energy consumption for travelling (Dujardin et al., 2014; Marique and Reiter, 2012) according to the principle that transport energy demand is a function of mode, technology and fuel choice, total distance travelled, driving style and vehicle occupancy.

A more innovative field of emerging studies is related to the new vision of the comprehensive space, mobility and energy approaches, based not anymore on the principle that societal energy consumption and related emissions are influenced by optimal efficiency but also by lifestyles and socio-cultural factors (Schwanen, 2013). They propose a variety of approaches and within different disciplines, addressing more directly some of the links between energy, societal change and their associated socio-political implications (Anable et al., 2012; Calvert, 2015; Figueroa et al., 2014; Guy and Shove, 2000; Marvin et al., 1999; Mattes et al., 2014; Rutherford and Coutard, 2014; Schwanen, 2015; Shove et al., 1998). A literature has emerged that foregrounds how changes to the attitudes, lifestyles, norms and values of the people contribute to behaviour change and decarbonisation. These behaviour changes encompass a whole variety of different types of choice related to travel demand and living styles. These aspects of research have contributed to recognition of, in particular the mutual influence between energy provision, space and mobility; and the weight of urban regions, activities and populations in the energy metabolism of contemporary societies. Furthermore another key aspect acknowledged in these studies is the importance of space (both in terms of transformation of the built environment and in terms of urban/territorial structures) in (transitions of) the supply and use of energy within urban regions.

Next to that, another field of studies are focussing of the policy implication of integrating energy, spatial and mobility measures for reducing energy use from both building and transport sectors. In many cases a top down approach still prevail, but some studies and research project are seeking to understand the rising capacity of urban actors to govern or influence energy-related change; and the importance of spatial communities as sites of energy-related innovations. Related to that, within the “smart city” literature, some studies focus on how information and communication technologies can have an impact of the energy saving and increasing efficiency.

3. A cross-sectorial and actor-relational approach for spatial, mobility and energy planning:

Space and mobility and energy interaction, and their underlying causes, have been explored with different approaches, at a range of different scales, but the proposed review suggests a gap in the literature, and highlights the need for space, mobility and energy innovative studies. The analysis conducted shows indeed some blind spots on the research on interaction space, mobility and energy.

In reflecting on the existing work and ongoing scientific debates, we see some overlapping areas of reflection, points of discussion and potential pathways for further research on emerging urban energy transitions, based on a more relational approach of the energy spatial mobility interactions. It is widely recognised that energy's decarbonisation is a massive challenge that can only be achieved by combining spatial and energy policies, means and measures targeting multiple elements within transport and land use systems – means of transport, their users, fuels, prices, regulations, infrastructures, the separation of origins and destinations – simultaneously (Banister, 2011). The space, mobility and energy crossovers can be seen as an emergent complex socio-spatial-technical system developing out of interacting dynamics between external societal landscape drivers, innovation within the current centralised energy regime and emerging, decentralised energy niches that involve technological, social innovation and/or institutional innovation. It is becoming more and more clear that those integrated researches needs to include behavioural aspects, based on shared economy principles. A new research agenda should indeed link this to transitions by showing that, alongside technological change, economic instruments, and behavioural changes, is one of the main strategies for achieving a transition towards climate change mitigation.

As a result, the integrated field of space-mobility-energy is not only highly complex – in the very essence of the word - but also very situational and specific. In this respect it is even remarkable that the majority of the contributions mentioned in the previous paragraphs is highly generic focused, privileging one solution for all, or privileging either a national or a supranational focus. In other words, a reduction in energy service demand from transport and living will be achieved through a myriad of individual and societal level shifts in preference for the amount of time travelling, the choice of destinations and where to live, attitudes towards health and the environment and the local community, different models of car ownership, driving behaviour as well as more 'standard' decisions about mode and car choice. That kind of literature on socio-technical transitions, and socio-psychological models of behaviour change, travel and living behaviour, is strongly influenced by concerns relating to health, quality of life, energy use and environmental implications.

With this in mind, a future research agenda should be based on innovative approaches, which address the multiplicity and fuzziness of our perceptions and actions in time and space concerning discursive, collaborative, informal and post-policy planning, as well as relational geography, multi-planar, non-linear and actor-relational approaches (Boelens, 2010; Boelens and de Roo, 2014). In other word, the new approach should be post structural, co-evolutionary, actor relational, situational and departing from specific transitions and ambitions, including hardware, software and orgware solutions reciprocally.

The perspective of local communities, actor-networks and/or upcoming integrated niches should be at the central focus: the urban scale is sometimes viewed as a bounded spatial or institutional form within which change happens, whereas, we argue, acknowledging the relational nature of the urban is central to studying and understanding contemporary urban change. A majority of the contributions still try to model the possible interrelations between energy transition, sustainable mobility and spatial planning and therewith fail to appreciate the very complexity and fuzziness of this interrelation itself. In other terms, the real interrelation within the cited domains could be achieved without thinking anymore in terms of "scientific domains" and boundaries, but in terms of energy, mobility and spatial actors, accordingly to a post-structural approach. On these bases, new studies should conceive processes towards a more sustainable space, mobility and energy transition in quite different ways.

Energy should be referred at the same time to many different things: a quantity consumed in mobility and residential decisions, a set of flow inputs and outputs of particular places, an infrastructure system through which electricity and heat are produced, transported, distributed, commercialized and consumed, or a policy instrument for the delivery of climate change mitigation strategies, etc. Space and mobility systems – instead of more or less territorially constituted and bounded – should be seen as actor-relational, covering various scales from the smallest parts of the built environment to global urban relations, including a narrow or wide set of actors beyond official policy-makers and elected politicians, etc. (Boelens, 2009, 2010).

Transition is less sectorially/spatially/socially focused, but more or less open and diverse, more or less political, etc. in which social processes start for a unclear beginning, with a fuzzy in-between, towards an unpredictable end; as a kind of undefined becoming (Boelens and De Roo 2014).

According to this, some examples of further researches should go towards for example: co-evolutionary transition of space, mobility and energy systems and the role of technology and planners; the impact of apps for less energy consumption and travel and spatial behavior; the reciprocal contributions of new mobility systems versus renewable energy systems in a mobile smart grid and its impact on space; impact of shared mobility systems for energy consumption and the spatial layout versus spatial behavior of citizens.

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The relation between the water resources management and territorial planning in São Paulo macro metropolis (Brazil)

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1. Introduction

One of the most important challenges of the contemporary metropolis is to ensure the availability of water resources in this territory. The pressure on natural resources and the excessive demands by the population and economic activities put in evidence the need to rethink the management practices and governance in these areas. The dialogue between the legal frameworks and management tools is essential to guarantee the access and water sustainability.

This article approaches the contemporary challenges of the water supply system in the biggest metropolitan region in Brazil and also one of the biggest in the world: the São Paulo macro metropolis – SPM. This spatial unit covers an urban network with diversified functions which establish economic relations with several other urban agglomerations. This city-region corresponds to an area of approximately 50,000 square kilometers, spread over 173 municipalities and several agglomerations, and also corresponds to 50% of the urbanized area of the São Paulo State. This region (or city-region) has a population of over 30 million people, concentrating 75% of the State population and 83% of the São Paulo State GDP, which represents 16% of the Brazilian population and 28% of the Brazilian GDP (IBGE, 2010).

The SPM is considered a possible platform for the integration of policies, offering several challenges: the territorial connectivity, the economic competitiveness and governance. However, the deficit in the water supply is directly related with the low water availability and also one of the biggest environmental and social problems in this territory. Placed in the Parana River Upper Basin, the SPM is characterized by a high drainage density that does not offer a significant volume for supply. The inefficiency in the planning and control of water resources and land use is accentuated by the social-environmental problems and the changes in the climate scenarios. In the last decade, the state legal plan for water resources in the SPM (Decreto Estadual nº. 52.748/2008) established several actions in different institutional and administrative scales and levels.

Nevertheless, there is a predominance of segmental and sectorial logics with no integration between municipalities, state or national levels and sectors. In this context, this article aims at the identification and analysis of the institutional arrangements and legal frameworks already in place and how capable they are in providing water security in this macro metropolis territory. The article is organized in sections that describe and discuss the SPM. The second section approaches the concept of macro metropolis. The third and fourth sections deal with the territorial context and the legal and institutional framework of the SPM. The subject of water management and territorial planning problems are dealt with in all the sections.

2. The formation of the Macro Metropolis and regional development

The macro metropolization is a fragmented and complementary process between established metropolises covering a large and complex territory. This process concentrates resources, power, economic growth, technological development and, on the other hand, inequality, poverty and environmental unsustainability.

The concept of the macro metropolis is close to the concept of the city-region, which refers to the idea of the global-city. This concept concerns a group of cities, articulated in a network which is configured in domination areas (central) and of the subordination (normally in the peripheric areas of the city), that may cover large spatial areas. The city-regions create an important hub for the global economic system and are areas of expressive and increasing economic and technological development activities (Scott et al., 2011). Despite being the richest areas in their countries, they are also those that maintain the highest intraregional inequality, even in developing countries (Fainstein, 2001).

This characteristic of the macro metropolis is due to the inclusion of new areas in the global economic system (Haesbaert, 2010). These areas are not homogeneous, presenting inequality and fragmentation, governed by the centralities of these areas and their hinterlands. In this sense, some parts of the municipalities receive benefits of the global economic system, and others, get degraded or spoiled. The globalization does not reduce this unequal situation, in the opposite, it increases the process and structure network for this centralization. This condition seems to be irreversible and contemporary (Santos, 1996).

It is interesting to observe that the macro metropolization is a new approach, not completely valid yet in different disciplinary fields, but that creates a new opportunity to explain and provide solutions to problems that go beyond the concepts and traditional scales of planning – city, urban agglomerations, metropolitan regions. It is, therefore, a new unit of observation and analysis for management (Lencioni, 2003).

In the State of São Paulo, the process that led to the formation of the SPM started in the 1970s, when the Brazilian industrialization was concentrated in the city of São Paulo. The change in the industrial logistics, from the railway to the highway, and production processes – automation, fragmentation of production, and the decrease of job offers – causes a “deconcentrated concentration” in industrial plants (Azzoni, 1986). These industries left their original areas and moved to a wider territory, with regional infrastructure, but not too far from their hometowns. Such industrial deconcentration created, nowadays, a widespread urbanization process, characterized by the widening of the areas linked with mostly urban activities and significant transformation of once rural areas in fragmented urban areas.

In many cases the results of this process have been followed by the deepening of inequalities, even if the institution of a region, in any scale, has a parameter the valuation of the diversity and interdependency. Scott et al (2001) highlight, on the other hand, that conflicts created by the development processes of cities-regions have as their results the institutional innovation. It is possible to observe the SPM sectorial and localized management that does not reflect the regional development aspects. This management does not aim at the adequation, coherence, or transversality in which different actions and public policies should be conducted in the region.

In this sense, it is possible to affirm that the macro metropolis is, above all, an institutional policy and state action, which tries to validate unsustainable production and urbanization models.

From this framework it is possible to analyze the water resources management. The configuration of an institutional “hydric metropolis” begins. Which can be used to justify the exploration of resources, without generating development for the macro metropolis as a whole. The hypothesis is that the creation of the macro metropolis as a region and the element of territorial planning have as their objectives to make easier and legitimate the transference of economic and social resources between the counties in their area of influence. In the context of scarce resources that characterized the region, beyond the overexploitation, such concentration tends to increase the inequality as well as social and territorial fragmentation, specially if there are no instruments for planning and governance committed with that holistic and integrated development of the region.

3. The São Paulo macro metropolis territories

The spatial formation known as the SPM is the biggest Brazilian urban concentration, located in the São Paulo State, the richest and most populous state of the Federation. This region concentrates 16% of the Brazilian population and 28% of the GDP of the country (IBGE, 2010). Formed from a network of flows and multiscale functional relations, the SPM is the most complex and diversified productive structure, covering several types of economic sectors, from the most traditional to the most modern, specially the high technology sectors and innovative and specialized services. There are also research, educational and technical capacitation centers, concentrating human and technical resources beyond innovative forms of production. Such multifunctional complexity concentrates the institutional and corporate command centers and, besides, also activities from the agribusiness, industry, trade and cutting edge services are developed and imbricated, increasing the economic and urban dynamics in course. (Emplasa, 2011)

This vast city-region, according to Scott et al. (2001), the SPM, coordinate an urban network that not only stands out for its population and economic size, but also for the performance of complex and diversified functions (multifunctionality) and that establish economic relations with many other urban agglomerations (Ribeiro, 2009). In this way, it occupies a wide area – around 50,000 km² – that connects cities and metropolitan regions (Figure 1 and Table 1), diverse polycentric agglomerations, by means of productive, cultural and financial flows, with more than 2,5 million commuting journeys each day. (IBGE, 2015) (Figure 2). There are 173 municipalities, grouped in 9 regional units with 30 millions inhabitants, which take part in the production of a GDP of around US\$ 300 Billion.

Regional Units		Number of Municipalities	Total Population 2010		GDP 2009*			Area
			Inhabitants	% Brazil	Millions of Reais (R\$)	% Brazil	Per Capita	Km ²
Urban Agglomeration	Jundiaí	7	698,724	0.37	27,886,413	0.86	40,699	1,269
	Piracicaba	22	1,307,256	0.69	29,758,481	0.92	23,047	7,003
	Sorocaba	22	1,447,331	0.76	34,178,286	1.06	24,018	6,092
Micro Region	Bragantina	11	391,738	0.21	6,302,635	0.19	16,333	2,912
	São Roque	5	262,484	0.14	4,789,748	0.15	18,454	2,469
Metropolitan Region	Santos	9	1,664,136	0.87	39,992,888	1.23	24,306	2,423
	Campinas	19	2,797,137	1.47	85,733,756	2.65	31,221	3,646
	São Paulo	39	19,683,975	10.32	613,060,482	18.93	31,446	7,944
	V Paraíba e Litoral Norte	39	2,264,594	1.19	55,594,849	1.72	24,869	16,181
Macro metropolis		173	30,517,375	16.00	897.297.542	27.70	29,744	49,938
São Paulo State		645	41,262,199	21.63	1,084,353,489	33.47	26,202	248,210
Brazil		5570	190,732,694	100	3,238,404,053	100	16,917	8,514,876

Table 1: The São Paulo macro metropolis in numbers

Source: Emplasa (2014) IBGE (2010). In association with State Statistical Organizations and State Government Secretariats / Seade Foundation. (*) Date subject to revision.

In spite of not having a formal institutionalization, the SPM is a functionally integrated territory that is recognized in the technical studies and public policies proposals for the economic development, services and infrastructure and environmental and sanitation resources. Considering this sectorial segments and territorial units associated, the governance of the macro metropolis is the most challenging in this area.

The State Decree nº 52.748/2008 defines this social economic territory for Water Resources Master Plan of the São Paulo Macro Metropolis - WRSPM and covers the springs and water catchment areas that supply densely populated counties in the State of São Paulo. The territory corresponds to Mogi Guaçu (part); Paraíba do Sul (part); Litoral Norte (part); Piracicaba, Capivari and Jundiaí; Tietê/Sorocaba; Alto Tietê and Baixada Santista river basins (Figure 3 and Table 1).

The WRSPM covers a wide territorial area which includes another unit suggested in the Action Plan of São Paulo Macro Metropolis - APSPM – 2013-2040, elaborated by Emplasa since 2012 in a perimeter formed by Metropolitan Regions and Urban Agglomerations. Since it is a long term instrument of planning, the APSPM – 2013-2040 indicates guidelines for public action explicated by a hundred sectorial projects and institutional actions. These guidelines aim at prioritizing and articulating the macro metropolitan territory. The plan establishes three strategic axis: Territorial Connectivity and Economic Competitivity; Territorial Cohesion and Inclusive Urbanization; and Metropolitan Governance (Emplasa, 2014).

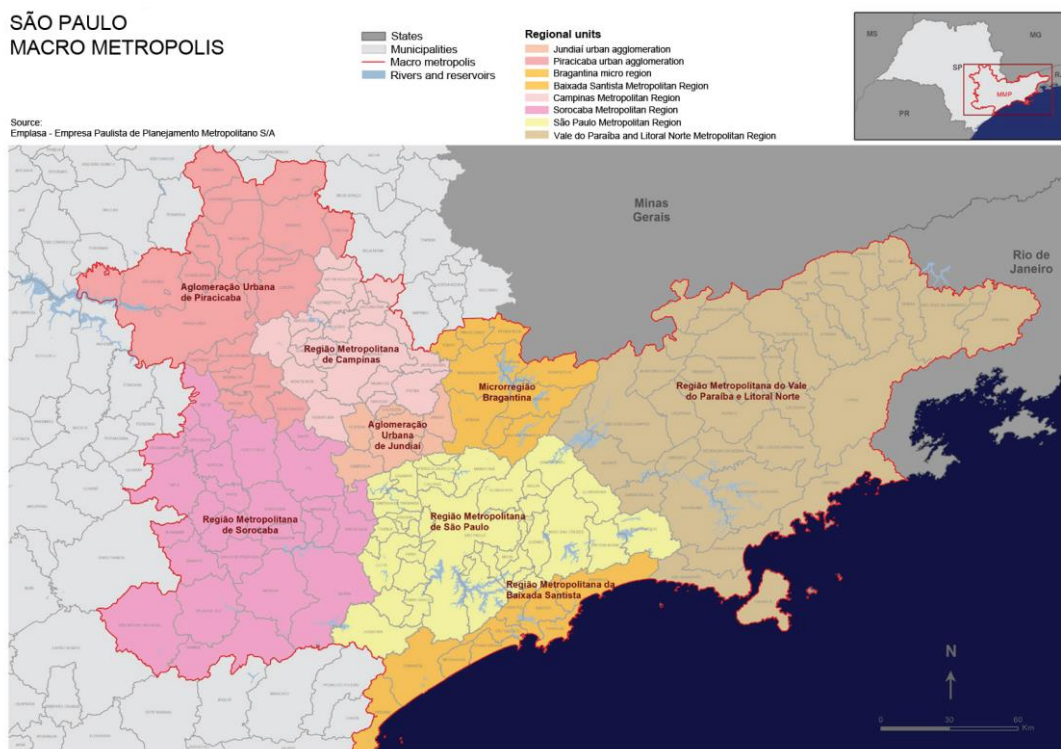


Figure 1: São Paulo Macro Metropolis

The multiple economic, social and environmental functions performed there potentialize the capacity to produced goods, provide services, establish partnerships, manage resources in a new scale of action, as observed by IBGE (2015).

The exceptional economic and technological resources of region and the growing trend of fragmentation of urban areas in different places of housing and work, intensify the daily mobility and the flows between several urban centers. This situation shows the diverse possibilities of territorial arrangements in the region, as a whole in the 'polycentric or multigrouped agglomerations' (IBGE, 2015), with a multisclar and multifunctional approach unknown until then (Emplasa, 2014).

Even if the SPM is delimited by institutionalized regional units in São Paulo Stateⁱ it is certain that a significant part of the counties that integrate these metropolis and agglomerations and also the SPM, present peculiar functional connections which break with institutional bordersⁱⁱ.

The distribution of daily commutes to work and study between the parts of the regions is an example of such 'macrometropolitan functionality' whose format is imprecise, indicating vector of urbanization and networks with significant intensity that also trespass the boundaries of the SPM.

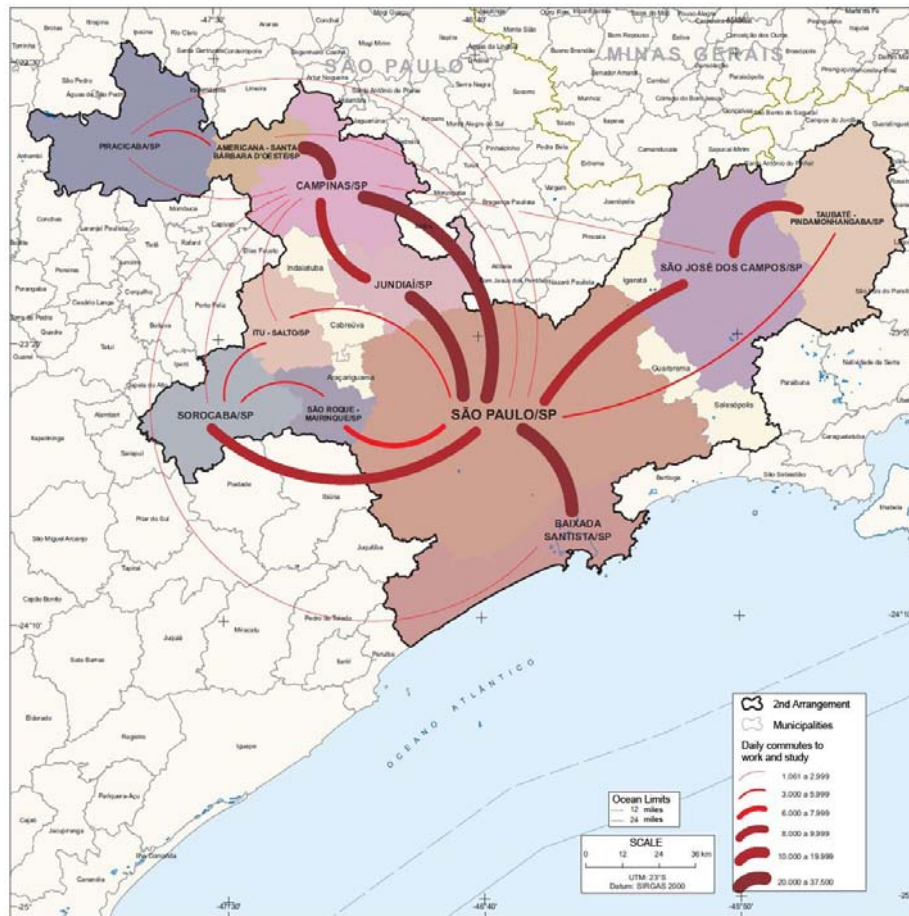


Figure 2: Distribution of daily commutes to work and study (education) above 1,000 per day among different regions in SPM – 2010

Source: IBGE (2015), *Populational Arrangements and Urban Concentrations of Brazil*, IBGE, Brasília.

Observation: Populational arrangements identified according to the methodology developed by the Geography Coordination of IBGE, from data of the Demographic Census / 2010.

In a certain way, the hydric SPM establishes functional relations for the production and consumption of water. Its definition aims to deal with the growing demand on water resources. Nowadays, according to WRSPM, the production activity and human consumption in the SPM is of 222m³/s and there is already a water shortage situation. The best economic scenario is the worst water use scenario, it shows that by 2040, this consumption will reach almost 300m³/s, and even a more comfortable scenario shows an expansion in demand, which will require new policies in water adduction and conservation. Two types of water uses are noteworthy in the region, according to its features: public supply and manufacture, even though the irrigation still covers a great part of water consumption in river basins like Sorocaba/Medio Tiete or Paraíba do Sul (Governo do Estado de São Paulo, 2013).

In relation to the water balance, the worst situation is in the Alto Tiete, Sorocaba/Medio Tiete and Piracicaba/Capivari /Jundiaí (PCJ) river basins. The mainly water catchment is direct, which means that it comes from the rivers instead of the reservoirs.

WATER SYSTEM

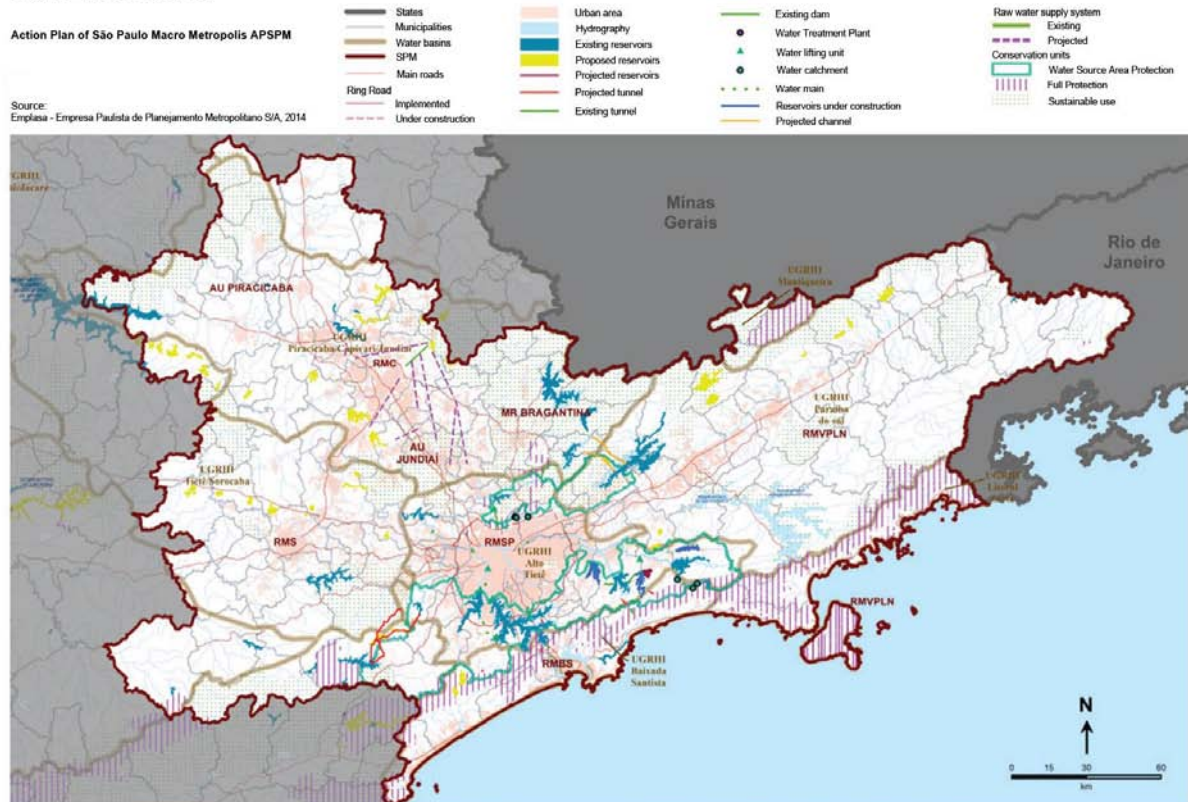


Figure 3: Water system of the São Paulo macro metropolis

Therefore, the environmental protection is essential to maintain the river flows. However, only 20% of the territory is covered with native forests, mostly concentrated in coastal watersheds - at PCJ, it's only 0,1%. This number contrasts with the range of environmental protection areas: although only 3,6% of the total area are protected by the Water Source Areas Protection Law, 32% are under some category of conservation units, despite the fact that some of these areas overlap with each other, this could be enough if well distributed to protect water resources.

More than this, the more preserved watersheds are also the poorest ones, therefore, from the environmental point of view, or from the nature processes that sustain such activities, the simple constitution of that vast area may not encompass all the relations and it also indicates the intention to concentrate the use of the resources in some points of the network.

Even if the proposal of the region is ad-hoc, from the selection of some determined variables, it is necessary to take into account their relative weight compared with the other territorial characteristics and the connections of these places. Besides, even if the scale for the establishment of a region is variable, it is necessary to understand if there are real gains in the regional development of the macro metropolis and also in relation with the rest of the state and of Brazil. At the same time, it is important to consider if there is a possibility of addressing territorial public policies or if the institution of such region serves the concentration of economic resources and development, including the transference of natural resources to some specific knots of the network.

In the next section, the analysis of the conceptual and institutional proposal of the SPM is made based on the legal and institutional frameworks of water resources management and the metropolitan areas.

4. The institutional arrangements of water resources management and the macro metropolis

For Pahl-Wostl and other (2012, p.27) the legislation related to water resources has been adopting

“a more integrative approach, promotes flexibility in the choice of instruments to achieve environmental goals and introduces the basin principle ensuring governance at hydrological spatial scales. This shift toward integrated governance and management poses even higher demands to vertical (across spatial levels) and horizontal (across sectors) integration. To reduce problems of fit between administrative and biophysical boundaries new formal institutions have been introduced in most countries of the world operating on spatial scales following hydrological principles.”

The work of Moss (2004, 2012) indicates several spatial fit problems between new institutions as river basin units however, organized by traditional jurisdiction that became a barrier for the implementation of integrated management approaches that can lead to excessively complex structures.

In the Brazilian case, the use of the river basin as a unit of management can be seen in two main legal tools: the National Water Resources Policy and the State Water Resources Policy. The National Water Resources Policy, created in 1997, established new planning and management units – river basins – and the National System for the management of Water Resources, based on the decentralization in River Basin Committees, with the participation of users, civil society and government. Each Federate State adopted or created its own specific legislation based on this model. In São Paulo State, the water legislation was created in 1991, and became a reference for the 1997 national water law (Abers and Keck, 2013). On the other hand, the Statute of the Metropolis was approved in 2015, which was an innovation in territorial governance because it allows the organization and management of projects, programs and plans around the metropolitan regions and urban agglomerations, that may or not be organized around hydrographic regions (Chart 1). At the same time, in the county level, municipalities are responsible for elaborating a Master Plan defined in the National Constitution and the Statute of the City (Federal Law). A Master Plan is the main tool used to handle and control land use which is essential to protect and preserve water resources.

Policy/ Legal Framework	Legal instruments	Territorial Units	Institutional Spaces
National Water Resources Policy Federal Law 9,433/97	Water Resources Plans, Water quality classification, permanent system of water withdrawals and effluent discharge, bulk pricing water, water resource information system	River basin	National System for the management of Water Resources, Water Resources National Council, Federal River Basin Committees
State Water Resources Policy State Law 7,663/91	Water Resources Plans, Water quality classification, Permanente system of water withdrawals and effluent discharge, bulk pricing water, water resource information system	River basin	Water Resources State Council, State River Basin Committees
Statute of the Metropolis Federal Law 13,089/2015	Integrated Urban Development Plan, Interfederative Sectorial Plans, Public Funds, Interfederative consortium urban operations, Zones shared application of urbanistic instruments Statute of the City (Federal Law), Public Consortia, Cooperation agreements, Management contracts,	Metropolitan regions and urban agglomerations, Micro-regions created by the State Law	National System of Urban Development

	Compensation for the environmental services or other services provided by the municipalities to the metropolis, Public-private interfederative partnerships		
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Chart 1: Legal framework of water resources management and the macro metropolis

It is interesting to notice that national and state water laws promoted the decentralization of water decision-making from the federal to state and local governments. At the same time, water management takes place in participatory institutions where, not just the state but also users and civil society organizations became decision makers and members of river basin committees, water state councils and water national councils (Abers, 2010). Also, water was defined as a public good and a finite resource with economic value. Additionally, the laws emphasized that water should be used to meet people's basic needs during critical periods, and that each sector should respect this and guarantee water access to all activities that use the resource simultaneously (Porto and Porto, 2002). The river basin became the territorial unit to implement water policy institutions and management tools (Empinotti, 2014).

The water management main tools that should recommend actions and programs to guarantee water availability are the water resources state plan as well as the water resources river basin plans. The river basin committees along with the water resource state council are responsible to elaborate such documents. Following the system characteristics, the water resources plans are the result of a negotiation process among their members. While the state plan suggests more general actions the river basin plans are specific to the local and regional realities and members demands. When under situation of stress and conflict, the river basin committees are responsible to mediate the negotiations as well as to establish, through consensus, the limits of water withdrawal as well as the priority of use according to the water law.

In the same way, the Statute of the Metropolis can contribute to the water management and governance of complex regions. In the specific case of the metropolitan region of São Paulo, there is almost a spatial convergence between the management water resources unit and the metropolitan unit, which may favor the spatial fit in policies and institutions. Many instruments from the Statute of the Metropolis (Chart 1), including the *compensation for the environmental services or other services provided by the municipalities to the metropolis*, can contribute to reduce the regional inequalities in the metropolitan regions. The compensation can favor counties that provide environmental services for regions that concentrate and centralize economic activities, population and infrastructure, as in the case of the city of São Paulo. As an example, counties located on water springs/heads could receive a financial compensation from São Paulo County to maintain and manage forest areas in order to guarantee water for the reservoir system that supplies it.

It is important to discuss how the legal tools described above are not coordinated with the APSPM and WRSPM which defined the macro metropolis territory as presented on the previous section of this article.

The construction of the planning and management unit of the SPM was validated by the APSPM 2013-2040 and also by the WRSPM, which were plans elaborated in recent years, 2012 and 2008 respectively, by the initiative of the government of the State of São Paulo. Considering the policy and legal framework mentioned in Chart 1, some issues could be raised, regarding the macro regional theme and the water management.

The first aspect to be observed is the compatibilization of the institutional and physical territories. For the APSPM, the region contemplates 172 counties with 48,000 km². For the WRSPM, the area is practically the same (180 counties covering 52,000 km²), but there is a compatibilization with the water resources management units, which are associated with the Water Resources Management System of the State of São Paulo. Both plans were not originally planned in the national regulatory laws. Their structuring and organizational discussion were elaborated and coordinated by the executive power of the government of the State of São Paulo.

For the management of water resources the main question is the identification of water availability and demand – water balance. As the macro metropolis expands and integrates new areas, including agricultural and natural ones, it necessarily endangers different availabilities and water demands. At the same time, such expansion incorporates different watershed, users interests and their respective spaces for negotiation. Right now, following the SPM boundary, 8 river basins are included in this territory. However, according to the water legislation, there is no space of negotiation planned to such a territory since the macro metropolis boundaries are not fixed according to river basin limits. The unit of action is different and it challenges the institutional arrangements in place. This management tool did not follow the water legislation and its participatory institutions and consequently disregarded any action plans suggested in river basin committee plans or even from the state water management resource plan. The Secretariat of Sanitation leded the WRSPM elaboration process, having the Secretariat of Environment, at that time, the one hosting the Water Coordination Agency, as one of the panel members responsible for following the elaboration process. As consequence, the WRSPM plan created a parallel space of decision-making in which the state is the main decision maker and technocratic solutions in a top-down matter prevail over participatory processes.

However, the WRSPM, which has a sectorial character, was created first and set the path to some decisions regarding infrastructure works already undertaken by the executive power. Even before its conclusion, the WRSPM generated subsidies which allowed the Government of the State of São Paulo to decide to build the São Lourenço System, which will collect more than 4.7 m³/s for the supply of the metropolitan region of São Paulo (Governo do Estado de São Paulo, 2013). The use of the WRSPM to guide the governments action to water infrastructure investments pushes aside the water management system and demoralizes such institutional arrangement. In such case, state plans prevail over federal and state laws.

On the other hand, the APSPM – 2013-2014 has a character of a strategic plan, to the point that it lists projects and actions. Regarding the infrastructure services, the proposal elaborated by the WRSPM, is assumed as a plan to be implemented. From the point of view of sustainability and not only from the water supply, the APSPM widens the scope and contemplates several environmental actions involving also the territorial ordainment and environmental management mechanisms, such as the inclusion of ecosystemic services. However, this concerns strategic proposals and not normative ones with the mandatory adhesion of the instances involved.

In the SPM municipalities level there is also a mismatch, because there is no coordinated articulation between the Master Plans and the River Basin Plan and their negotiation instances (local chambers of counsellors and River Basin Committees). These Master Plans define uses and occupation patterns of the municipal territory with high impact on water resources. Another problem associated with the municipal land use is the level of housing precariousness in the water source areas and the difficulty in accessing the land to create protected areas (such as parks) to provide ecosystemic service for the metropolitan region (Momm-Schult et al., 2013). However, in order to answer to the challenge of protecting riverbeds from illegal housing occupation, the São Paulo state created a law to protect the Billings Reservoir. Such a pioneering initiative brought together the municipalities of São Bernardo do Campo, the Alto Tietê Watershed Committee and the state government in order to promote the dialogue among different land use management tools. In this case, the state law defined environmental and urbanistic parameters so the municipality of São Bernardo do Campo could include them in its Master Plan, especially the municipality zoning tool. Such integration allowed for an interchange among different actors and legal tools, having water resources and its territory as the space for action.

Finally, with the Statute of the Metropolis, there is a national framework for policies such as the APSPM and WRSPM. However, the lack of articulation with the National System of Water Resources may continue because, in the case of federal river basins, the limits go beyond the jurisdiction of the states of the Federation, which define and manage the metropolitan regions. However, the law is very recent and the Brazilian metropolitan experience

is not very promising, with the exception of some initiatives by intermunicipal consortia (Klink 2013).

5. Final Considerations

Based on the conceptual discussion of the legal and institutional framework some considerations can be made.

The macro metropolization is an irreversible and contemporary condition. This system is a new form to approach the traditional planning concepts such as cities, urban agglomerations and metropolitan areas. However, the SPM is fragmented and it does not present territorial cohesion attributes as expected from planning and development units.

The creation of the macro metropolis, as a region for territorial planning and development, legitimizes the transference of resources, particularly natural resources, for the richest and most industrialized municipalities. Therefore, in the context of scarce resources, such concentration tends to increase the inequality as well as social and territorial fragmentation. The centrality of the region has not diminished and will not diminish with globalization and intensification of the flows and fixed networks.

There are several ongoing innovations in the scope of institutional and territorial public policies. For example: the Water Source Areas Protection Law and the articulation with Municipal Master Plans; control of water withdrawals and effluent discharge; awareness campaigns; promotion of the water reuse. However, the initiatives and innovations referenced above are not coordinated with the water resources policies already in place.

From the discussion presented above, it is possible to recognize that the macro metropolis territory was defined by state plans, which did not follow the unit of planning defined by the federal and state water law. At the same time, the new territory can create new flows of resources and demands that are not being discussed in formal spaces of negotiation such as water councils. As consequence, there is a lack of dialogue not just between decision makers, but also mainly among municipalities and actions taking place. Considering the size and complexity of a macro metropolis, unless we have an institutional arrangement that recognizes and coordinates the different actions, it will be difficult to ensure water supply to such an enormous area.

Acknowledging the macro metropolitan scenario, it would be convenient to question if such social spatial characteristics and flow intensity tend to spread around the territory in such a way that it may change the present water balance. At the same time, this dynamic endangers new spaces, spreading this standard of spatial production and of water demand, increasing the level of functional interdependency that takes advantage of the spatial diversity, but results in inequality and for non adjacent and metropolitan territories.

Finally, considering the recent inclusion of the macro metropolitan theme in the public policies and the evolution of the water resources management and metropolitan systems, it is necessary to continue researching the possible advances and obstacles.

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ⁱThe Brazilian Federal Constitution of 1988 (article 25) and the State of São Paulo Constitution (articles 152 and 158) as also the 'Lei Complementar' n° 760 of 1994, establishes to the State the competency to define metropolitan regions and urban agglomerations as regional units of the state territory. Regarding the definition of the macro metropolis, it remains only as a region of particular interest for planning (Emplasa, 2014).

ⁱⁱ The regional units of the territory of the State of São Paulo, have been institutionalized since 1996. The regions listed below form the SPM:

Lei Complementar Estadual n° 815/1996, creates the Metropolitan Region of Baixada Santista;

Lei Complementar Estadual n° 870/2000, creates the Metropolitan Region of Campinas;

Lei Complementar Estadual n° 1,139/2011, reorganizes the Metropolitan Region of Grande São Paulo;

Lei Complementar Estadual n°. 1,146 / 2011, creates the Urban Agglomeration of Jundiaí;

Lei Complementar Estadual n° 1,166 / 2012, creates the Metropolitan Region of Vale do Paraíba and Litoral Norte;

Lei Complementar Estadual n° 1,178 / 2012, creates the Urban Agglomeration of Piracicaba;

Lei Complementar Estadual n° 1,241 / 2014, creates the Metropolitan Region of Sorocaba.

Analysis of the impact of positive and negative criteria on the siting of wind turbines in Flanders

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1. Abstract

If Flanders wants to reach its target of 10.5% renewable energy by 2020 it has to step up the realisation of one of the most important contributors to reach this goal: the siting of wind turbines. The current share of wind energy within the production of renewable energy must grow from 13% to 18%. This would mean more than a doubling of the current installed power production or an increase of 80MW of installed wind turbines each year. Siting wind turbines in the highly urbanised region of Flanders without facing limiting factors is however very challenging. Several policy areas have formulated restrictions regarding wind turbines. This paper wants to analyse the impact of positive and negative criteria on the siting of wind turbines in order to support vision making processes for the future of wind turbines in Flanders.

Data concerning applications for building wind turbines, authorized wind turbines and actual built wind turbines are being collected by the Spatial Development Department Flanders. Based on this data a GIS analysis will be done to first of all determine where the applications for wind turbines, the authorized wind turbines and the currently built wind turbines are sited and if they comply with the restrictions set and if not which of the restrictions are not as strict as they seem. On the other side the same analysis will be done to see if the positive criteria to site a wind turbine are being respected. Second a calculation shall be done to define whether or not, with the current restrictions, enough wind turbines can be sited to meet the set goals.

2. Introduction

The European Climate and Energy package sets ambitious and binding targets for its climate and energy goals by 2020. These so called 20-20-20 targets have three objectives to reach by 2020: to reduce greenhouse gas emissions by 20% from the 1990 levels, to improve the EU's energy efficiency with 20% and to raise the share of EU energy consumption produced from renewable resources to 20%. This last target has been translated for Belgium in an increase of renewable energy resources of 13% (Directive 2009/28/EC). This in turn has been translated for the region of Flanders in a target of 10.5% renewable energy resources by 2020 (VR 2014 3101 DOC.0134/1BIS). This target, albeit low in comparison to the overall EU target is very ambitious when compared to the share of renewable resources in Flanders of 5.8% in 2013.

The recent communication of the European Commission (Document 52015DC0080) on the Energy Union is also focusing on decarbonising the economy. An ambitious climate policy will be an integral part of the Energy Union. The EU Energy policy should make Europe the number one in renewable energy. Moreover a new target for the share of renewable energy consumed in the EU by 2030 has been set at at least 27%. To achieve this 27% target new challenges must be faced.

This paper will focus on the production of renewable wind energy. This focus has been chosen because it is expected that in Flanders wind turbines, besides solar energy, have the most potential to produce a large amount of renewable energy. This potential however is not

completely clear. To research the possibilities of wind turbines the Flemish Government has started the project of the 'Fast Lane' (VR 2015 2003 DOC.0246-1).

First of all this paper will focus on the territorial impact wind turbines have and the difficulties wind projects face in the densely urbanised region of Flanders. Second of all an analysis will be made to see where the applications for wind turbines, the authorized wind turbines and the currently built wind turbines are located and if this complies with the legislation set for siting wind turbines. After this a short GIS-analysis will be performed to see how much space in Flanders is available if we take the positive and negative siting criteria used in this paper into account and how many wind turbines can theoretically be placed. This will allow us to examine the possibilities of generating wind energy in Flanders. The paper will conclude with a discussion and an overall conclusion.

3. Territorial impact of renewable energy sources

Wind turbines have a large territorial impact, especially when they are clustered in groups of 5 or more turbines. Because renewable energy sources have a lower production compared to classic energy sources, their territorial footprint becomes much larger and thus the impact they have on our direct environment is much more prominent. To produce the same amount of energy a renewable energy source will need more hectares as compared to classic energy sources. An example can be given if we compare the nuclear power plant of Doel in Flanders. On a surface of 80 hectares almost 3.000MW is being produced. Converted to wind turbines of 3 MW each, this means a 1000 wind turbines are needed. If we place these turbines in a grid formation of 31 by 31 turbines with a distance of 500 meter between the turbines this would signify a surface of 22.500 hectares, or 1.7% of the whole of Flanders. Figure 1 illustrates this. This calculation is however based on the fact that the wind turbines would produce energy constantly at maximum capacity. In reality, wind turbines (as opposed to nuclear power plants that produce at almost 100% capacity) will only produce roughly at 25% of capacity.

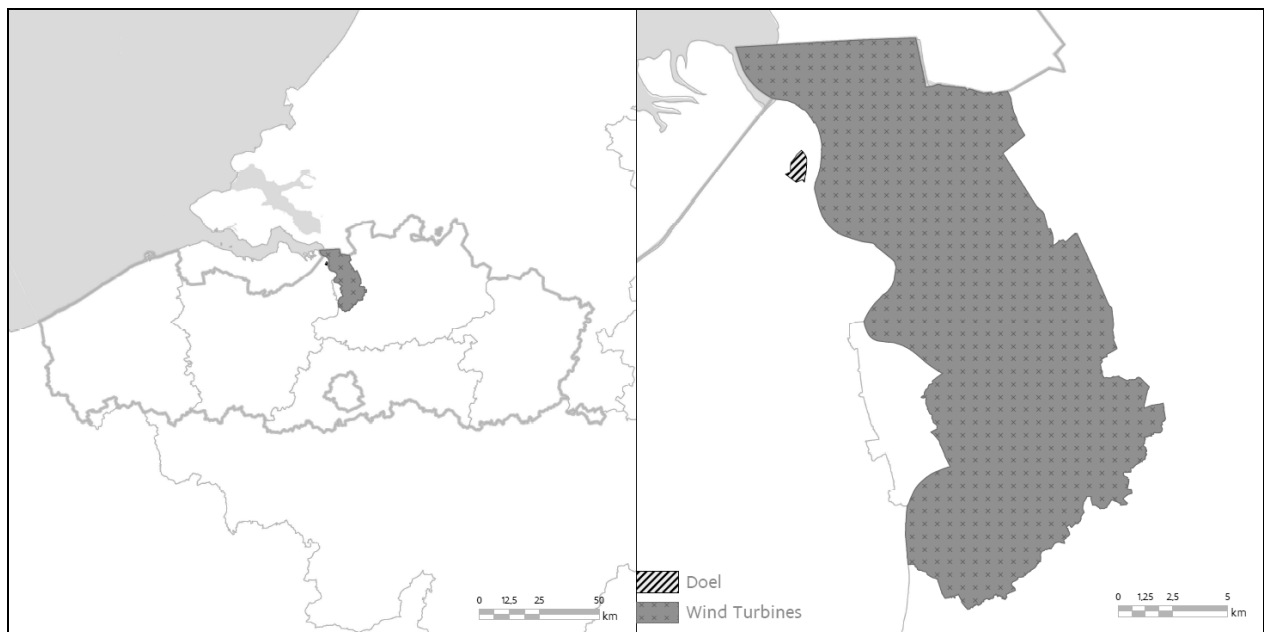


Figure 1: Territorial impact of renewable energy resources

If we focus on the current numbers and targets for wind energy we can see that within the production of renewable energy the share of wind energy is 13%. By 2020 this share should grow to 18%. If we recalculate this share in power that needs to be generated, the current installed power production of 490 MW in 2014 should rise to 1.064 MW by 2020. This would mean an increase of 80 MW each year (VR 2014 3101 DOC.0134/1BIS). Two additional factors need to be taken into account. First of all the potential for other renewable energy

sources, like biomass energy, seems to be limited and secondly the targets set for 2020 are no end goal. As mentioned above the target for 2030 has already been set on at least 27% and an increase towards 2050 can be expected.

Although many new wind turbine projects are started in Flanders, until now the realisation of these projects is lagging behind. The main issue is to find an appropriate location. The high population density and the dispersed built up area contribute to the relative lack of suitable sites (Lastro Bravo et. al, 2011). The large share of built up area also contributes to other limiting factors like infrastructure and aviation limitations. Additional limitations are set by bird and habitat directive areas and nature and forest reserves. As a consequence the locations to site wind turbines are limited and decreasing due to the increasing development.

Until now wind turbines have mainly been placed close to big structures like ports, industrial areas, highways and power lines. The selection of these locations helps to minimise the visual and landscapes impact and to reduce noise pollution by wind turbines. Former wind turbine projects were mostly small scale with 3 to 4 turbines due to the current restrictions. To reach the target on renewable energy production like explained in the introduction, these small scale projects will not suffice

4. Analysis wind turbines Flanders

Data concerning applications for building wind turbines, authorized wind turbines and actual built wind turbines are being collected by the Spatial Development Department Flanders. Applications for wind turbines are daily updated. In order to check whether or not a wind turbine has actually been built a yearly monitoring is performed based on aerial pictures to see if the authorized wind turbines have effectively been built. Due to this yearly manual check-up the data has a significant delay. The monitoring performed in May 2015 was based on the newly released aerial pictures taken between January 2014 and May 2014. This means a delay of 1 - 1.5 years is present in the data on built wind turbines.

On the 8th of June 2015 812 files for wind turbines have been submitted. One file can contain several wind turbines. In total 2492 applications for individual wind turbines have been submitted. Because this study only wants to analyse the bigger turbines we have filtered the database in order to only work with the data of wind turbines with a minimum tower height of 70 meter and a minimal total height of 110 meter. After this selection 2165 wind turbines were selected. Table 1 shows in more detail the status of the wind turbine applications.

Status	Number
Refused	652
In Application	45
Withdrawn	634
Inquiry	10
Returned	142
Automatically expired	17
Authorized	636
Renunciation	25
Unknown	4
Total	2165

Table 1: Status of wind turbine applications

If we have a closer look at the 2165 applications the data shows that 636 are authorized. Of the authorized wind turbines 272 are built in Flanders. Figure 2 shows that in the past almost all the authorized applications for wind turbines in Flanders have been built. The share of built wind turbines however rapidly decreases for the last five years.

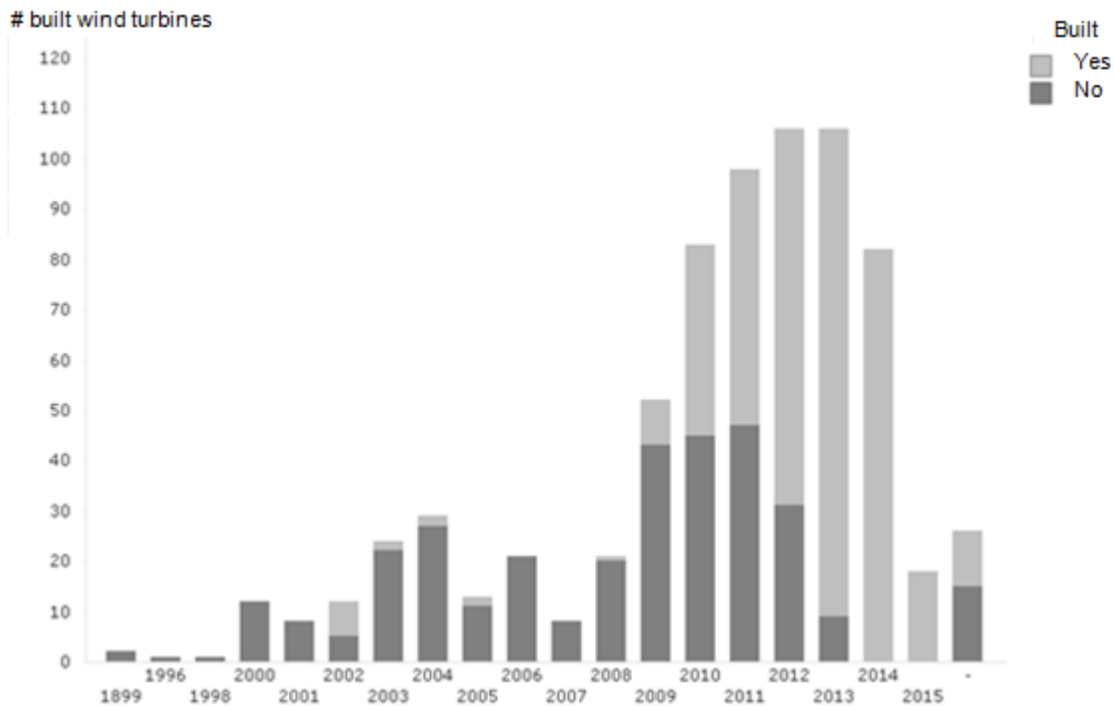


Figure 2: Built and non-built authorized wind turbines

The last update on built wind turbines that was performed in May 2015 shows a clear increase of authorized wind turbines being built starting from 2009. Figure 3 shows the delay between the moment of authorization and the actual building of the turbine. If this information is combined with the figure above we can conclude that delays of up to five years are common in wind projects.

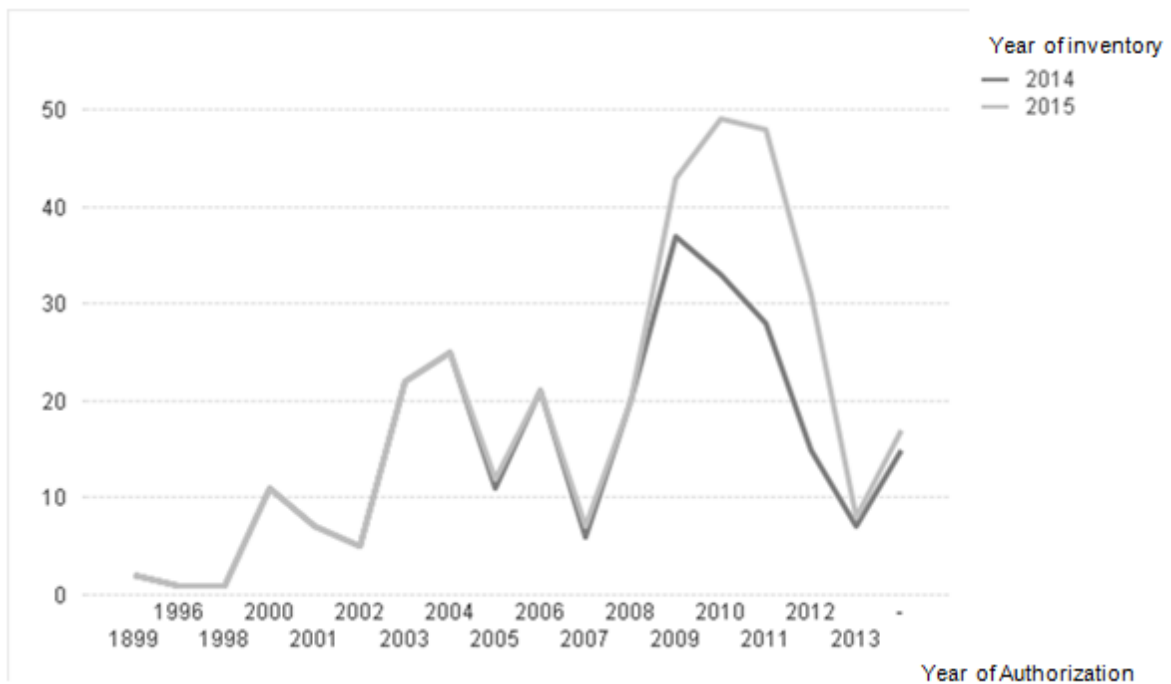


Figure 3: Difference between built wind turbines in 2014 and 2015

This conclusion is confirmed by ODE that states that a large part of the wind projects are delayed by legal procedures (Standaard 17/07/2015). However many legal procedures have ended in 2015, which clears the way for these wind turbines for being built. According to the same article the year 2015 will reach the goal set by the Flemish Government of 80 new wind turbines.

4.1 Land use category

In order to gain insight into the realisations of wind turbines with the current wind turbine policy a GIS analysis has been conducted to see in which land use category the applications for wind turbines, the authorized wind turbines and the currently built wind turbines are sited. According to legislation RO/2014/02 spatial policy should aim to concentrate wind turbines in port areas and industrial sites or close to large landscape defining infrastructures like highways, railroads, rivers, canals and power lines. Another possibility is to site wind turbines close to larger urban areas. Since 2009 wind turbines are also allowed in agricultural areas. Table 2 shows the distribution of wind turbines over the different land use categories.

Land use category	Applications	Authorized	Built
Residential use	2	1	1
Recreational services	6	0	0
Natural areas	12	1	0
Other green areas	51	11	5
Forestry	2	0	0
Agriculture	1236	234	100
Industry	421	187	84
Industry in the ports	278	138	68
Other uses (Infrastructure, utilities and services and mining)	108	35	14
Total	2116	607	272

Table 2: Distribution of wind turbines over land use categories

From this table we can conclude that most wind turbines are built in industrial zones (the categories 'Industry' and 'Industry in the ports'), with a total of 152 turbines. Almost half of the applications in industrial zones are authorized. The second largest share of wind turbines are built in agricultural zones. The table shows that most applications are done in agricultural zone, but only one fifth of those applications are authorized. Although the siting of wind turbines in agricultural zones is allowed according to spatial planning legislation, the integration of these turbines into the landscape is not guaranteed. Spatial policy aims at concentrating wind turbines in larger clusters in order to minimise the landscape impact. The proliferation of turbines in the agricultural zones could have negative effects in the already densely built up and scattered landscape of Flanders.

4.2 Positive Criteria

The spatial policy legislation on wind turbines has been further translated into positive criteria that indicate areas where wind turbines are wanted. Industrial areas and harbour areas and

their immediate surrounding are suitable for siting wind turbines because of their impact on the landscape, but also because of the direct spatial coupling between production and use. The industrial areas in Flanders are very much spread over the whole region. Only the bigger industrial sites of larger than 5 hectares are taken into account.

In order to take large infrastructures into account a buffer of 250 meter has been applied to these objects. This buffer of 250 meter will allow the wind turbines to be aligned parallel to the infrastructure in a line configuration in order to emphasize the shape of the infrastructure. Placing the turbines in a larger grid next to an infrastructure element is not allowed. To reach this goal the buffer only has a width of 250 meters.

The legislation also mentions the possibility of siting wind turbines close to larger urban areas. In Flanders larger urban areas are defined in planning processes defined in spatial plans. The disadvantage however of using this dataset is that it does not take into account the urban cores in the country side. To remedy this lack of data the areas in Flanders where the soil is sealed for more than 50% are also taken into account as a positive criteria.

Utility and service areas, although not mentioned in the official legislation, can also be included into the positive criteria due to the nature of the activities in these zones. Lastly the surroundings of already built wind turbines are also included. Siting wind turbines in groups or in line formations are preferred. Table 3 shows the distribution of wind turbines over the different positive criteria. This time the total number of wind turbines does not count up to 272 due to the fact that the zones of the positive criteria can be overlapping each other.

Positive criteria	Applications	Authorized	Built
Existing industrial sites, buffer 250 m	946	399	190
Planned industrial sites, buffer 250 m	639	260	125
Harbour area	278	138	68
Railways, buffer 250 m	240	84	40
Highways, buffer 250 m	616	158	78
Primary roads, buffer 250 m	276	77	26
Waterways, buffer 250 m	340	121	60
Sealed soil > 50%	347	168	51
Planned urban areas	304	121	66
Surrounding of utility and service areas	23	14	12
Surrounding of built wind turbines	40	18	15

Table 3: Distribution of wind turbines over positive criteria

Like the analysis on distribution of wind turbines over land use categories we can conclude from the analysis on distribution of wind turbines over positive criteria that most applications for wind turbines, authorized wind turbines and built wind turbines are located in the industrial zones. More than 40% of the applications in all three types of industrial zones get authorized. However only half of those authorized wind turbines has actually been built.

What this analysis further reveals are the large numbers of applications for wind turbines especially along highways and, to a lesser extent, waterways. The success rate of these applications is however significantly lower with only one fourth of the applications being authorized for wind turbines along high ways and primary roads. The rate of authorization is higher for turbines along railroads and waterways. One third of those turbines are authorized. Again, only about half of the authorized wind turbines along line elements have effectively been built. These numbers do however show that the spatial policy aiming to concentrate

wind turbines in industrial areas and close to large landscape defining infrastructure is working.

Almost half of the applications for wind turbines in an area of more than 50% sealed soil get authorized. This is one of the highest success rates. The actual building of these turbines is however one of the lowest with only 30% built. A different picture can be seen for the wind turbines in the planned urban zones. With a success rate for the applications of almost 40% and with more than 50% being built, planned urban zones are the third most common place to site wind turbines. The placing of wind turbines in urban areas is difficult due to the proximity of housing. In general a distance of at least 300 meter should be respected due to safety restrictions and sound and shadow flicker. This distance is however not always respected as can also be seen from the analysis on negative criteria below.

The small number of wind turbines sited close to other wind turbines supports the statement made above that most former wind turbine projects are small scale and the building of wind turbines in Flanders is to haphazard. A larger vision on where wind turbines should be sited in the Flemish landscape is missing again adding to the already fragmented region.

4.3 Negative Criteria

Besides positive siting criteria a large number of negative siting criteria can be listed. These criteria are mainly formulated by other policy areas or due to safety restrictions. The negative criteria define areas where currently no wind turbines are allowed or where strict restrictions should be taken into account.

First of all several types of natural areas are restricted for wind turbines. These are the birds and habitat directive areas (except for industrial areas sited in these areas), areas part of the Flemish ecological network and areas part of the support network of the ecological network, nature reserves and forest reserves. Due to their natural value wind turbines are not desirable.

Areas with a high landscape value are also restricted for wind turbines. Besides anchor sites, protected archaeological sites, protected landscapes, protected monuments, protected cityscapes and UNESCO sites, large open spaces bigger than 1000 hectares are also excluded. Due to the dense built up area, large open spaces are rare and should be preserved. To determine this open space the indicator of contiguity of open space is being used. These are contiguous areas with a surface of at least a 1000 hectares that are not cut through by mayor infrastructure or build up areas. All those areas are excluded from placing wind turbines except a buffer of 250 meter around highways and a buffer of 750 meter around existing wind turbines. The spatially vulnerable areas are also being excluded.

Regarding safety several restrictions need to be taken into account. The rotor turning above an industrial building is not allowed (buffer of 50 meter if the rotor diameter is 100 meter) and a minimum distance needs to be applied with respect to power lines, pipelines and seveso installations (150m, 150m and 200m respectively). A buffer of 300 meter is applied around planned residential areas and individual residential buildings. Existing wind turbines also need a buffer of 500m.

National defence policy has indicated several zones with different types of restrictions. In the high danger zone and the radar zone no wind turbines are allowed. In the Aerodrome Control Zone and the Military Reserve Aerodrome a height restriction of 122 meter applies. In the PAN-OPS zones height restrictions based on individual analysis applies. Finally in the Military training areas beaconing is required.

To conclude the list of negative criteria the Belgian Air Traffic Control has two types of restrictions. In a 10 km zone around the DVOR navigation beacon a limited number of turbines can be placed. Outside the radius of 10 km wind turbines are allowed. Within 15 km of the radar zone a detailed study is needed to determine the effects of the turbines. Table 4 shows the distribution of wind turbines over the negative criteria.

Negative Criteria	Applications	Authorized	Built
Habitat directive (without Industrial sites)	1	0	0
Bird directive (without Industrial sites)	41	20	1
Nature reserves	0	0	0
Forest reserves	0	0	0
Flemish Ecological network	1	0	0
Anchor sites	12	0	0
Protected archaeological sites	1	0	0
Protected landscapes	3	0	0
Protected monuments	0	0	0
Protected cityscapes	0	0	0
Unesco	0	0	0
Spatially vulnerable areas	50	19	12
Planned residential area, buffer 300m	171	41	18
Industrial buildings, buffer 50 m	223	96	37
Residential buildings, buffer 300 m	1144	322	147
Railways, buffer 50 m	10	4	2
Highways, buffer 50 m	11	3	3
Primary roads, buffer 50 m	4	0	0
Waterways, buffer 50 m	11	2	1
Power lines, buffer 150m	161	37	18
Pipelines, buffer 150m	152	36	24
Seveso installations, buffer 200m	30	8	2
Defence Radar Zone	74	13	11
Defence Military Reserve Aerodrome	124	21	13
Defence Aerodrome Control Zone	151	11	5
Defence High Danger Zone	19	5	0
Belgocontrol Radar Zone	76	10	3
Belgocontrol Orange Zone	394	88	45
Built wind turbines, buffer 500m	555	314	272
Authorized wind turbines, buffer 500 m	1260	626	272
Open space > 1000ha, except highways	185	23	12

Table 4: Distribution of wind turbines over negative criteria

This spatial analysis on the wind turbine data compared with negative siting criteria shows that not all the criteria are respected. Especially in the areas with high nature value and the areas with heritage value none, or almost none, of the applications for wind turbines are being authorized. The 20 turbines which are authorized in bird directive area are all in the same municipality.

Of these numbers, the results for the comparison located in a buffer around wind turbines can be ignored. It is logical that all the built wind turbines (272) are within a buffer of 500 meter of itself.

More striking are the relative large numbers of wind turbines close to residential buildings. A footnote should be added however on the data source of the residential buildings. Due to privacy reasons no official dataset on residential buildings in Flanders is currently available. Therefore an estimation has been done based on the selection of all the buildings located in residential land use zones. This estimation however has its flaws since not all buildings in residential zones are residential buildings. The numbers do however indicate that the safety restrictions in order to minimise sound and shadow flicker are not always respected. The wind turbines authorized and built in planned residential areas (with a buffer of 300 meter) are all except for one located in the buffer zone around the residential area.

If we have a closer look at the defence and aviation restrictions we can see that all of these zones can not be completely ruled out as a location for wind turbines. For the zones originating from Belgocontrol the rules are vague: 'limited numbers are allowed' or 'a detailed study is needed'. These flexible rules have let to 48 built wind turbines so far. In two of the defence zones (high danger zones and radar zones) no wind turbines are allowed. But the numbers do show 11 built and 7 more authorized. All of these turbines are located on the edge of the zone. In the two other defence zones (Military Reserve Aerodrome and Aerodrome Control Zone) height restrictions limit the possibilities. After a more detailed look at the data however only the 5 built turbines in the Aerodrome Control Zone respect these limitations. All the other built and authorized turbines have a greater height.

Both the authorized and the built turbines within spatially vulnerable areas are mainly sited within the harbour area of Gent. Only a small number of built wind turbines do not respect the buffer around line elements and industrial buildings. After a more detailed analysis it showed that these turbines are built on the edge of the buffer zones. The higher amount of turbines on power lines and pipeline is due to the fact that these are underground lines and the dataset does not show the difference between lines above and underground.

Finally, the cause of the small number of authorized and built wind turbines in open space can be found in the fact that no official dataset for open space is available and therefore also not used when applications for wind turbines are examined.

5. Area available in Flanders for wind turbines

In this part a GIS analysis is performed in order to see how big the surface available for wind turbines in Flanders is if we take the above mentioned positive and negative criteria into account. First of all the surfaces of all the positive criteria are added up. This is the area where wind turbines are wanted. Second of all the surfaces of all the negative criteria are deduced from the positive criteria. According to the interpretation used in this paper the result of this exercise will give the total available space in Flanders for wind turbines.

As the analysis in section 4 shows, not all of the negative criteria are as strict as they seem. The analysis performed below should therefore be seen as a starting point in the search for suitable sites for wind turbines.

Figure 4 shows the result of the overlay analysis. As can be seen from the map, few areas in Flanders are not covered by negative restrictions. A total of 4200 hectares is still available in Flanders to site wind turbines. The harbours of Zeebrugge, Gent and Antwerp can easily be distinguished on the map as favourable places for wind turbines. If an algorithm is used to

place as many turbines in those remaining areas with a distance of at least 500 meter between those turbines, a total of 854 could be placed. If the already authorized, but not yet built turbines are added up to this number, it would appear enough space is still available to build 80 wind turbines a year until 2020.

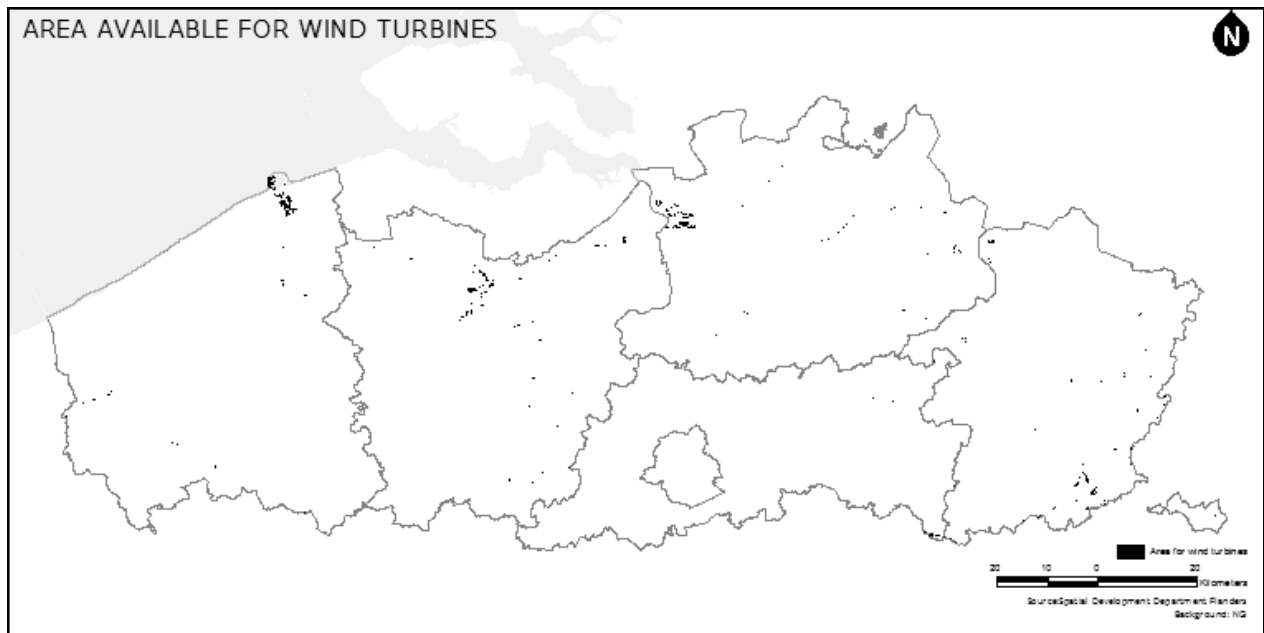


Figure 4: Area available for wind turbines

6. Conclusion and discussion

This paper wanted to give an overview of the current situation of wind turbines in Flanders, in order to support new vision making processes for the future of wind turbines in Flanders. The results suggest that although there seems to be limited space in Flanders a reasonable amount of 636 wind turbines did get authorized. If the numbers shown in figure 2, showing that almost all the authorized wind turbines before 2009 are also built, continue in the same way after 2009 the set target of 80 new wind turbines a year is within reach. The GIS overlay analysis seems to be consistent with this conclusion adding another 854 potential wind turbines.

There is however a significant delay between the date of authorization of a wind turbine and the date of building of a wind turbine. Further research is needed in order to find out what causes the delay and if it is possible to speed up the process. A first indication of the reason of delay is the reference to legal procedures, started by people in the direct surroundings of the planned wind turbines. What type of actions could avoid these legal procedures?

The fact that at the moment a significant amount of the authorized and even of the already built wind turbines are already situated in zones that are now seen as negative siting criteria also needs to be examined in further detail. These results suggest that each wind turbine project is unique and should be individually examined. An analysis done on the scale of Flanders is useful to establish an overall framework for the reviews of wind turbine projects, but place based approaches are still needed for individual projects.

This analysis is mainly based on GIS data. As explained above the Spatial Development Department keeps track of all the built wind turbines by a yearly manual overlay with the aerial pictures. There is however a large delay of more than a year on this data. Moreover, the database is only based on the authorizations from a planning perspective; besides this an environmental authorization is also needed. This data is not available at the moment. In order to monitor the Flemish process towards the 20-20-20 goals a more comprehensive database accessible for all is needed. Updates on the realisation of wind turbines should be

done on a daily basis, based on the actual built turbine, not based on aerial pictures. Other data used in this analysis, like the data on residential buildings, industrial buildings, pipelines and power lines also need to be more detailed in order to refine the zones of negative criteria.

The big number of potential wind turbines is also given a false positive image for the actual possibilities. As stated above, from a spatial perspective it is desirable to cluster wind turbines in larger groups in order to minimise the impact they have on the landscape. A scattering of solitary wind turbines have a much larger impact on the landscape than several bigger clusters. The calculation of potential wind turbines did not take this fact into account and as a consequence has included many solitary wind turbines. This limitation in the results suggest further in depth research is needed in order to give a more realistic output.

So although a good first overview has been given on the current situation of wind turbines in Flanders, a lot is still unclear and needs further research. This research could address the limitations as stated above on data problems and clustering of wind turbines. Further study is also required on the reasons of the delay between the authorization of a wind turbine and the actual building of the turbine.

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VR 2015 2003 DOC.0246-1 Conceptnota aan de leden van de Vlaamse Regering 20 maart 2015 betreffende de realisatie van een 'Fast Lane' voor windenergie.

Municipal Renewable Energy Planning in Support of Post-Earthquake Revitalization: an Application in a Japanese Municipality

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Synopsis: A GIS-based approach for municipal renewable energy planning and its experimental application in a Japanese municipality to support post-earthquake revitalization.

Keywords: renewable energy planning; GIS; scenarios; decision making support; post-earthquake revitalization; Japanese municipality

1. Introduction

After The Great North Eastern Japan Earthquake on March 11, 2011, Japanese Government officially started their Feed-in Tariff (FIT) for Renewable Energy (RE) in July 2012. The incentives from FIT have been expanding the RE markets (Chen et al., 2014) and its promotion. In 2013, Japan had the third largest annual investment in RE and fuels, as well as the second largest solar PV capacity additions in the world (REN 21, 2014).

As one of the most affected prefectures by the great earthquake and its consequent nuclear crisis, Fukushima embraced RE as an alternative to nuclear power to improve energy security. The Fukushima prefectural government (2012) has defined RE as a “New Industry” and one of the potential approaches to support their post-earthquake revitalization. Taking into account the future potential growth of RE in Fukushima, it is necessary to provide appropriate planning for RE to support its developmental vision, at both the regional and municipal levels. It is important to integrate spatial planning principals into RE planning (Stremke and Koh, 2010; Wang et al., 2014). To integrate the energy related strategies into state and regional level spatial planning, has also been addressed in the latest “Conference of the Federal Spatial Planning Ministers (Ministerkonferenz für Raumordnung), Berlin 2015” (Federal Ministry of Transport and Digital Infrastructure, 2015).

The regional RE planning can provide future vision and mediate different areas' potential and needs. In a previous study (Wang et al., 2014), we proposed a GIS-based approach to support spatial planning for RE in Fukushima Prefecture. The proposed approach consists of primary energy consumption estimation, RE potential estimation, energy self-sufficiency analysis, and composite map preparation. Municipal level RE planning is more detailed; it mainly focuses on local restrictions, land uses, and stakeholders' interests among others. Several studies (Nilsson & Martensson, 2003; Dobbeltstein et al., 2011; Sperling et al., 2011; Takigawa et al., 2012; Kostevsek et al., 2013; M. de Waal & Stremke, 2014; Gustafsson et al.,

2015; Van der Schoor & Scholtens, 2015) on municipal energy planning have been reported in the literature. The studies and practices are centralized in Europe, while the studies on the integrated approach to support municipal RE planning are few. Furthermore, due to the particularity in post-earthquake condition of the affected region, there is no study focusing on municipal RE planning to support post-earthquake revitalization.

In this context, this study aims to explore the municipal RE planning approach in the earthquake affected area. Based on our regional level study, this study adopted a GIS-based approach for municipal RE planning. The proposed approach has been tested through an experimental application in Kawamata town, Fukushima, Japan. It features the integration of Viewshed Analysis for wind turbine potential sites, and consideration for post-earthquake conditions, such as radiation issues and designated evacuation zones within the town. This study can serve as an example to other municipalities on how to visualize municipality's future RE developmental alternatives.

2. Proposal for a Municipal Renewable Energy Planning Approach

To generate integrated information for decision-making of RE planning at the municipal level, we proposed an approach which is composed of a set of sequential steps that include:

- a) Local issues identification.
- b) RE potential evaluation and visualization.
- c) Site comparison.
- d) Scenario analysis.

The application of the proposed approach is explained step by step in Section 4.

3. Study Area

Kawamata town is located in the northern region (Kenpoku) of Fukushima Prefecture, Japan, with easy access to Fukushima City which is 20 km away (Figure 1). It has a hilly topography, covering an area of 127.66km², with a population of 14,111 (2015). Traditional local industries include: agriculture and silk manufacture. However, businesses in town are now on the decline due to population loss and aging (Kawamata Town Government, 2015). The town was designated as “Depopulated Area” by the Japanese Ministry of Internal Affairs and Communication in 2002.

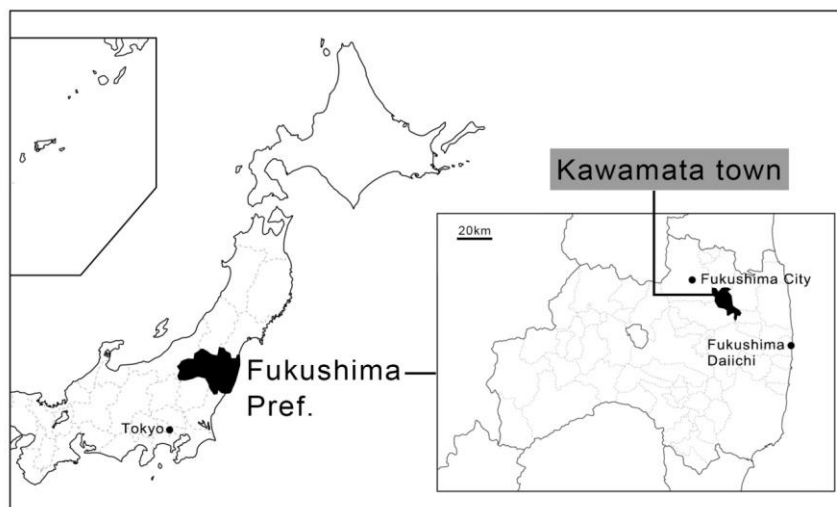


Figure 1. Location of Kawamata town in Fukushima Prefecture, Japan. (Source: by authors)

The Great North Eastern Japan earthquake in March, 2011 and the consequent Fukushima Daiichi nuclear crisis brought disaster to Kawamata town. Almost all the town areas have been contaminated by radioactive particles. Southern parts of Kawamata town (Yamakiya area) that have high radiation levels have been designated as two types of evacuation areas. One, is the zone preparing for lifting off the evacuation directive (>20 mSv/year, after planned decontamination, aiming to rebuild the community several years later), and the other is habitation restriction zone (<20 mSv/year, aim to recover as soon as possible for restoration and reconstruction, residents expected to return) (Japan Ministry of Land, Infrastructure, Transport and Tourism, 2013). People who used to live in the evacuation areas have moved out of town or are living in temporary houses within the town. The Fukushima Prefectural Government is now building new public houses for people from the evacuation areas. There will be a total number of 120 households built in Kawamata town, construction of 40 of them is 24% complete, while 80 are in the design process (Fukushima Government, 2015). Furthermore, to accelerate the post-earthquake revitalization, the town presented a concept named "Depopulation Smart Community Project", cooperating with Toda Corporation (Kawamata Town Government, 2013). RE promotion is one of its crucial approaches, which include: 2MW*5 wind turbines, 5 mega-solar farms, 1.5MW factory rooftop PV, and 4.0MW household rooftop PV.

4. Case Study: Data and Methods

4.1 Local issues identification

To identify local issues, an on-site survey was conducted from July 5-6, 2014. The survey was composed of site visits and interviews. The areas visited included the rural square temporary houses and the zone preparing for lifting off of the evacuation directive in Yamakiya area. The first interview respondents included 3 officers from the nuclear emergency response department in Kawamata town and 5 local citizens. The second interview was conducted with 2 members from Yamakiya neighbourhood association.

4.2 RE potential evaluation and visualization

There are three main available RE resources in Kawamata town; solar power, wind power, and biomass. We extracted their available sites based on the regional RE potential GIS database established in our previous study (Wang et al., 2014) using ArcGIS 10.1. In consideration for usable wood biomass, we selected forest areas under $0.1\mu\text{Sv/h}$ (air dose rate, 1m above ground) after year 2020 as a short-term reference. In regard to RE available potential estimation methods, available site selection criteria, and original data resources, please refer to Wang et al., 2014.

In addition to RE availability site map (mega-solar, wind, biomass), we also added other layers to generate an integrated potential map. They include: topography hill shade, abandoned land, road, 500kV power line, transformer substation, national forest boundary, protected forest boundary, land use, evacuation zones, and new public houses planned sites.

4.3 Site comparison

To compare different potential sites for each RE sources, we coded all potential sites, and then compared them based on different criteria. The information for each criterion were provided or obtained from the RE potential GIS database of Kawamata town in ArcGIS 10.1. For mega-solar, the sites were coded with a capital letter 'S' and a corresponding number.

The criteria include: solar radiation, slope and aspect, available land area, current land use, capacity potential, electricity production in a year, and income estimation based on FIT, access, regulation (urban planning), and evacuation zone.

For wind power, the sites were coded with a capital letter 'W' and a corresponding number. In consideration that visual impact of big wind turbines is one of the main factors that influence public acceptance, Viewshed Analysis was conducted to analyze visibility of wind turbines on the potential sites using ArcGIS 10.1. Criteria for wind power potential sites include: average wind speed at 70m, slope, potential number of 2MW wind turbines, electricity production in a year and income estimation based on FIT, access, distance from main residential areas, Viewshed, regulation (urban planning), and evacuation zone.

For biomass, the specific location of biomass plants were assumed mainly based on access to biomass sources. The locations were coded with a capital letter 'B' and a corresponding number. Criteria include: available resource land (forest / farmland), land use, heat production in a year and income estimation based on FIT, distance from main resource areas, distance from energy consumption areas, access, regulation (urban planning) and evacuation zone.

4.4 Scenario analysis

In order to evaluate and compare economic-environmental benefits and impacts under different exploitation extents of RE sources in the study area, we adopted two RE developmental scenarios. Scenario 1 was RE prioritized scenario. This scenario was designed for rational exploitation of RE sources in the study area, with a consideration for balancing development in evacuation and non-evacuation zones. Five mega-solar farms (2 within evacuation zones), 5 wind turbines (to exploit 20% of total potential wind turbine numbers, 3 within evacuation zones), and 2 biomass plants (1 within evacuation zones) were proposed for Scenario 1. Scenario 2 was evacuation zone prioritized scenario. This scenario was set up to prioritize exploitation of RE sources within evacuation area in Kawamata town. This is to help with building a more reliable and sustainable infrastructure to attract more people to return to the area. Two mega-solar farms, 8 wind turbines (to exploit 30% of total potential wind turbine numbers), and 1 biomass plant located within evacuation zones were proposed for Scenario 2. Five factors to compare scenario 1 and 2 include; construction cost, annual electricity production and electricity selling income based on FIT, number of houses to be supplied, Viewshed area, and CO₂ reduction amount. By the end of August 2015, the above two scenarios have not been discussed with the local stakeholders. They are hopefully to be presented to the local stakeholders in the near future.

5. Results and Discussion

5.1 Local issues identification

Based on site visits and interviews, the following main local issues were found:

- Radiation problems and the decontamination work: according to the local officers, decontamination work was to be completed before August 2014, but people were worried about whether, or to what extent would decontamination work.
- Only aged people are left: after the March 11th 2011 great earthquake, most of the adults and young people moved out, only aged people were left. The traditional 'three generation family' no longer exists. Nobody knows how many people will come back over the years because they fear lifestyle change, and that the local infrastructure and

services (super market, medical care etc.) are not fully prepared.

- Maintenance issue: in regard to Toda Corporation’s smart community project, local people were apprehensive about it. They were worried that the high operation cost will make the project difficult to maintain.

5.2 RE potential evaluation and visualization

The extracted available sites for mega solar (include abandoned land), wind power, forest biomass (available after year 2020), and farmland based on the regional RE potential GIS database are shown in Figure 2. The integrated potential map with other layers (road, evacuation zones, and land use among others) is shown in Figure 3.

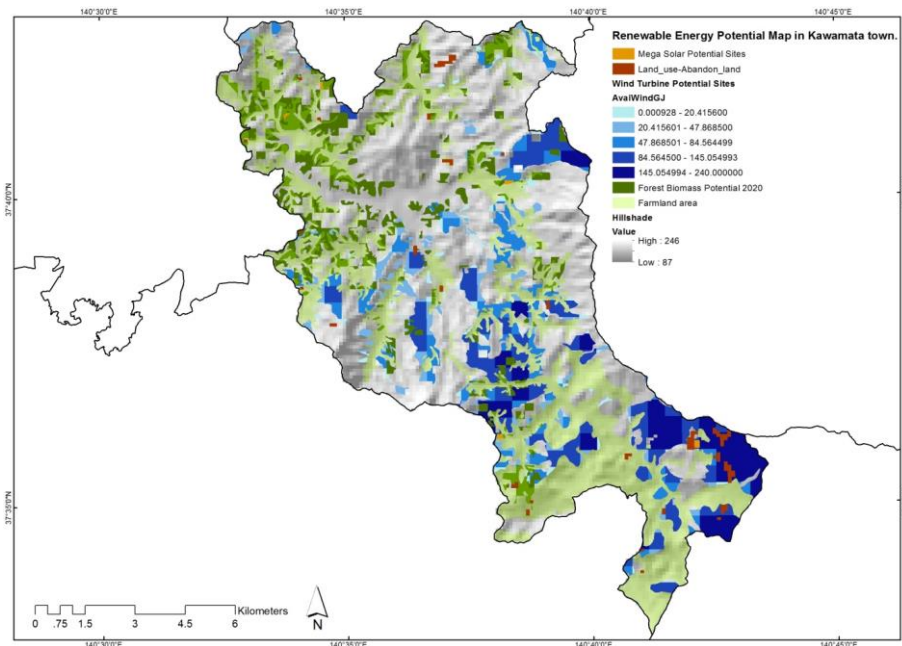


Figure 2. Renewable Energy potential map in Kawamata town. (Source: by authors)

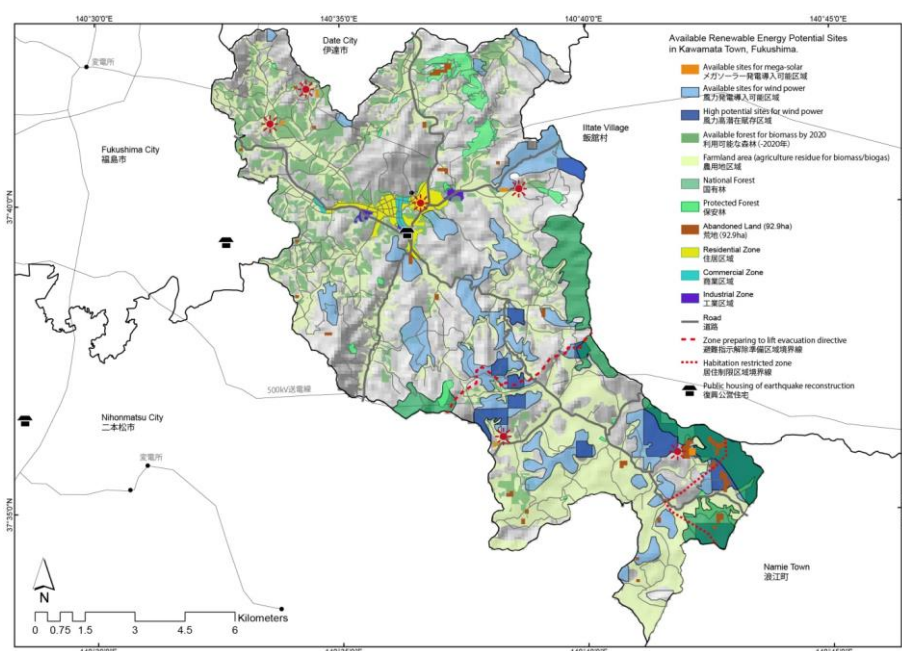


Figure 3. Integrated Renewable Energy potential map in Kawamata town. (Source: by authors)

5.3 Site comparison

The codes and information for comparison of mega-solar potential sites is shown in Figure 4 and Table 1. Similarly, the codes and information for comparison of wind power potential sites is shown in Figure 5 and Table 2. For biomass plant potential sites, please see Figure 6 and Table 3. Annual electricity consumption was about 106,000MWh in Kawamata. Within which, basic electricity consumption was about 32,000MWh (about 30%) (Kawamata Town Government, 2013).

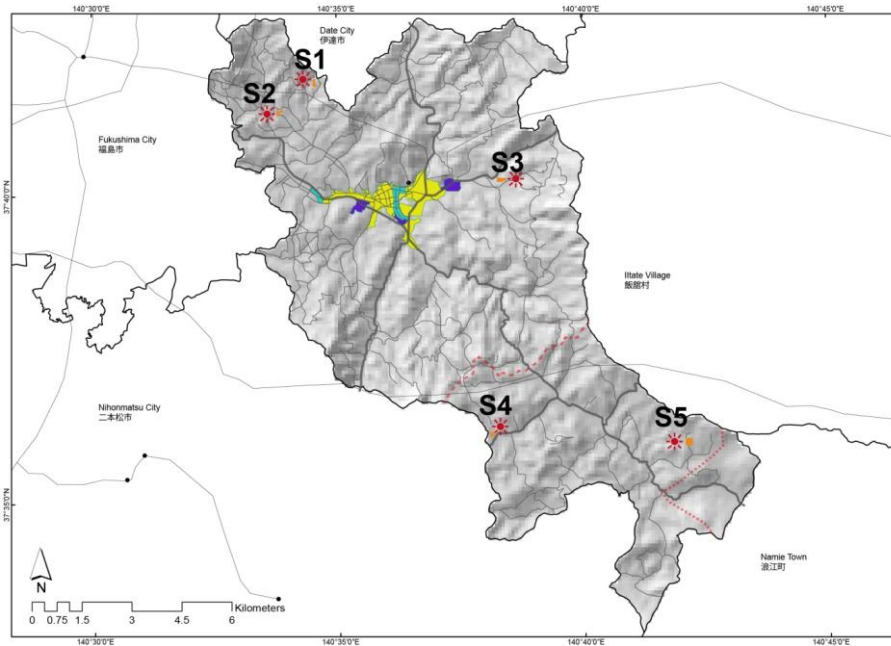


Figure 4. Code numbers for potential mega-solar sites. (Source: by authors)

Table 1. Detailed information for potential mega solar sites.

Average annual solar radiation	Slope Aspect	Available area(m ²)	Current land use	Capacity	Electricity production/year (Electricity selling income)	Access	Land use regulation(urban planning law)	Inside evacuative zones or not
S1 12.8 MJ/m ² -day	7.5°SW	21,976	Hybrid land(residence, agriculture field, forest)	2.8MW	3,449,774.9kWh (110 MJPY)	Good	Outside urban planning area	No
S2 12.8 MJ/m ² -day	7.4°S	16,714	Hybrid land	2.1MW	2,623,750kWh (83.96M JPY)	Good	Outside urban planning area	No
S3 13.0 MJ/m ² -day	7.8°W	26,157	Forest, agriculture field	3.3MW	4,170,262kWh (130M JPY)	Good	Outside urban planning area	No
S4 13.3 MJ/m ² -day	7.8°SE	19,984	Factory, decontamination working space	2.6MW	3,259,614kWh (100M JPY)	Good	Outside urban planning area	Yes
S5 13.2 MJ/m ² -day	6°S	48,185	Forest, decontamination working space	6.2MW	12,768,540kWh (410M JPY)	Good	Outside urban planning area	Yes

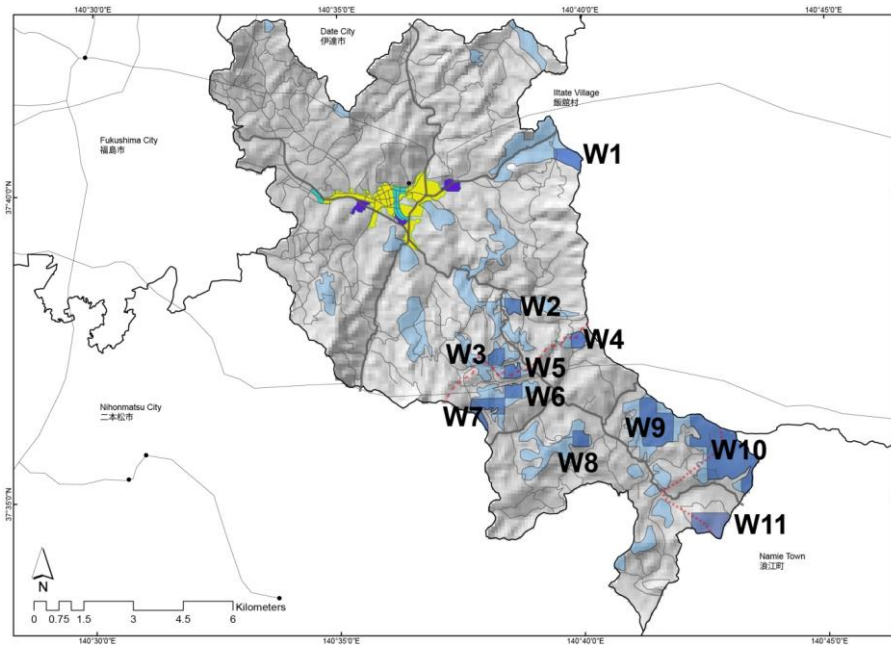


Figure 5. Code numbers for potential wind power sites. (Source: by authors)

Table 2. Detailed information for potential wind power sites.

	Average annual wind speed at 70m	Slope	Current land use	Number of 2MW wind turbines that can install	Electricity production/year (Electricity selling income)	Access	Distance from closest residential area	Viewshed Visible (not-visible) (km ²)	Land use regulation(urban planning law)	Inside evacuative zones or not
W1	7-7.3m/s	13.3°	Forest	2	7,708,800kWh (170 MJPY)	Good	1200m	Visible3.5 (124.2)	Outside urban planning area	No
W2	7 m/s	4.5°	Forest	1	3,854,400kWh (84.8 MJPY)	Good	700m	Visible0.5 (127.2)	The same	No
W3	7.2 m/s	4.2°	Forest	1	3,854,400kWh (84.8 MJPY)	Good	560m	Visible1.1 (126.6)	The same	No
W4	7.4 m/s	8°	Forest, houses	1	3,854,400kWh (84.8 MJPY)	Good	735m	Visible0.5 (127.2)	The same	Yes
W5	7.3 m/s	2.9°	Forest	1	3,854,400kWh (84.8 MJPY)	Good	350m	Visible0.5 (127.2)	The same	No
W6	7.4 m/s	4.6-6.9°	Forest	1	3,854,400kWh (84.8 MJPY)	Medium	715m	Visible0.2 (127.5)	The same	Yes
W7	7-7.3 m/s	2.8-8.9°	Forest, houses	3	11,563,200kWh (250 MJPY)	Good	740m	Visible3.1 (124.6)	The same	Yes
W8	7.1 m/s	7.3-8.8°	Hybrid land (residence)	1	3,854,400kWh (84.8 MJPY)	Good	860m	Visible0.4 (127.3)	The same	Yes
W9	7.2-7.4 m/s	3.9-8.5°	Forest and houses	5	19,272,000kWh (424MJPY)	Good	1560m	Visible3.9 (123.8)	The same	Yes
W10	7.1-8.2 m/s	2.8-13.7°	Forest, decontamination working space	10	38,544,000kWh (840 MJPY)	Good	3700m	Visible10.3 (117.4)	The same	Yes
W11	7.5-8.2 m/s	8.5-13.9°	Forest	2	7,708,800kWh/170 MJPY	Medium	1500m	Visible3.5 (124.2)	The same	Yes
W1-11	-	-	-	-	-	-	-	Visible106.3 (21.4)	-	-

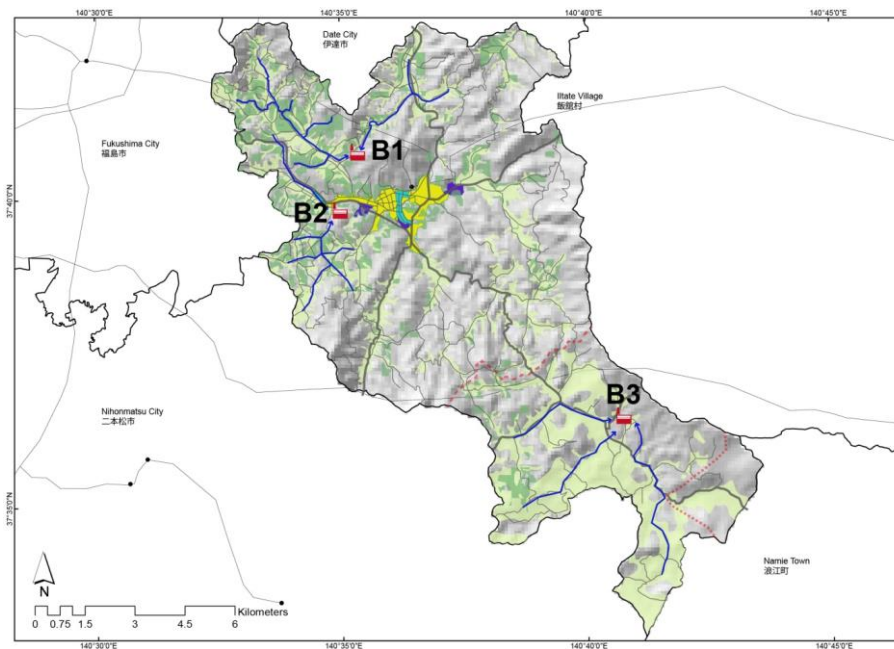


Figure 6. Code numbers for potential biomass plant sites. The blue arrows show the potential access corridors to transport biomass resources. (Source: by authors)

Table 3. Detailed information for potential biomass plant sites of biomass.

	Available biomass resource area (forest/agriculture land)	Current land use	Annual heat production GJ/yr.(Electricity selling income)	Distance from biomass resource area	Distance to energy supply area	Access	Land use regulation(urban planning law)	Inside evacuative zones or not
B1	571,089m ² , 10,290,033m ²	Hybrid land (agricultural land)	27995GJ+28902GJ=56897 GJ/yr (379.3M JPY)	1500-3000m	500-3500m	Good	Non-senbiki urban area	No
B2	2,851,949m ² 5,801,903m ²	Forest, Agriculture land	13294GJ+17364GJ=30658 GJ/yr (204.5M JPY)	1500-2000m	500-3000m	Good	Non-senbiki urban area	No
B3	1,266,171m ² 18,425,123m ²	Agriculture land	5637GJ+18838GJ=24475G J/yr (163.1M JPY)	500-3000m	500-2500m	Good	Outside urban planning area	Yes

5.4 Scenario analysis

In Scenario 1, S1-S5 were selected as the five potential sites for mega-solar farms, with S4 and S5 located within the evacuation zones. W2, W3, and W9 were selected as potential sites for setting up 5 turbines, while 3 turbines were set within W9 in the evacuation zone. B2 and B3 were selected as the potential sites for biomass plants, B3 was located within the evacuation zone. In Scenario 2, S4 and S5 were selected as the potential sites for mega-solar farms. W9 and W10 were selected as the potential sites for setting up 8 wind turbines. B3 was selected as the potential site for setting up a biomass plant. See Figure 7 for RE developmental sites selection and spatial layout in Scenario 1, and Figure 8 for Scenario 2.

The results of the five evaluation criteria for Scenario 1 and 2 were summarized in Table 4. Overall, Scenario 1 costs more and generates more energy than Scenario 2. It can thus supply more houses and achieve higher CO₂ reduction level. The proposed RE facilities in Scenario 1 spatially distributed in both southern parts (Yamakiya area, evacuation zones) and northern parts (old central area) of the town, thus presents a more balancing RE spatial strategy for the whole town. This scenario can better enhance infrastructure improvement for the whole town, as well as helping with infrastructure renewal for the old central area in Kawamata town. In the planning implementation, Scenario 1 may benefit more from the

current infrastructure basis and potentials in the northern old central town, such as industrial waste heat potential, easy access to current power line and substation. Furthermore, RE facilities located in the northern town can provide clean energy for the new public houses that are close. The town could build the “zero-energy” new public houses for evacuees as one of their sustainable approaches for post-earthquake revitalization.

Scenario 2 bears unique features as well. It mainly develops the southern parts of the town, which can improve infrastructure and provide more development opportunities for evacuation zones. If the abundant wind resources in the evacuation zones are exploited appropriately (i.e. develop as wind park), the municipality may get benefits such as: electricity production, income growth, jobs creation, and local tourism boost among others. However, the visual impact (Viewshed area) of big wind turbines should be carefully considered before exploitation. In the southern parts of Kawamata town, large agriculture areas have been contaminated. To take advantages of these land, to cultivate economic plants as biomass resources can be a good alternative. Also, it provides an opportunity to develop new local agriculture, such as plant factory (greenhouse cultivation). Biomass and wind power can provide heat and electricity for both old and new houses in the southern town, new zero-energy houses and guest houses using clean energy may help with local development and sustainable lifestyle building. Thus, different from Scenario 1, in regard to planning implementation, Scenario 2 has big potentials to develop a new central in the southern parts of Kawamata town. Benefits from RE development in the evacuation zones, such as Infrastructure improvement, job creation, and green power supply among others may attract more people returning to the zone preparing for lifting off evacuation directive in Yamakiya area.

Table 4. Results comparison between Scenario 1 and 2 based on five criteria.

	Scenario	Construction Cost (JPY) ^a	Annual electricity(heat) production (Electricity selling income-JPY) ^b	Supply number of houses ^c	Viewshed – visible area (km ²)	CO ₂ reduction amount(t) ^d
Solar	1	5,100M	17,870,400 kWh (571.9M)	3,250	--	10,364.8
	2	2,640M	9,250,560 kWh (296.0M)	1,682	--	5,365.3
Wind	1	3,000M	19,272,000 kWh (424.0M)	3,504	3.94	11,177.8
	2	4,800M	30,835,200 kWh (678.4M)	5,606	6.99	17,884.4
Biomass	1	717M	55,133 GJ (367.6M)	2,785	--	8,883.2
	2	318M	24,475 GJ (163.1M)	1,236	--	3,943.5
Total	1	8,817M	37,142,400 kWh 55,133 GJ (1,363.5M)	9,539	3.94	30,425.8
	2	7,758M	40,085,760 kWh 24,475 GJ (1,137.5M)	8,524	6.99	27,193.2

^aMega-solar 300,000 JPY/kW; wind turbine 300,000JPY/kW; biomass-electricity 410,000 JPY/kW.

^bElectricity production per year= RE facility capacity*hours (8760)*energy efficiency factor(solar, 12%; wind 22%; biomass electricity 20%). The 2014 Japanese FIT price, Mega-solar, 32JPY/kWh; wind, 22JPY/kWh; biomass-electricity/heat, 24JPY/kWh.

^cAverage electricity consumption per family: about 5500kWh.

^dCO₂ reducing factor: 0.58kg/kWh (Yue and Wang, 2006).

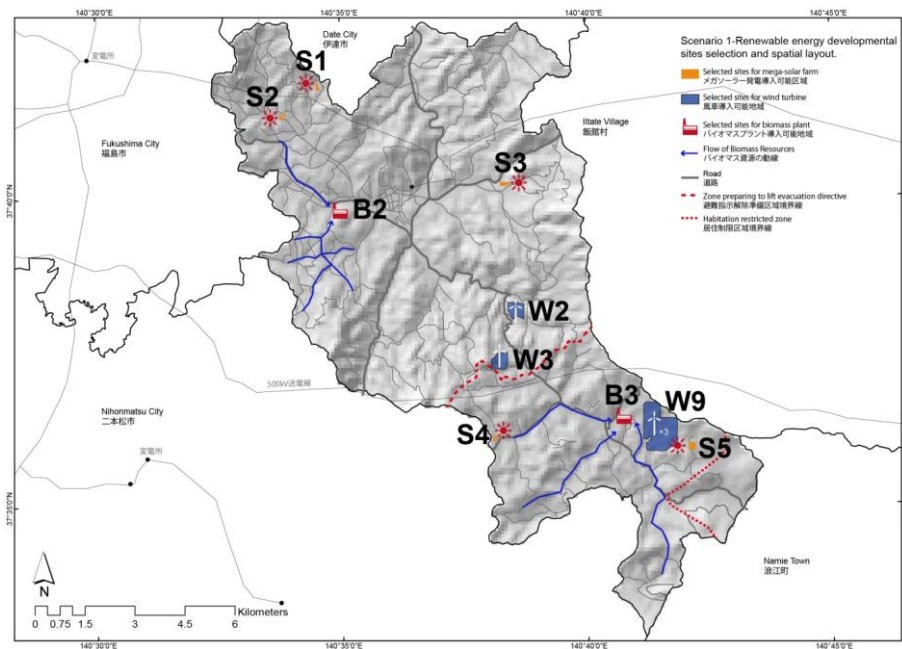


Figure 7. Scenario 1 (RE prioritized scenario)-Renewable energy development sites selection and spatial layout. (Source: by authors)

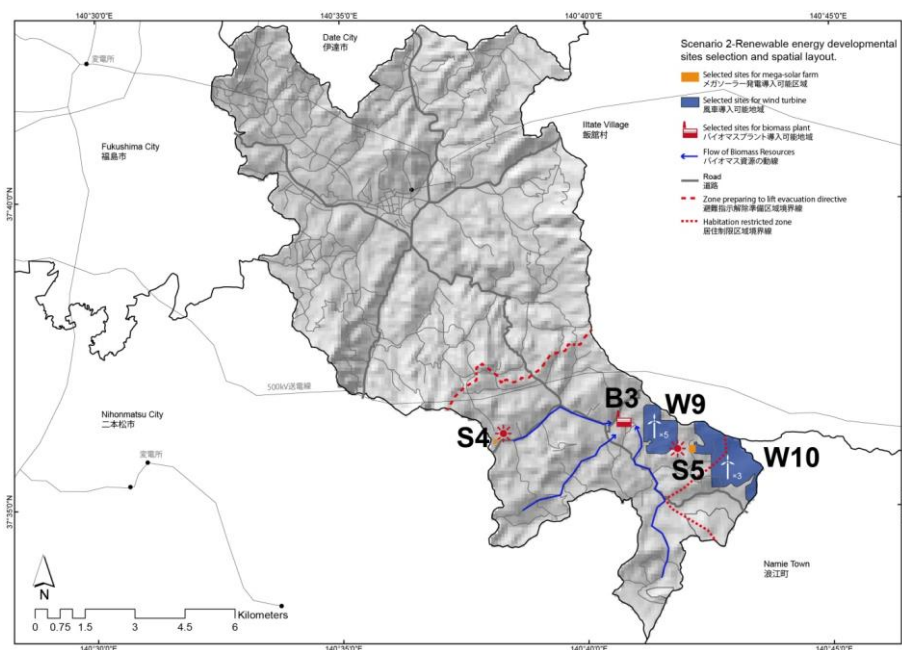


Figure 8. Scenario 2 (Evacuation zone prioritized scenario)-Renewable energy development sites selection and spatial layout. (Source: by authors)

6. Conclusion and Recommendations

The results show that GIS is an efficient tool to provide quantified and visual information on local RE potentials and its developmental alternatives at the municipal level. Theme maps and quantified data generated through the proposed approach can be used in the local RE planning process, to enhance the interactive dialogue and the feasibility of local participation within the municipality. This would facilitate a transition of municipal energy structure towards a more sustainable level. RE promotion can contribute to local sustainable development,

through jobs creation (Bergmann et al., 2006; Rio & Burguillo, 2008), environmental education (Wang et al., 2015), and agricultural revitalization (Wang et al., 2015) among others. Kawamata town and other affected municipalities may benefit from RE promotion to support post-earthquake revitalization. After the Great North Eastern Japan Earthquake (2011), Kawamata town set the principles for their future development, keynotes such as 3R (reduce, reuse, recycle), zero nuclear power, greenhouse effect mitigation, and security of energy supply in harmony with nature were proposed (Kawamata Town Government, 2014). Specifically, in regard to how to integrate the energy planning with local post-earthquake revitalization policy, the authors think the proposed RE planning can serve as one of the significant subordinate planning for “The Revitalization Plan of Kawamata Town” (Kawamata Town Government, 2014). In this plan, three keywords can be extracted from the goals for their post-earthquake revitalization: safety, job creation, and bond. Based on the above goals, several action strategies were proposed. They include: to build disaster resistant town, to promote RE, to revive local business and industry, and to foster strong children for the future among others. It is not hard to find out that RE promotion has been taken as one of the main approaches for local revitalization. Also, RE promotion can facilitate other strategies in the revitalization plan (2014) by giving contributions like safe and clean energy supply, job creation, disaster prevention and reduction, and environmental education among others. Besides, the RE planning can support the “Depopulation Smart Community Project” in the town with clean energy supply for public facilities, houses, and vehicles in the community. Exploitable solar, wind, and biomass potentials exist in Kawamata town, Japan. Within the evacuation zones, wind power resources are abundant. However, visual impact of large sized wind turbines should be paid attention to. Biomass resources should be carefully monitored due to local radiation issues. Prioritized promotion of RE in the evacuation zones may help with jobs creation and infrastructure improvement, thus attracting more people to return to the town. In addition to suggestions on RE promotion, for Kawamata town, we give further recommendation that may combine with RE promotion as integrated strategies for local sustainable development and post-earthquake revitalization as follows:

- Energy saving and waste energy re-use approaches: strengthen energy saving, re-use industrial waste heat for building/district heating among others.
- Housing development: possibilities to build new public houses (for evacuees) and guest houses as zero-energy houses.
- District heating network: to consider developing a district heating system for; new public houses, new residential areas in evacuation zone, and old central town area powered by local biomass resources.
- Agriculture survival: to import “plant factory” (indoor greenhouse vegetable cultivation technology) to respond to vegetation safety issues due to radiation. Artificial lighting energy in the greenhouses can be provided by PV panels or wind turbines.
- Local tourism: establish a wind park / RE park to cater for local tourism, and provide environmental education opportunities.
- Local citizens’ participation: citizens to invest in wind turbines, mega-solar farms, or in the local RE company established and managed by the local people.

Based on the above study and recommendations, we proposed a RE masterplan for Kawamata town, see Figure 9.

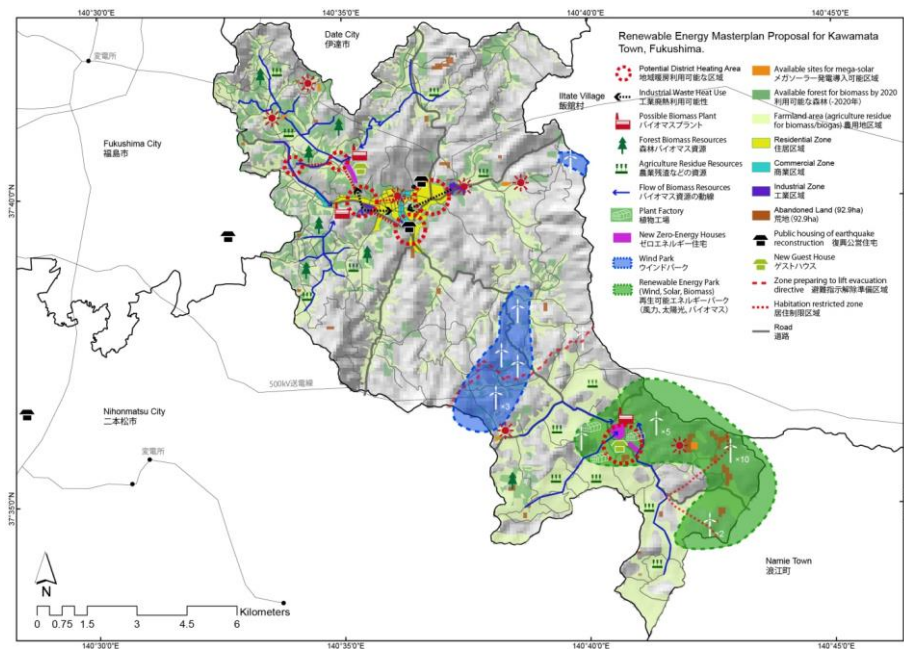


Figure 9. Renewable Energy Masterplan Proposal for Kawamata town. (Source: by authors)

Acknowledgement

The authors would like to express their gratitude to Kawamata town and Fukushima prefecture for they took time to respond to our site visits and interview. We thank all the members of Laboratory of Spatial Planning (Town and Country Planning) in the Graduate School of Horticulture, Chiba University for their advice and other inputs. Last but not least, we thank “Sichuan University Research Starting Fund for the Professionals, Theory and Practice of Planning and Design for Renewable Energy, No.YJ201512 (四川大学引进人才科研启动项目，可再生能源在规划设计领域的理论与实践，YJ201512)” for the support.

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From Passive Protection to Green Growth: the transformation of planning paradigm for Ecological Function Area in China

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Abstract

Cities in ecological area have long been confused both in green protection and local development, and the traditional planning in such area has long been difficult. Generally speaking, local economy of cities in green protection area, especially in China, mainly takes the form of traditional farming and grazing, which leads to the deterioration of the local ecological environment. With local ecological becomes more and more fragile, the ecological products supply is reduced, and then local economy is getting worse. Therefore, most cities in ecological area face a circulation of problems: local economic development relies mainly on local ecological resource, while local ecological protection needs local economic development in turn. Unfortunately, poor local financial makes it's hardly possible to solve any of these problems.

Such confusion is face by Tongyu as well. Tongyu, located in western part of songliao plain, China, is one of the eleven counties in well-kown Khorqin grassland ecological function areas. According to China's national development planning, tongyu is ecological function area, which means large scale industrialization and urbanization are forbidden there, while ecological protection is the primary goal. It is hard to solve the circulation of problems all by Tongyu County itself. On this consideration, we put forward the Ecology-Economy planning, trying to deal with the circulation problem in a bigger picture.

Firstly, the goal of Tongyu is put up from regional perspective-- the ecological and economic construction reform experimental area of khorchin national park. This regional perspective make the plan not only explores how to build an eco-economy city in Tongyu, but also how to put up new node in Horqin ecological function area, finding breakthroughs in similar ecological protection areas and new develop paths for national poverty and ecological function areas.

Secondly, this plan puts up that Tongyu should take a green-based industry in a region vision. That is to say, industry in Tongyu should be smarter, greener and more sustainable. As an ecological and an agricultural county, Tongyu should stand on ecological products supply and combine with the innovative industry development path in network era, forming a resources-products-goods converse mechanism by actively integrating into regional industry system.

Thirdly, the spatial arrangement should also be thought in a regional cooperative way. On the one hand, as one of the most important node of Horqin national park, there should be an overall arrangement of the region. On the other hand, to protect local ecology, to increase the supply of ecological products and to improve residents' standard of living at the same time, the spatial arrangement should be reasonably arranged.

Fourthly, the development policies should be thought in a regional cooperative way. There are already a series of national and provincial policies for the ecological function oriented zone, as well as lots of relative departmental policies. Carding, integrating and improving these existing policies and persisting implement -oriented to make good use of them can achieve max results with little effort for the development of Tongyu.

Keywords

Ecology-Economy development planning, Ecological Function Area, Green Growth, Spatial Governance, Action Planning, Tongyu County, Jilin Province, China

1. INTRODUCTION

The ecological area has long been facing a dilemma both in ecology protection and economic development: on the one hand, local economy mainly takes in a traditional way—farming, grazing and primary agricultural product processing, which directly leads to the deterioration of local ecology. On the other hand, however, with local ecology becoming more and more fragile, local ecological product supply keeps on reducing, and then worsen local economy in turn. Such vicious circle can be clearly observed in Tongyu province, China.

Tongyu, located in western part of songliao plain, China, is one of the eleven counties in well-kown khorgin grassland ecological function areas. According to China's national development planning, Tongyu belongs to ecological area, which means large scale of industrialization and urbanization are forbidden there, and ecological protection is this county's primary goal. The deserted land in Tongyu was 173,800 hectare in year 1989, and increased to 217,400 hectare in year 2004; at the same time, the GDP ranking of Tongyu in the whole province has also declined, and what's even worse, Tongyu has long been listed in the 100 poorest counties in China.

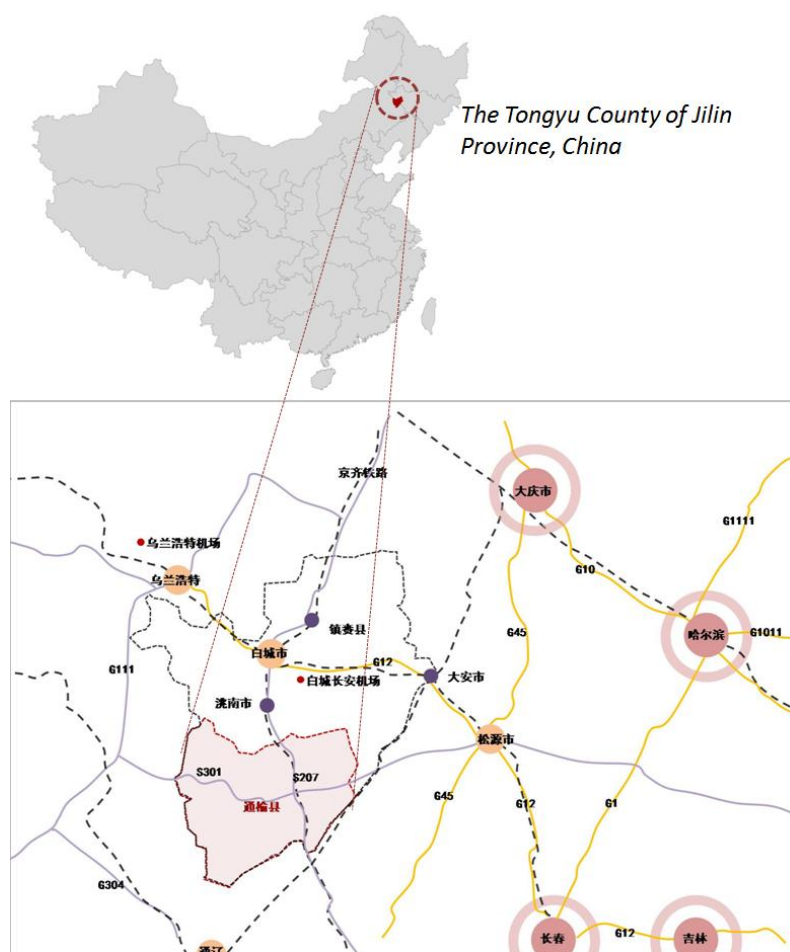
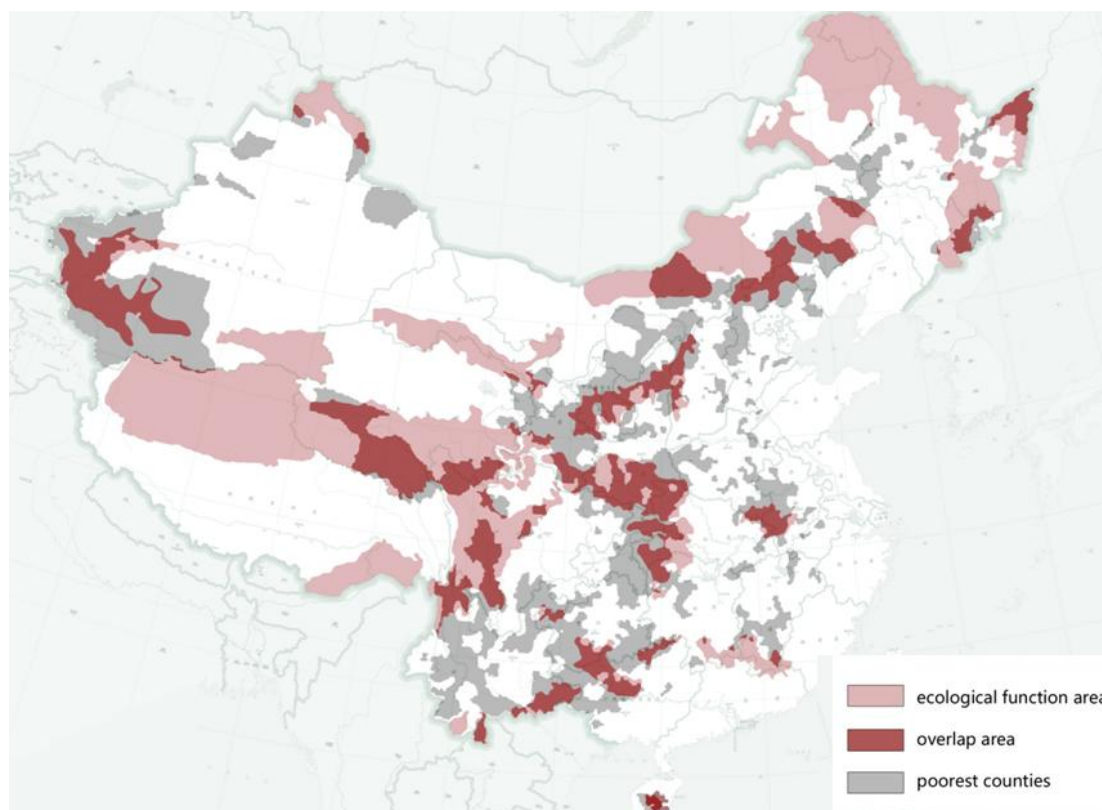


Figure 1: Project location*Figure 2: The overlap of poorest area and ecological function area in China*

Undoubtedly, the problems Tongyu has long been facing are actually faced by most ecological areas, not only in China, but also in many other developing countries as well. In these areas, none of ecology protection or economy development can be solved separately. The crucial issue here is : in order to protect local environment, local economy development must be considered at the same time.

On this consideration, we put up an innovative strategy, which emphasizes that problems of ecological area faced should be solved by the so-called ecology-economy planning. The innovative Planning method provide a fresh new perspective, which is not only spaces need to be preserved and protected, but also could be transferred into productivity. On the other hand, it coordinates with the external context, the higher and higher demand for ecological development in China today.

2. LITERATURE REVIEW

2.1 Traditional view of ecological area protection in China

Ecological area is a very sensitive word in China before. It used to be regarded as a pure science issue for a long time. For example, ecological area used to be a question of

physical geography category, or in relation to the cross-cutting issues of resources, environmental science, biology and other disciplines. On this consideration, It is easy to understand why the traditional understanding of the ecological zone only emphasis on protection rather than development.

From the perspective of system theory, most issues of the scientific scope include three levels: basic science, technological science and engineering (Qian Xuesen, 1989). Therefore, the study of traditional ecological development and ecological protection can also be divided into three levels : basic theory studies, technological science and technology application.

2.1.1 Basic Theoretical Research Progress on Ecological Area Protection

As for the theory and concept research, most scholars concern on ecosystem itself, analyzing the impact factors, and accordingly analyzing principle, types and applications of ecological protection, especially the role and status of biological factors in the ecological protection (Long Hua, 2004). According to traditional ecological theories, there are three fundamental components—producers, consumers and decomposers, and the interaction between them forming the environmental food chain (Wang Songnian, 2006). From this aspect, the theory of ecological zone protection is mainly about the judgment, intervention and even control of food chain. Of course, the essential of traditional theory is trying to solve the environmental problems from the environmental system itself (Li Mei-chi, Yanjing Song, 2009; Ding Duo, Sun Yan, 2011). This path can also be described as in the framework of sustainable development of environment utilizing Roadmap (Ma Kuang, 2006; Pengyu Dan, Li Yang, Liu Tingting, 2012).

It is well known that the quantitative geography, which reached the peak of the so-called "quantitative revolution" during 1958 to 1962 (Bruton, 1963), has caused the changing of geography research paradigm, which directly makes the transition from descriptive geography to scientific discipline, focusing mainly on generalization and the establish of theory and model. Based on traditional ecology study, many scholars uses the model of the various components to do in-depth analysis (C Andrew Day, 2009;Richard Brazier,2004;John Rodda,1980) .

2.1.2 Technological Science Research Progress on Ecological Area Protection

(1) Literature review

According to recent years' research, research on ecological protection emphasizes more on comprehensive control and ecological restoration. Li Mingchuan, who is from China's national development and reform commission, has concluded two pollutants ecological restoration methods at home and abroad from the angle of exogenous and endogenous. Exogenous pollution control method includes basin pollution of wastewater concentrated treatment, recovery and reconstruction of coastal zone ecosystem. Endogenous pollution control methods including physical, chemical, biological, ecological reinforcement, etc. (Li Mingchuan, 2007).

(2) The Progress of Phytoremediation Technology

The research and application of phytoremediation technology is relatively mature currently, which is also commonly used in green management.

Phytoremediation is an environmental pollution treatment technology which refers to patience and excessive accumulation of some plants or some chemical element theory as a foundation, using plants and microorganisms system to remove pollutants from the environment (Zhou Xiaohui, Xu Wei, grace, 2011).

For example, the mechanism of phytoremediation technology mainly includes: (1) the mechanism of purifying water environmental aquatic plant absorption and enrichment; (2) adsorption, sedimentation and filtration function of aquatic plants; (3) the inhibitory effect of aquatic plants on algae; (4) a variety of combinations of aquatic plants.

(3) The Research Progress of Animal Repair Technology

As for animal repair technology, take water environmental repair for example. Aquatic biological repair on water environment is the best way to reflect the connotation of the sustainable and ecological restoration among all kinds of technology, no matter from concept or practice. In recent years' study, especially the eutrophication of water body purification methods, mollusks is more and more outstanding. Some scholars found benthonic mollusks is very good at purifying polluted water with lower algae, organic detritus and inorganic particles. Currently, research on benthic soft bottom animal is very important in the area of water purification, water environmental pollution detection, enrichment of heavy metals, etc..

2.1.3 Technological Application Progress on Ecological Area Protection

Ecological restoration application is concentrated on components of environment, such as water bodies, air, and land. Take the protection of water for example, in recent years, many scholars and experts in China have done thorough research and engineering practice of China's major freshwater lakes. In the research of Taihu lake and river basin water environment ecological restoration, it has carried out the theory of basin system renovation. In this research, people take the basin as a whole, and all the elements of watershed system are coordinated, such as river basin flood control and waterlogged, pollution control, ecological restoration and maintain a comprehensive governance, and then it helps to promote the rational development and utilization of various resources in the basin, environmental protection and drainage basins, the sustainable development of social economy (Zhang Shuming, 2004). Furthermore, some other scholars put up other theories accordingly. Wang put forward 4 types of repair, the management protection, directly repair, hydrating repair and ecosystem replacement (Wang wen, Huang Suiliang, 2009). The ecological repair of Wenyu River, which is an important ecological corridor of northeastern of Beijing, has taken lots of new technology, such as Micro-Bac bioremediation technology, biological technology, sewage treatment technology, constructed wetland in Denmark ABFT wastewater in situ remediation technologies, in addition to the traditional ecological slope protection.

2.2 Current view of ecological area protection in China

2.2.1 The Revelation from the study comparison between Chinese and abroad

Since year 2000, the domestic study on ecological restoration grows rapidly, which can be observed from the changing of main direction of China's geography profession. Take the research on water environment from Progress in Physical Geography, UK, for example. In nearly 40 papers, there are five articles from Chinese scholars (including overseas), and which are concerning mainly on river basin water environment problem in China. The domestic research concerns more on the application and empirical research of ecological restoration, while foreign scholars focus more on quantitative research and the modeling.

2.2.2 The Technology Application Turns from Integration to Diversification

There is no doubt that the restoration of environment has been a hot issue in the field of sustainable development. Research on this direction has extended from the traditional geography category to the resources, environment, and sociology. The ecological restoration has become a multidisciplinary study area.

However, the integration of technology cannot solve many problems in real world. The solving of local environmental problem is systematic, which means we cannot just rely on technology itself, but also the whole environmental system should be taken into consideration as well.

2.2.3 Green development: considering the protection and use of local ecology simultaneously

It is well-known that Carlson, the American female author, first put forward the conception of green revolution in year 1962. Since 2000, the contradiction between environment and development is more and more serious, and the green development has been highly concerned.

Recently in China, the topic of green development is widely concerned. Hu (2012) defines green development as the coordination of economy, society and ecology, which means reasonable consumption, low consumption and low emissions. Considering from the framework of green economy, the motivation of development is not only the growth of capital or GDP, but also the ecological environment and overall human well-being (Yang Zhi, Wang Mengyou, 2010). Yang (1998) classified green technology innovation into terminal management technology innovation, green technology innovation and green product innovation (Yang faming, Lv Yan, 1998).

2.3 E2 concept

2.3.1 The development of E2 concept

The E2 concept (Ecological Economics) firstly emerge in 1960's, and its development can be divided into three stages. In the beginning stage, interest in bridging the gap between ecology and economics dates back at least to the 1960's in the work of Kenneth Boulding¹ and Herman Daly². In the establishment stage, the first formal efforts to bring

¹ Boulding, K. E. 1966. The Economics of the Coming Spaceship Earth. pp 3-14 In: H. Jarrett (Ed.) Environmental quality in a growing economy. Resources for the Future/Johns Hopkins University Press, Baltimore, MD

² Daly, H.E. 1968. On Economics as a Life Science, Journal of Political Economy 76: 392-406.

ecologists and economists together occurred in the 1980's. In 1982, Ann-Mari Jansson organized a symposium in Saltsjöbaden, Sweden on "Integrating Ecology and Economics".³ In 1987, Daly and Costanza edited an issue of *Ecological Modeling* to test the waters. A book entitled *Ecological Economics*, by Juan Martinez-Alier, was published later that year. In 1988, the International Society for Ecological Economics (ISEE) was formed and incorporated in Louisiana. After the foundation of ISEE, ecological economics has entered the development stage. Knowledge from mainstream environmental economics, resource economics and sociology gradually added in, making richer perspective in ecological economics.

2.3.2 The development of E2 concept

According to the mainstream view at present, the definition of ecological economics is within the carrying capacity range of ecological system, change production and consumption patterns using ecological economics principles and system engineering methods, tap all available resource potential, and develop economically developed and ecological efficient industries, establish reasonable and harmonious culture, as well as ecologically healthy and landscape suitable environment. Ecological economics is the economics that realize the highly unity and sustainable development of economic development and environmental protection, material civilization and spiritual civilization, natural ecology and human ecology.

Ecological economics is a kind of economic type which respects the ecological principle and economic law. With ecological environment construction and social economic development as the core, it emphasizes the integration of various elements of the economic system and the ecological system. The essence of ecological economics is to establish economic development on the basis of ecological capacity, expand economic reproduction on the premise of ensuring natural reproduction, forming intensive, efficient, persistent and healthy "social economy - natural ecology" system with optimized industrial structure, reasonable economic distribution, improving resource renewal and environmental carrying capacity, and enhanced economic power. In other words, achieve the win-win situation of economic development and ecological protection by establishing a complex ecological system with the benign circle of economic, society and nature.

2.3.3 The characteristics of E2 concept

The characteristics of ecological economics reflect in time dimension, space dimension and efficiency dimension. First, the persistence of resource utilization in time dimension. Future generations should have equal or better access of natural resources and right to survive, the contemporaries should not sacrifice the interests of future generations in exchange for their own comfort. Second, the persistence of resource utilization in space dimension. Regional resource exploitation and regional development should not damage the other region's ability to meet their needs, ecological economic requires resource and environment sharing and co-construction among different regions. Third, the efficiency of resource utilization in efficiency dimension, that is "low consumption and high efficiency"

³ Jansson, A. M. (ed.) 1984. *Integration of economy and ecology: an outlook for the eighties*. University of Stockholm Press, Stockholm.

of resource utilization. With technological progress as the support, through optimizing the allocation of resources, reducing the resource consumption and environmental costs of unit output to the most extent, in order to continuously improve the output efficiency of resource and the support capacity of social economy, to ensure resource base and environmental conditions for the sustainable economic growth.

3. METHODOLOGIES

3.1 E2- Development Concept to Governance Principle

Since 1960's, the western country's environmental protection thought has thoroughly changed. The emphasizing of local environment protection has transferred from technical and irritating means to political and preventive ones. People began to realize that the environmental problem is the result of inappropriate human activities, and in order to deal with regional environmental problems, local economic, social development must be taken into consideration as well. Therefore, the governance of ecological environment has been transformed from technical issues to government governance issues.

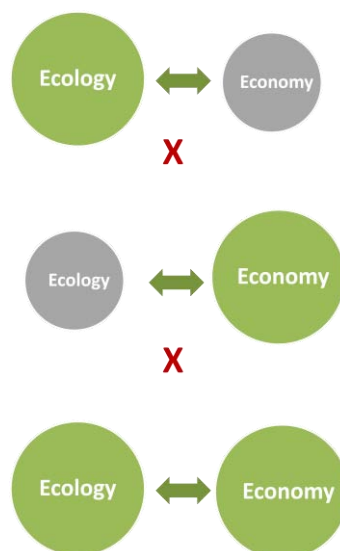


Figure 3: The Relationship between Ecology and Economy

3.2 E2 Spatial Governance- Upgrading Passive Protection to Green Growth

Based on the protection of local ecology, how to take all of the other goals together under the conception of green development? In other words, how to upgrade passive protection to green growth? By drawing lessons from UK's Local Development Framework (LDF) and other European countries' spatial plan, such as German's, we conclude that E2 spatial governance should emphasis aspects as follow:

3.2.1 Spatial governance: from local to regional

Local ecological problems, as a matter of fact, are always faced by the whole region. For example, the ecological degradation of Tongyu county is actually faced by the whole Horqin grassland. On this consideration, in order to deal with local problem, firstly and

most importantly, the whole ecological region should be taken into consideration. That is to say, the regional goal and policies of ecology and economic should be put forward firstly, and then followed local goal and policies, and which should be coordinated with the regional ones. Only by doing this, can local goals and policies be really put into practice.

3.2.2 Spatial Planning: coordinating ecology and economics

Coordination is a hot topic of urban planning in China today, and the most important problem of coordination is the relationship between local development and environmental protection. Therefore, spatial planning is proposed to coordinate ecological protection and local development. Spatial planning is the arrangement of spatial strategy and spatial structure, which aims at by appropriate arranging where economy activities occur and strictly defining ecological protection areas, to prevent ecological environment destruction. In other words, spatial planning aims at preventing ecological destruction rather than passive governance environment.

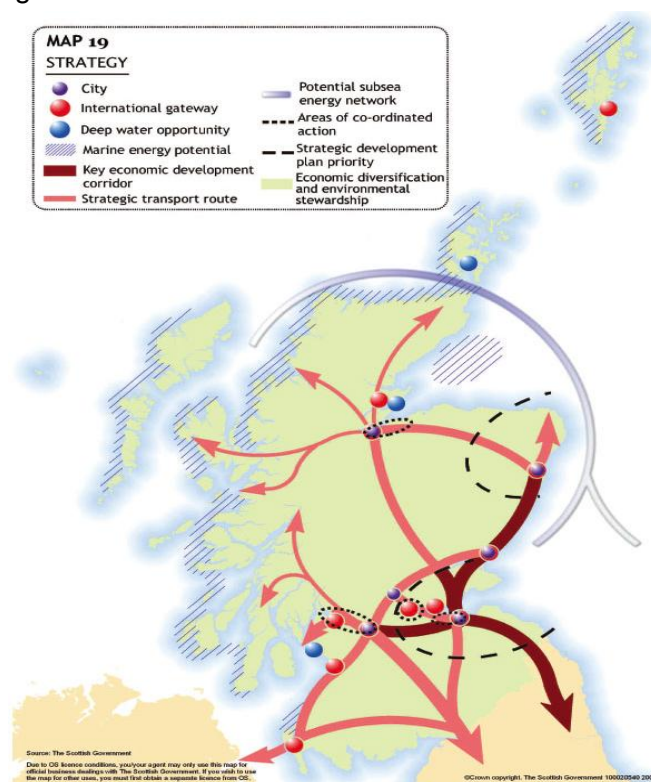


Figure 4: UK's Regional Spatial Strategy

3.2.3 Action Plan: take all the stakeholders into consideration

The theory of action plan has wide applications in urban planning system in the UK and the US after 2000. In particular, the planning system reform of the UK took place regarding the importance of action plan. From 2001, the Single Local Development Framework (LDF) had begun to replace the traditional structure planning and local planning. When adopted, the Framework together with the Regional Spatial Strategy will

form the statutory Development Plan for this area⁴. Action Area Plan (AAPs) was proposed as a part of LDF focusing on specific areas that needs construction or transformation recently. The connection between physical planning and social economic development planning was emphasized. AAP is a practical, manageable and flexible document, which is not a blueprint for development, but rather a guidance to show how the Council wants to see its objectives implemented⁵. According to the actual situation, AAP can either be compiled independently or be added to the existing planning, in order to reflect the local situation without the unnecessary duplication of work.

Action plan was also implemented as component of urban planning in major cities in the US. Some were reflected in the comprehensive planning of the city such as 'PlaNYC 2030: A Greener, Greater New York', it proposed 127 initiatives specifically in ten areas of interest: Housing and Neighborhoods; Parks and Public Spaces; Brownfields; Waterways; Water Supply; Transportation; Energy; Air Quality; Solid Waste; and Climate Change⁶. Some builds upon the area plan such as 'Chicago Central Area Action Plan 2009-2010', it contains information intended to encourage the implementation of policies and projects essential for the Central Area's effective functioning, growth and quality of life⁷.

As for the E2 planning, local government and entrepreneur are both the key to the implementation of local plan. Therefore, it is important to take consideration of them at the same time. First, the local government should play a role as coordinator. Government should represent public to apply support from upper government in the strategic or large actions, for example, environment protection and regional infrastructure construction. Moreover, government also needs to coordinate the enterprise and local residents. It should set up a good communication channel between private and public sectors. Second, large enterprise in ecological function area should play a leading role in action plan as a regional level. Comparing to government's poor financial condition, large enterprise in ecological function area usually involved into local construction actively. Actually, they could also share the benefit from its contribution in future.

4. EMPIRICAL RESULTS

4.1 The Dilemma of Passive Ecology Protection in Tongyu: A vicious problem-circle

As other cities in ecological area, Tongyu has long been facing a vicious problem circle: 1. the primary productive activities bring environmental degradation; 2. The fragile local ecology and non-appropriate productive activities further cause the reducing of ecological product supply; 3. the insufficiency of product supply due to poor government financial,

⁴Millbay and Stonehouse Area Action Plan 2006-2021, Plymouth City Council Department of Development, 2010

⁵City Centre and University Area Action Plan 2006-2021, Plymouth City Council Department of Development, 2010

⁶PlaNYC 2030: A Greener, Greater New York, New York City, 2007

⁷Chicago Central Area Action Plan 2009-2020, Chicago Plan Commission, 2009

the lagging of people's livelihood, and the lagging behind construction of municipal infrastructure; 4. all of these then hindered local economy.

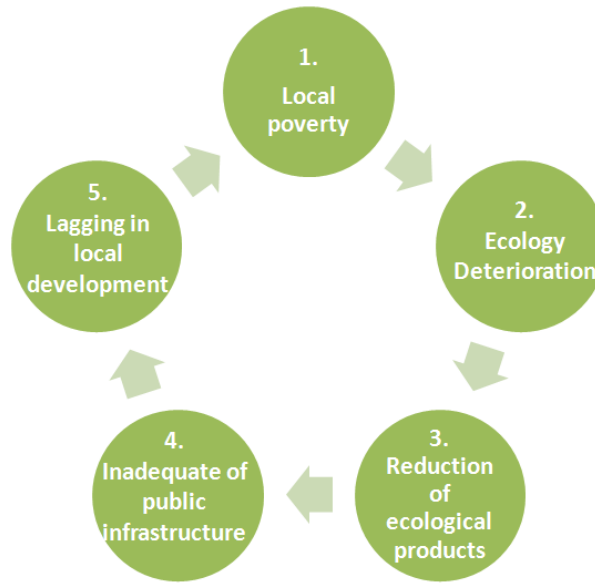


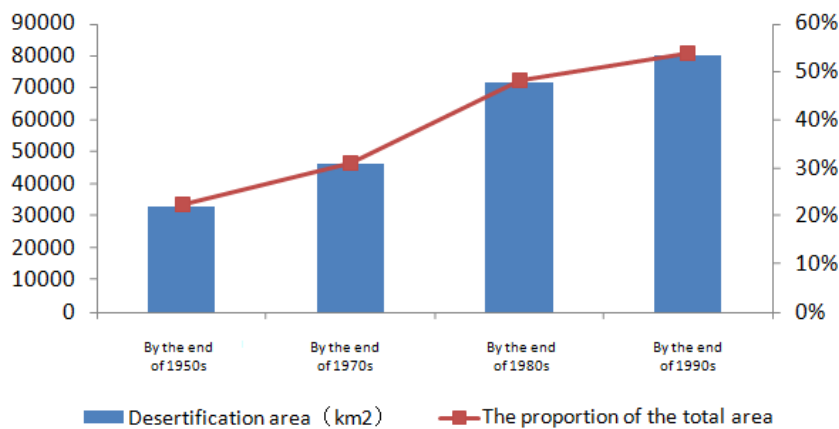
Figure 5: Problem circle of Tongyu County

4.1.1 The primary productive activities bring environmental degradation

In the past decades, the economy in Tongyu mainly takes the form of traditional farming and grazing. The primary productive activities directly due to the environmental degradation. From year 2009 to year 2012, The per capita ecological footprint in Tongyu has increased from 2.03 hectare to 3.15 hectare.

4.1.2 The fragile local ecology and non-appropriate productive activities further cause the reducing of ecological product supply

Tongyu, as an important component of Korchin grassland, was among China’s national ecological function area, which means ecological protection is the county’s primary goal. However, although plenty of effort and financial allocation have been put in, local ecology still keeps on deteriorating in the past decades. For example, the grassland has decreased from 56% in 1958 to 13.3% in 2013.



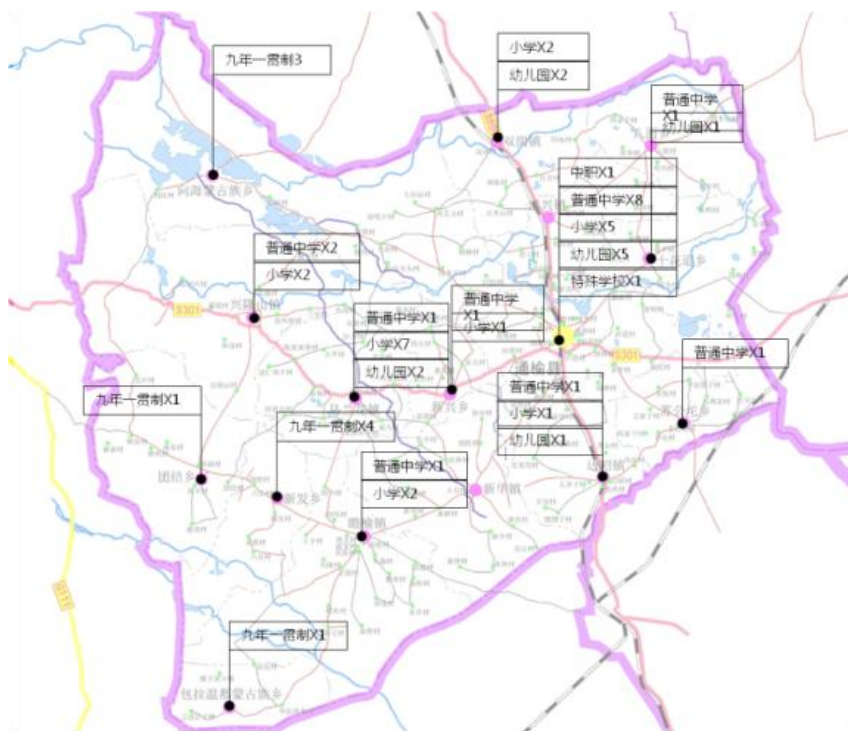


Figure 8: Current distribution of educational facilities of Tongyu County Region

4.2 Method Innovation: E2 (Ecology-Economy) Spatial Governance

As stated in the former part, there is a vicious problem-circle of ecology and economy in Tongyu, and none of them could be solved separately. On this consideration, we put up an E2 (Ecology-Economy) planning method, which emphasizes on turning the traditional negative protection of local ecology to green growth, tackling local problems in a comprehensive way.

4.2.1 E2: from negative protection to green growth

To deal with the problem-circle in Tongyu, the goal of local development should be comprehensive, that is to say, based on the protection of local ecology, all of the other goals should be thought together under the conception of green growth.

4.2.2 Spatial Governance: from local to regional

As a matter of fact, the challenges Tongyu are facing now are universal in Khorchin Region and Northeast Region. To solve the planning problems of Tongyu, it is important to take the whole Khorchin Region and Northeast Region into consideration.

4.2.3 Spatial Governance: Action plan and Coordinated Policies

The traditional planning is ideal blueprint planning, although some attention has been paid to short-term planning implementation, there is still no effective planning implementation focus or effective connection between overall vision and action plan. Therefore, some methods are proposed for this planning: implement the planning gradually by pre-control and step-by-step implementation; strengthen the core

planning structure by step-by-step proposal of strategic projects and short-term implementation projects; build consensus rationally by resonant statements of current idea, practice and appeal; find the balance between long-term blueprint and short-term reality by effectively define planning implementation focus; create effective connection between the government and the market by necessary policy and mechanism innovation.

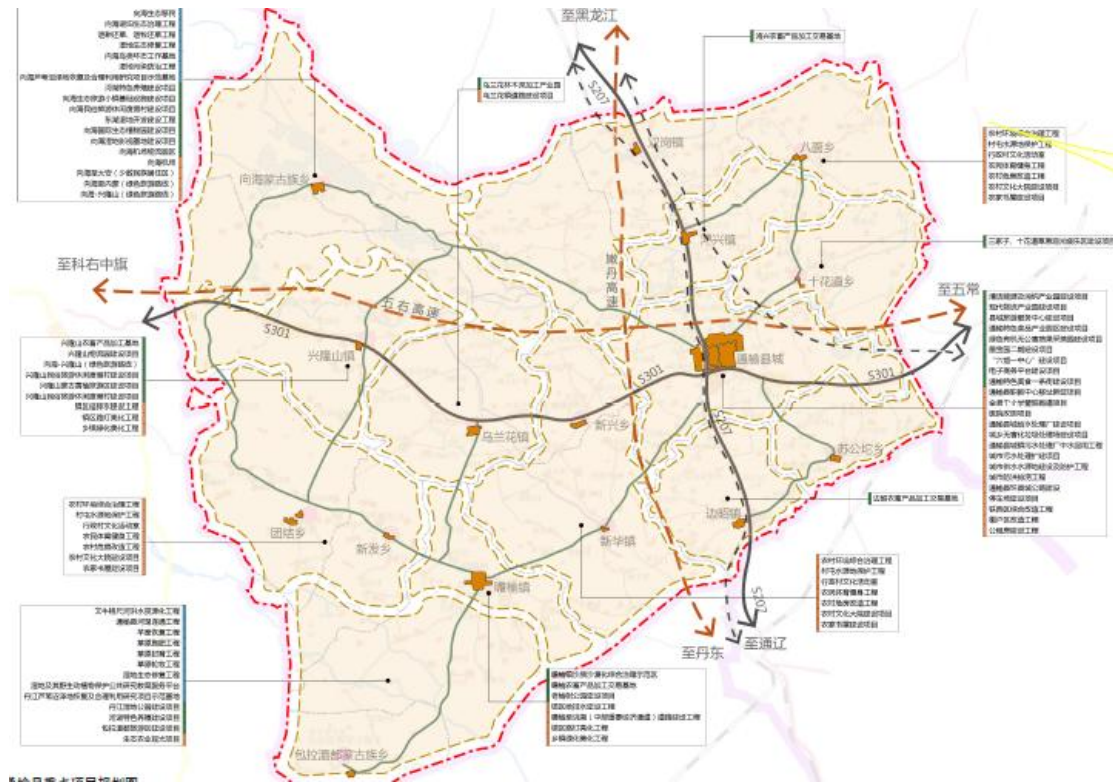


Figure 3: Action Plan of Tongyu

4.3 Conclusion System: The Tongyu Development Plan

4.3.1 Regional development: goal-space-strategy-policy

Based on high-quality resources such as Xianghai wetland and Baolawendu wetland as well as three existing national nature reserves, linking Xing'an League on the north and Chifeng on the south, take the advantage of regional combination, improve the ecological integrity of the regional ecological system, establish manage system focusing on ecological protection, improve the infrastructure in the region, and establish Khorchin National Park. Provide adequate protection for natural resources, historical resources and wildlife resources from being destroyed, maintain the integrity of the ecosystem for contemporary human and later generations.

Regard current national nature reserves and scenic areas of 4A and above level in Khorchin ecological functional region as key protection zone, provide rational planning and coordinate development, make detailed regulations to restrict and guide the behaviors and activities of visitors, in order to minimize their impact on the environmental

resources; besides, strengthen the management and maintenance of good scenery areas in the region, forming large area of buffer zone, moderately develop supporting construction projects; Create several ecological tourist town outside the buffer zone, increase tourist reception capacity and improve tourism service facilities.

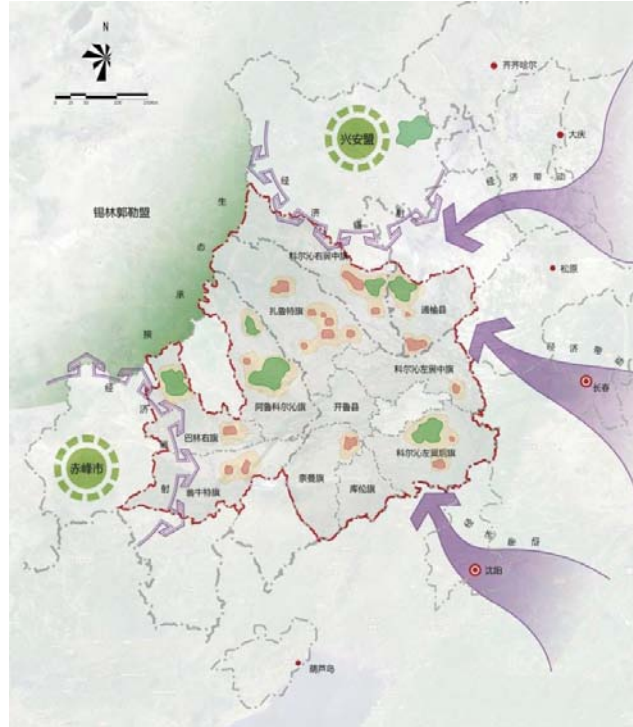


Figure 4: Comprehensive spatial distribution of Khorchin region

Carry on unified management of the National Park and surrounding areas, specify management division. Strictly distinguish development and construction, facilities, and open degree of different regions, develop differentiated development strategies and planning schemes according to different protection requirements, at the same time build regional cooperation framework. The primary task of the core area is to keep the pure ecological origin, the scale of facilities is strictly controlled; the government provide as much support as possible to infrastructure construction of the buffer zone and the surrounding ecological tourist town , improving the social development level of the region.

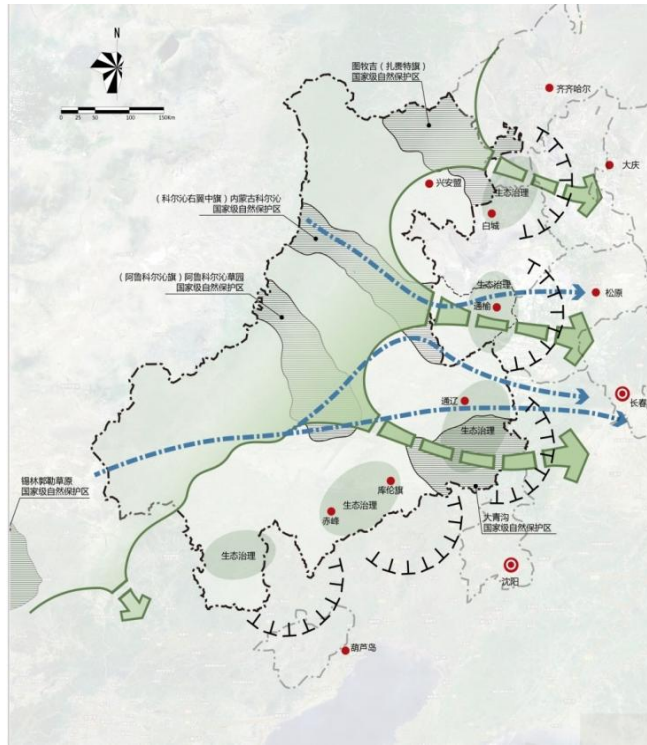


Figure 5: Regional ecosystem structure



Figure 6: Regional ecological supply

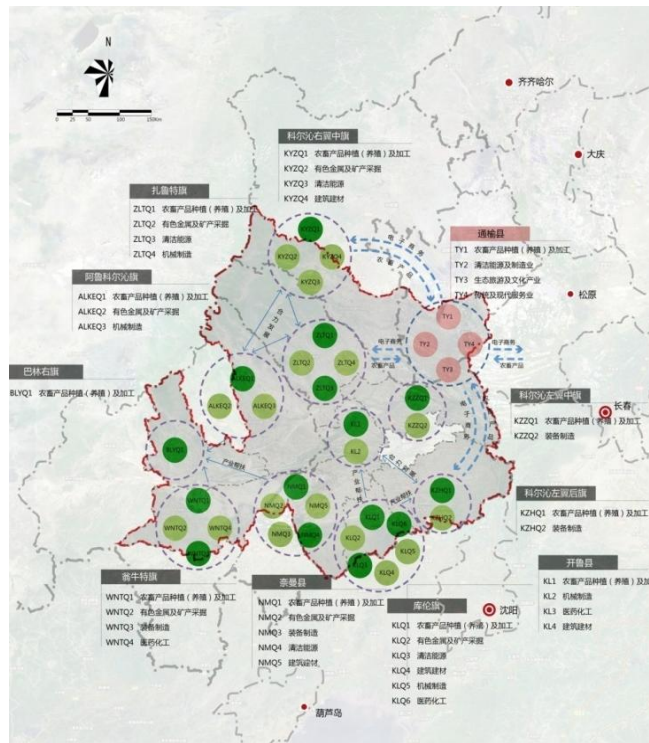


Figure 7: Regional product economy

Set up regional (Khorchin National Park) county magistrate joint conference. Straighten out the management system of Khorchin National Park. Establish special cooperation mechanism for regional industry, ecological environment management, etc. First, establish cross-regional cooperation mechanism for industries such as tourism, agricultural and animal products, etc., promoting regional economic development from competition to cooperation, and speeding up the brand marketing of Khorchin National Park as a whole; second, based on current ecological base and river corridors, promote cross-regional governance for ecological corridors such as river system, achieving regional coordination for sandy land control.

4.3.2 County development: Goal-space-strategy-policy

The County development goal is: ecological-economic construction reform experimental zone of Khorchin National Main Functional Region (Khorchin National Park).

Table 1: Main index in 2020 and 2030 of Tongyu

Main index		2020	2030
Ecosystem health	Air quality	The national level standard	The national level standard
	Quality of drinking water source	Within a class of standard	Within a class of standard
	Quality of surface water environment	Within two levels of standard	Within two levels of standard

	Disposal rate of harmless disposal of urban garbage	95%	100%
Supply of ecological products	Forest coverage	22%	28%
	Grassland area accounted for the proportion of the county	18%	25%
	Water area accounted for the proportion of the county	4%	6%
Economic growth	GDP(hundred million yuan)	310	660
	GDP Growth rate	10.2%	8.5%
	Per capita GDP(ten thousand yuan)	8.4	17.4
	Industry structure	16:49:35	14:44:42
Social livelihood development	Population(ten thousand)	40	43
	The rate of Urbanization	52%	60%
	Urban unemployment rate	3%	2%
	The farmers' per capita income(ten thousand yuan)	1.5	3
	Disposable income of urban residents	3	6
	Participation rate of new cooperative medical insurance in rural areas	100%	100%

The comprehensive space structure of Tongyu County is: One centre, multiple nodes, three corridors and seven clusters. One centre is central urban area, which is political, economic, and cultural centre of the county; multiple nodes are 15 villages and towns except for Kaitong Town; three corridors are two water ecological corridors based on Huolin River and Wenniugechi River and one forest ecological corridor along Ke-tie Railway, these three ecological corridors form the ecological structure framework. Seven clusters are complex ecological cluster.

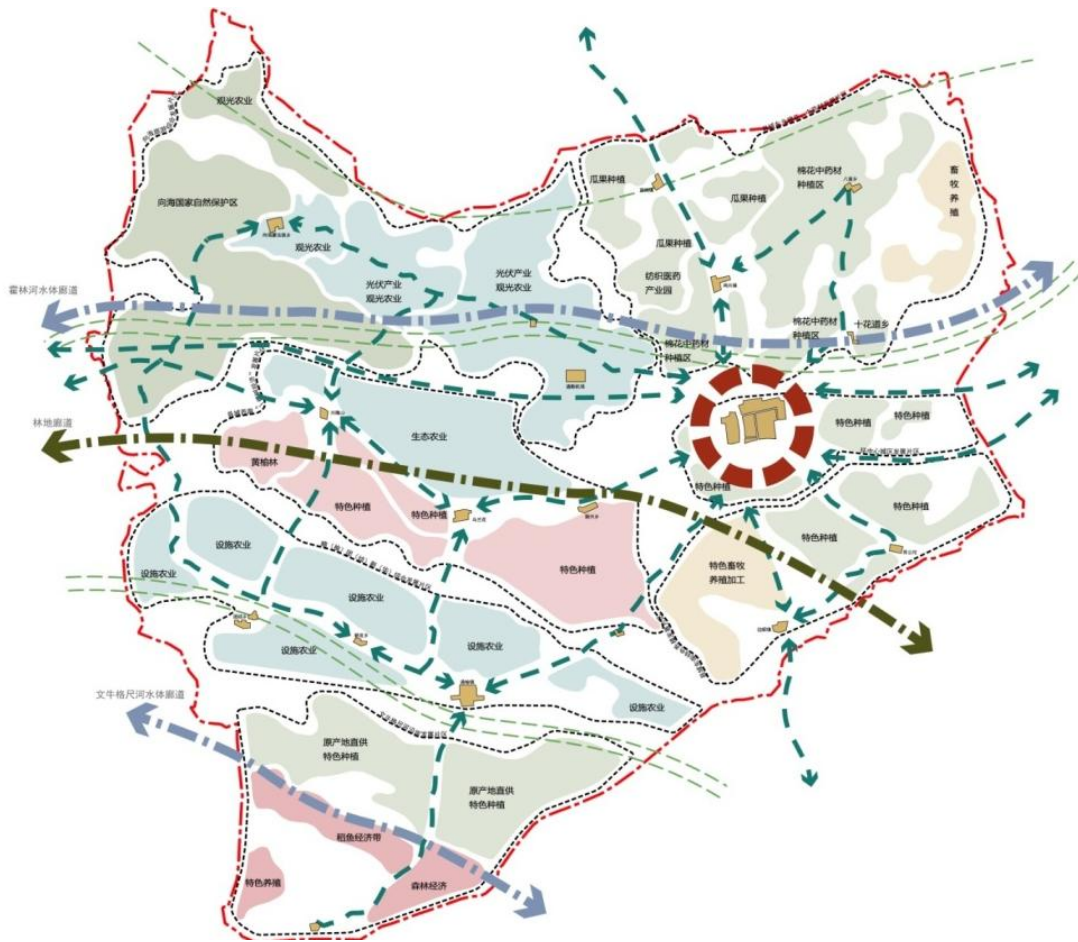


Figure 14: Comprehensive spatial structure of Tongyu County

For ecosystem, enhance ecological service function. The comprehensive ecological structure is three corridors and three districts; with symbiosis among different nodes. Besides, establish pan-ecosystem including core area and conservation area.

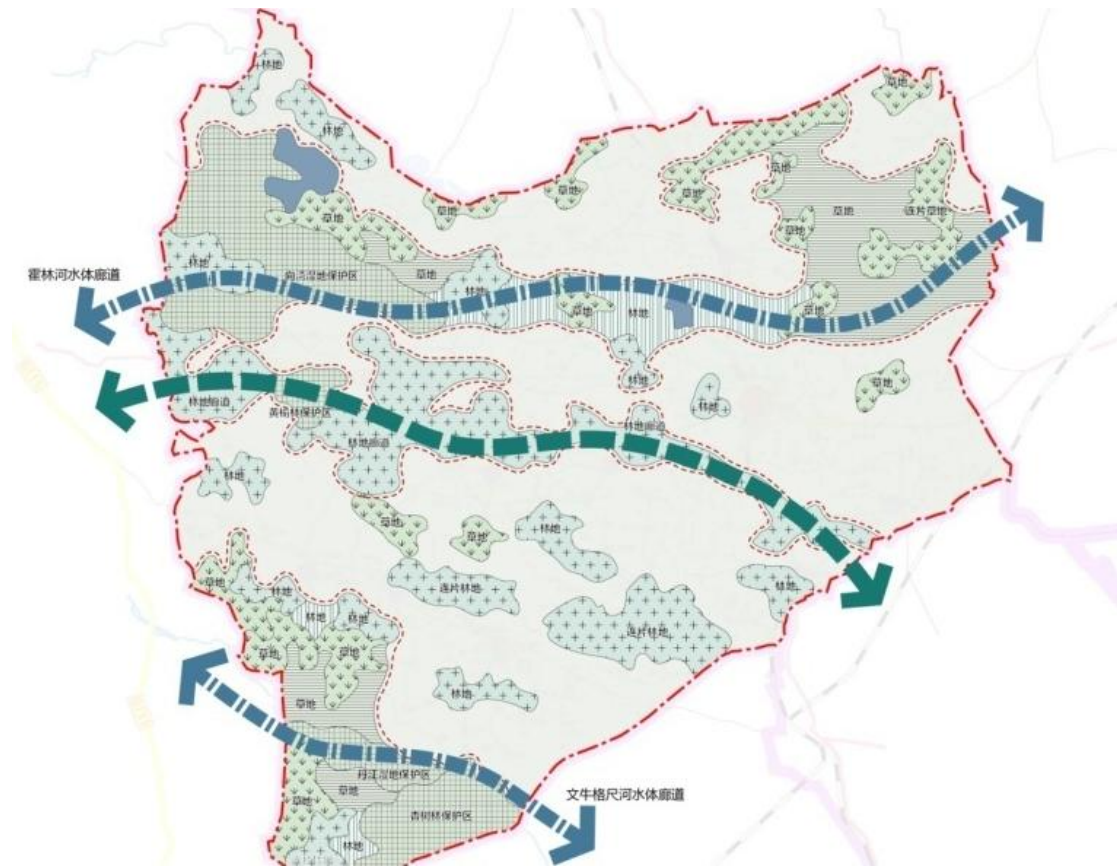


Figure 8 Ecosystem structure of the county

For ecological products, improve ecological product supply. First, improve ecological product supply by restoration, governance and conservation; second, implement ecological product authentication plan; third, strengthen the support with the construction of Tongyu raw material base. Fourth, cancel the relevant wind curtailment power limiting policy of Tongyu; check and approve the remaining index for incorporating power to the grid.

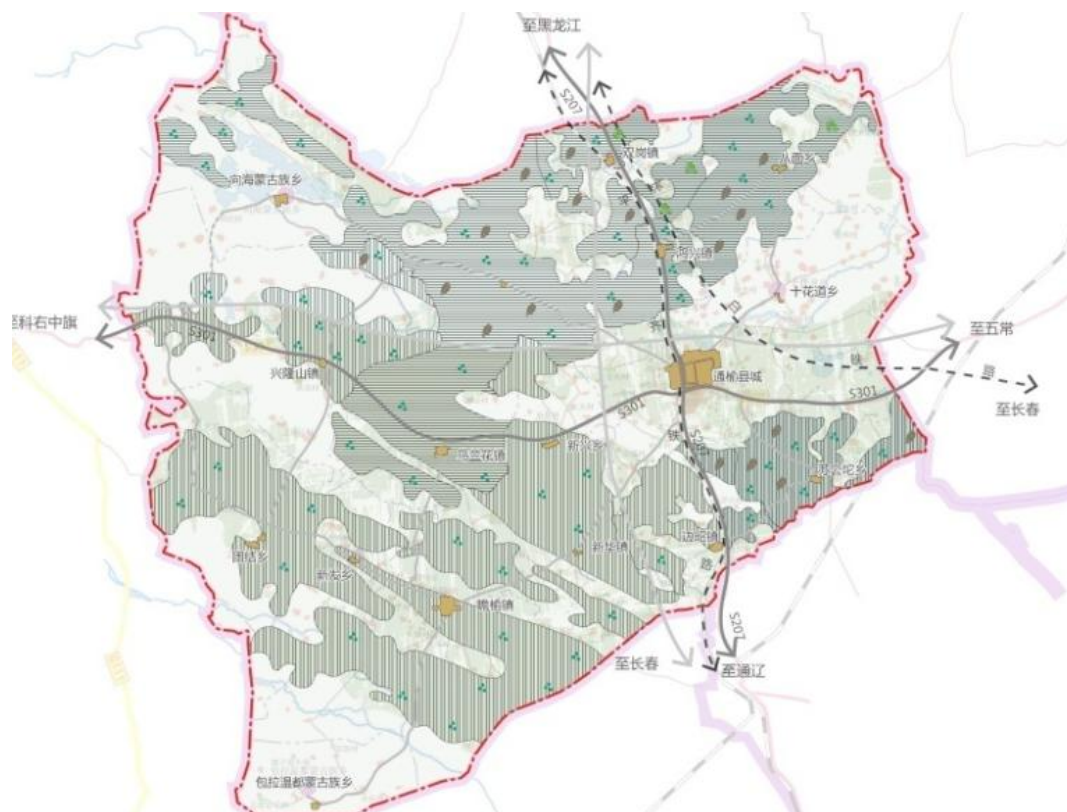


Figure 16: Agricultural ecological product supply planning

For product economy, develop ecological economy. First, accelerate the construction of green agricultural products base: green agricultural product cultivation base, green livestock and aquatic product cultural base, agricultural and animal products processing and trading base; second, recommend low carbon industrial park development: Clean energy and absorption industrial park, woods deep processing industrial park, textile and pharmaceutical industrial park; third, encourage new service industry development: e-Commerce, modern logistics, modern tourism, cultural industry.

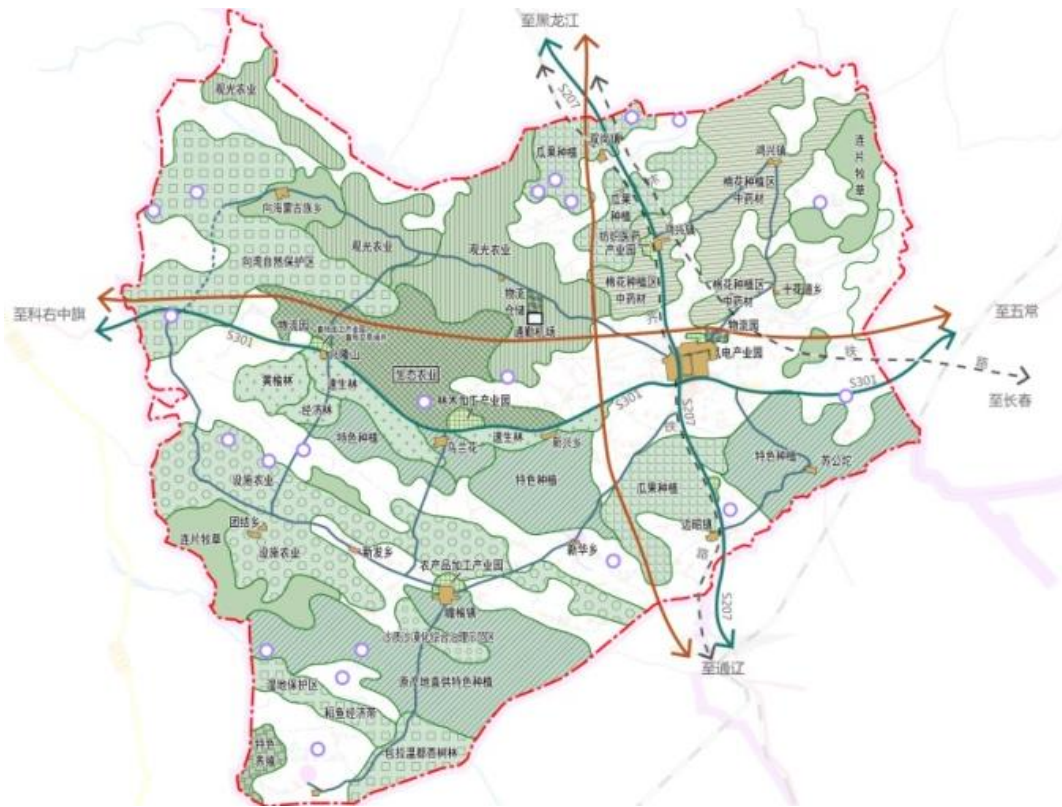


Figure 17: Product economy structure planning of the county

Fourth, for society, improve social service for people’s livelihood. Speed up the reform of education, complete the basic health care system, improve the transport system of the region and the county, and integrate the construction of municipal public facilities.



Figure 18: Public service facility planning of the county

Policies for county development are: strengthen industrial support; actively explore trading systems for land circulation, carbon sink, etc.; establish Tongyu policy development area; innovate area evaluation mechanism; and strive for earmarked subsidy funds.

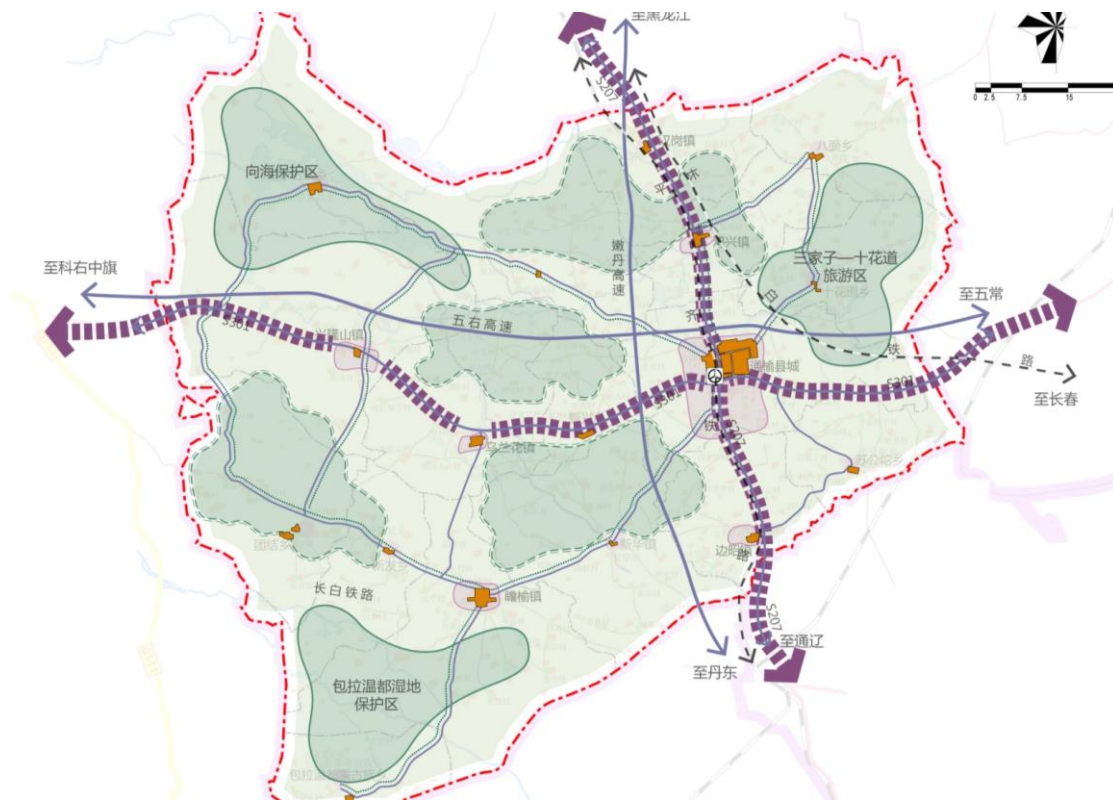


Figure 19: Policy district planning of the county

4.3.3 Action Plan: implement strategic blueprint and policy system

Through the implementation of three major projects (“comprehensive regulation projects for ecological conservation and restoration”, “steadily promotion projects for characteristic ecological economy” and “expansion and improvement projects for people's livelihood”), promote the sustainable development and green revitalization of Tongyu.

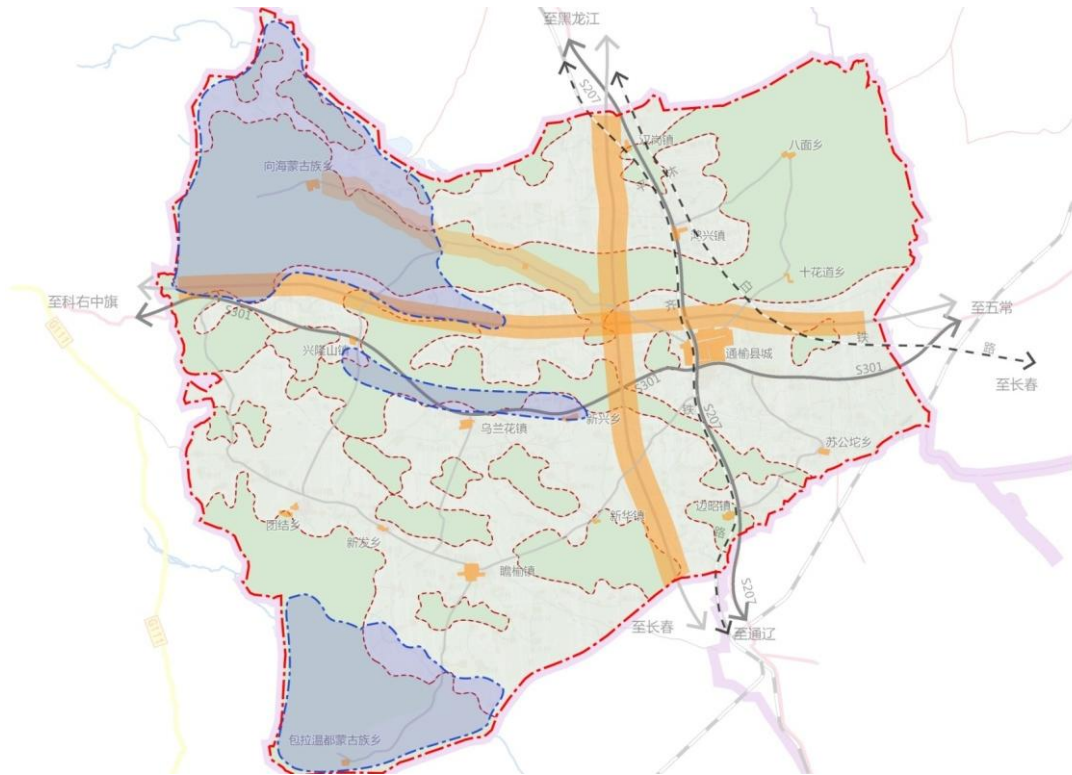


Figure 20: Short-term project implementation plan

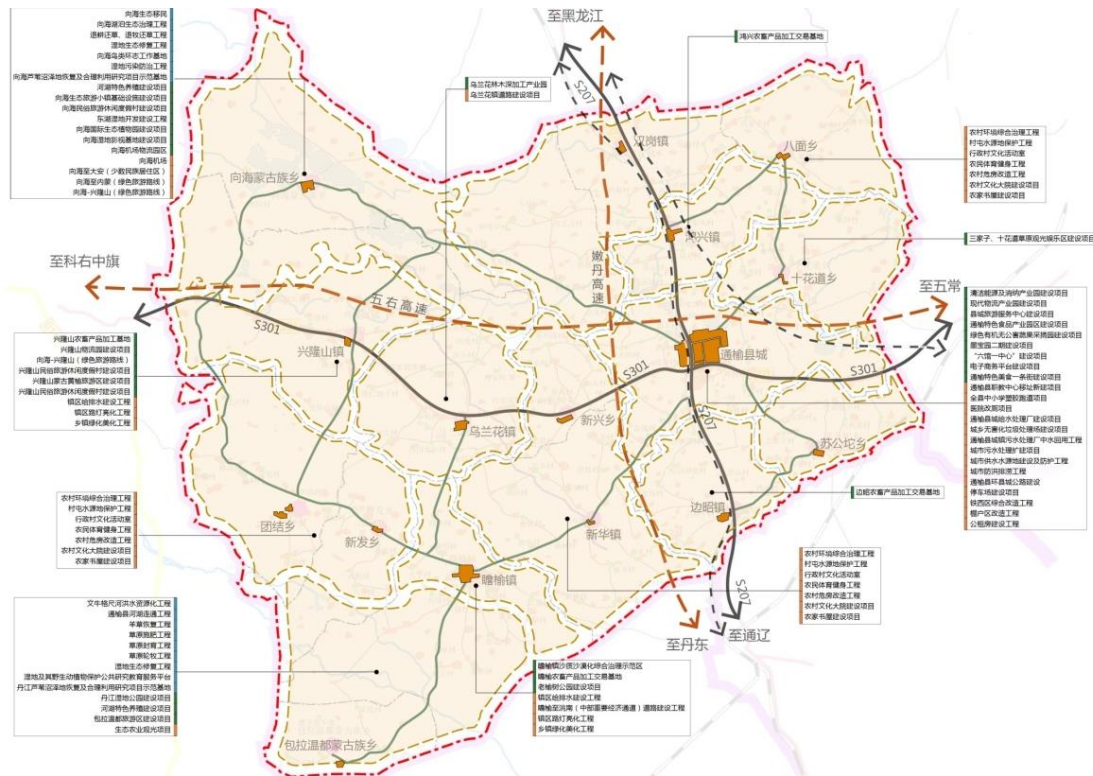


Figure 21: Key project plan

5 Discussions and Conclusions

5.1 Urban Ecology Protection: Not Contradict with Other Goals

As analyzed before, ecology problem cannot be solved by concerning ecology itself. Instead, other goals such as economy development should be taken into consideration at the same time. This plan has put up a “E2” strategy, trying to solve local problems circles within the same framework.

5.2 The Key of Urban Ecology Protection: within the County Itself

This plan put up that the key to solve developing and protection problems of Tongyu is within the county itself rather than outside. That is to say, once coordinate the relationship between ecology and economy, the problem circle could be well solved.

5.3 Space Perspective

Spatial planning is proposed in this plan as the carrier to coordinate ecology and economy. Furthermore, other local problems such as Inadequacy of public infrastructure are also tackled in a spatial perspective.

3.4 Provide a Practice Planning Method for Developing Areas

Undoubtedly, the problems Tongyu has long been facing are actually faced by many areas, not only in China, but also in many other developing countries, especially in Asia and Africa. The E2 spatial Governance method is somehow illuminate for these areas.

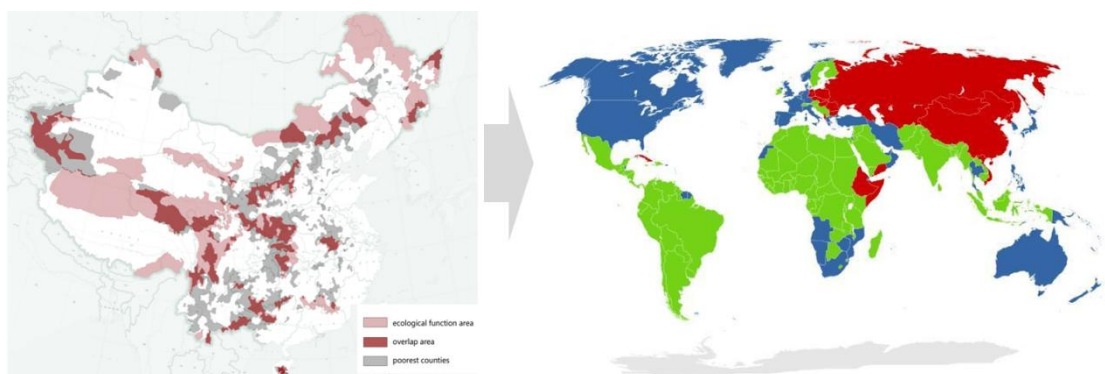


Figure 22: Other undeveloped counties worldwide: facing the same problem of Tongyu

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Optimum Population Capacity Forecast Based on Ecological Footprint Analysis : A Case Study of Xi'an

(Optimum Population Capacity Forecast)

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Abstract

Sustainable urban development will realized through the coordinated of the urban population, resources, environment, economic and social subsystems. Population capacity study has become one of the most practical problems. Therefore, the prediction of the optimum population capacity is critical to sustainable urban development. For the purposes of ecological balance and sustainable urban development, this paper used the ecological footprint model to calculate the optimum population capacity of Xi'an. Research data was taken from the "Xi'an Statistical Yearbook (2002)." Ecological footprint model was used to measure and compare the relationship between human activities and natural ecological carrying capacity. The result calculated by the method of ecological footprint show that the per capita ecological footprint of Xi'an is 0.99 hm²/person in 2001, the per capita ecological carrying capacity of only 0.13 hm²/person, then the ecological footprint will be 7.62 times of the ecological carrying capacity. In conclusion, these result shows that people's production and life has caused an unbalance in Xi'an on ecosystems. It is imperative to control the population size of Xi'an properly.

Key words

Ecological Footprint Model; Ecological Carrying Capacity; Optimum Population Capacity; Xi'an

Population plays an important role in regional sustainable development. In a certain level of economic development and resources possession, the population size is too large to hinder regional economic development, while reducing the amount of per capita resources, is not conducive to the coordinated development of population, economy, resources and environment. Therefore, in a certain social and economic context, considering the resources binding to explore the region's most appropriate population size, and studying the regional appropriate population, is an unavoidable realistic problem. Especially from the 1950s, the world's population has entered an unprecedented pattern of rapid growth, which leading to a series of ecological, social and economic problems, such as food shortages, lack of resources, environmental pollution, economic recession and other threats to the development of the world, especially in the developing countries. Since then, the study of population size and moderate population continues to appear, which from abroad to domestic, demographer, environmentalists, economists, sociologists have also been given great attention. However, the existing research on the moderate population capacity has the problem of broad definition,

hybrid methods, research focused varied^[1], which leading the existing research on the issue of population size has not been generally recognized. In this paper, the author summarizes and reviews the definition of appropriate population, and introduces the ecological footprint model to estimate the appropriate population size. The ecological footprint model is complete the research from the perspective of ecological footprint, ecological carrying capacity and ecological deficit. This paper also combines the actual case, using the statistical data of Xi'an city in 2001, using the ecological footprint model to calculate the moderate population of Xi'an city. Finally, the article puts forward strategic suggestions to reduce the gap between the actual population and the moderate population, on the basis of the coordination between the population development and resource environment.

1 Concept

1.1 Optimum Population

1.1.1 Population Capacity

The study on population capacity has a long history. But only the last few decades, the population capacity has been proposed as a scientific concept. The study of population capacity in china, the concept of population capacity is not unified. Some use the definition of the international organization, some of these definitions has to be transformed. Some definitions are more complex, while others are simply stated. There are two main definitions: firstly, the world's capacity for human beings to maintain the size of the world's population, which is based on the long-term stability of the world. The definition means that resources should be tread as a determinant of population capacity. Secondly, the United Nations Educational, scientific and cultural organization's definition is that a country or region in the foreseeable period, the use of the land and other natural resources, intelligence, technology and other conditions, in order to ensure that the material living standards of social and cultural norms, can continue to support the number of people.

Recently, some scholars from the perspective of sustainable development attempts to explore the optimal population ^[3]. Regional optimal population has been proposed as the most favorable conditions for the sustainable development of the region to achieve population objectives and requirements (including the number of population, population growth, population structure, population quality, population distribution and other conditions). The optimal population under the sustainable development is an extension of moderate population, but in the concept of sustainable development, the moderate population can not be purely for economic growth, but also to sustainable development of human. Therefore, the measure of whether the population is appropriate or not, should be measured in terms of whether it is the most conducive to sustainable development.

1.1.2 Relationship of population carrying capacity and optimum population

Population carrying capacity refers to the largest population may supported by the land which has the certain net productivity and consumption structure, equivalent to the grassland carrying capacity, and population carrying capacity is refers to the combination product of the carrying capacity and the social and economic factors. "Population carrying capacity and population migration," a book that the population capacity, resource carrying capacity, land carrying capacity is the concept of mutual distinction and unified [3]. Resources carrying capacity is the capacity of the environment. Land carrying capacity is a special case of the resources carrying capacity and the difference between them is that land carrying capacity emphasis the land resources in the natural resources. The core of land carrying capacity is that under the constraints of the natural, social and economic, the output of food in a certain region can feed how many people. On the relationship between population capacity and population carrying capacity, the author believes that population capacity have specific meaning, and population carrying capacity is the generic name, any population as the main body, resources, environment and economy as the object, and corresponding population carrying capacity, such as population capacity, environmental population capacity, economic optimum population, resource carrying capacity, land carrying capacity are collectively referred to as the population carrying capacity.

According to the general understanding, the population capacity is the largest population, which is the most of the resources and the environment can carrying in a region, which means the highest population. The appropriate population is the most appropriate population under some conditions, that is, the optimal population. If the consumption level is set to a desired value, the population size will be equivalent to a moderate population at a time when the population size is determined. Therefore, the population capacity and moderate population in the concept is different, but under certain conditions, they can also be converted into each other. Moderate population can also be said to be a certain sense of the population capacity.

2. Ecological Footprint

Since the 1980s, Chinese scholars have carried on many discussions on the theory of population capacity, but also have a lot of practical research on China's population capacity. These studies can be divided into the study of national population capacity and the study of regional population capacity, and the content can be divided into individual resources (land resources, forest resources, fresh water resources, mineral resources, etc.), the comprehensive carrying capacity of resources and environment, and the system research of population carrying capacity, etc. Most of the research is focused on the appropriate population size by analysis the carrying capacity of individual resources, this paper introduces the ecological footprint model to explore the appropriate population size [4,5], from the perspective of the balance of the comprehensive carrying capacity of resource and environment and population carrying capacity.

The concept of ecological footprint was first proposed by Professor Rees (William E Rees) of the Columbia University in Great Britain, and after his doctoral Maths Wackernage has been improved it. It mainly refers to the ecological area occupied by a certain level of consumption

of the population ^[6]. The model is a method of quantitative analysis, which translated the utilization of resources and environment into the amount of land and water area, and then translated into the amount of productive land area needed to supply the resources and absorb the wastes. Because of all kinds of land can not coexist in the geographical space, according to their different productivity, all kinds of consumption of the resource and energy can be converted into farmland, grassland, woodland, construction land, fossil fuel land and water area of these six kinds of biological productive land area type. The sum of these six kinds of biological production area is the entire area of ecological footprint.

Then, according to the theory and concept of ecological footprint, the specific steps of regional ecological footprint calculation: dividing the main consumption items and calculating the amount of these items; using the average output data, converting the consumption into biological productive land area; converting the biological productive land area into the equivalent productive land area; finally, Summarizing and summing up the size of the ecological footprint. The formula is:

$$EF = N \times ef = N \times \sum Y_i (aa_i) = N \times \sum (C_i / P_i)$$

EF is the total ecological footprint (hm²); N is the the population; ef is the capita ecological footprint (hm²); i is the category of consumer goods; aa_i is the per capita land area of biologically productive land area translated by i commodities (hm²); Y_i is the yield factor; P_i is the world average production capacity of i consumer goods (kg / hm²); C_i is the per capita consumption of i commodities (kg).

3. Xi'an ecological footprint

3.1 The consumption of ecological footprint in Xi'an

Xi'an is located in the Guanzhong plain area. It is not only the central city in Northwest China, but also the highest degree of industrialization and urbanization area, which has high population density. Xi'an City jurisdiction over 10 districts, 4 counties. The total area is 11053 square kilometers, of which the urban area is 3782 square kilometers, the construction of urban area is about 600 square kilometers. The permanent residents is 6.95 million (by the end of 2009), of which the urban population 5.65 million. With the sustained development and rapid growth of economy in recent years, the total amount of resource consumption and waste emissions in Xi'an is growing. However, the ecological environment of northwest China is fragile, and thus the ecological pressure is growing and tremendous.

Based on the foregoing calculation steps, according to the data is acquired from "Xi'an Statistical Yearbook (2002)," we calculated the ecological footprint of Xi'an. On the division of consumer items, human production and consumption divided into two parts, which is biological resources consumption and energy consumption. Biological resources can be divided

agricultural products, animal products, fruit and timber, etc. Energy consumption is mainly involved in the following categories: coal, coke, fuel oil, crude oil, gasoline, diesel fuel and electricity. When converting the energy into the fossil fuel production land area, using the world's average calorific value of the unit fossil fuel production land area as the standard, the heat consumption of local energy consumption translated into a certain amount of fossil fuels land area.

According to the calculation formula of the ecological footprint, the results of the biological resources and energy consumption convert into the amount of biologically productive land area are shown in Table 1 and table 2.

Table 1 The ecological footprint of biological resource consumption in Xi'an (2001)

Resource Type	Average production (kg)	Total consumption (t)	The total ecological footprint (hm ²)	Per capita ecological footprint (hm ²)	Land types
Food	2744	884929.4	322496.141	0.0464	Arable land
Edible Oil	431	48836.6	11309.890	0.0163	Arable land
Tofu	1500	39497.8	26331.890	0.0038	Arable land
Wine	13720	29290.0	2134.837	0.0003	Arable land
vegetables	18000	561723.6	31206.868	0.0045	Arable land
Pork	74	61741.3	834341.883	0.1201	Arable land
Fruits	6000	300792.6	50132.095	0.0072	Arable land
Eggs	400	56314.0	140784.886	0.0203	Arable land
Sugar	4997	10783.2	2157.933	0.0003	Arable land
Red meat	33	10100.9	372607.590	0.0367	Lawn
Meat poultry	764	34600.8	45288.952	0.0065	Lawn
Milk	502	56862.6	113272.197	0.0163	Lawn
Wood	2	1686.2	847348.085	0.1220	Woodland
Kernels	1059	16549.6	15627.576	0.0023	Woodland
Aquatic	29	7434.4	256359.979	0.0369	Waters

Note: In the table, the estimates of wood is based on the new added of urban and rural furniture in each year; the caculation of the consumption of urban residents is based on the number of urban residents; The aquatic is calculated in accordance with cutlass fish daily consumption.

Table 2 Xi'an ecological footprint per capita (2001)

Fuel Type	Consumption	Energy conversion coefficient	Total per capita consumption	Global average energy footprint	Xi'an per capita energy footprint	Production land types
Raw coal	3291184	20.9075	.4736628	55	0.180057	Fossil-fuel
Washed coal	410475	26.3430	0.0590750	55	0.028295	Fossil fuel
Coke	66600	28.4329	0.009585	55	0.004955	Fossil fuel
Crude	615754	41.8151	0.0886185	93	0.039845	Fossil fuel

Gasoline	-14532	43.0679	-0.002091	93	-0.000969	Fossil fuel
Kerosene	9511	43.0679	0.0013688	93	0.000634	Fossil fuel
Diesel fuel	-15846	42.6493	-0.002281	93	-0.001046	Fossil fuel
Fuel oil	8486	41.8154	0.0012213	71	0.000719	Fossil fuel
Liquefied petroleum gas	100521	50.1776	0.0144669	71	0.010224	Fossil fuel
Natural gas	26460	37.2373	0.0038081	93	0.001525	Fossil fuel
Other fuels	1563	41.8151	0.0002249	93	0.000101	Fossil fuel
Electric power	3069820	11.8251	0.4418044	1000	0.005224	Building land
Heat	6955922	0.99869	1.001087	71	0.014081	Fossil fuel

Note:

1. The unit of power is 104 kw/h, the unit of heat is "106 kJ", the unit of other fuel "t";
2. Gasoline, diesel oils contain their consumption, and therefore deductible.

Because of the per unit biological production capacity vary widely between arable land, fossil fuel land, grassland, woodland, the biological productive land area should be corrected and converted into an equivalent productive land area, through introducing the equilibrium factor. To sum up the data of Xi'an's biological resources and energy consumption, and the equilibrium factors was selected from the world's Ecological Footprint Calculation Research report. Meanwhile, taking into account the conservation of biological diversity, when calculating the ecological footprint, 12 percent of biodiversity conservation area should be deducted.

Table 3 The factors of ecological footprint

Land types	Equilibrium factor	Yield factor
Arable land	2.8	1.66
Woodland	1.1	0.87
Lawn	0.5	0.92
Inland waters	0.2	1.00
Building land	2.8	1.66
Ecological Greenbelt	1.1	0.00

Note: The equilibrium factor was selected from the world's Ecological Footprint Calculation Research report, the yield factor is given according to the actual situation.

Table 4 The per capita consumption of ecological footprint in Xi'an (2001)

Land types	Per capita consumption of total area	Balanced area
Woodland	0.1740	0.1914
Arable land	0.2549	0.7138
Lawn	0.0949	0.0474
Waters	0.0429	0.0086
Ecological Grassland	0.2784	0.3063
Building area	0.0052	0.0146
The total ecological footprint	0.9815	1.2820

3.2 Ecological carrying capacity in Xi'an

Ecological carrying capacity (EC) reflect the carrying capacity of all types of land, which consists of six land types: farmland, grassland, forest, water, construction sites and fossil fuels. The ecological carrying capacity was caculated by multiplied the area of these six types land and the corresponding yield factor and equivalence factor. Yield factor represents the ratio of the average productivity of a type of land for one country or region and the average productivity of these type of land for the world.

Ecological carrying capacity is calculated as follows:

$$EC = N * \sum ec = N * \sum A_j R_j Y_j; (j = 1, 2, 3, 4, 5, 6);$$

EC is the the region's total ecological footprint, (hm²); N is the population; ec is the per capita ecological carrying capacity, (hm²); A_j, the actual per capita possession of the j biologically productive land area, (hm²) ; R_j is equilibrium factor; Y_j is the yield factor. Taking into account the conservation of biodiversity, 12% of biodiversity conservation area has been deducted in the calculation of the ecological footprint.

Table 5 per capita ecological carrying capacity in Xi'an

Land types	Per capita consumption of total area	Balanced area
Woodland	0.0601	0.0523
Arable land	0.0414	0.0688
Lawn	0.0019	0.0017
Waters	0.0046	0.0046
Co2 absorption	0.0000	0.0000
Building area	0.0132	0.0220
The total supply area		1.2820
Biodiversity Conservation		0.1494
The total ecological carrying capacity		0.0179

Note: the per capita ecological footprint is 0.1314 when deducting 12% of biodiversity conservation area.

3.3 Ecological profit and loss in Xi'an

Ecological profit and loss is the difference between the ecological carrying capacity and ecological footprint, used the EDR represented. The formula is:

$$EDR = edr * N;$$

$$EDR = EC - EF;$$

EDR is the ecological profit and loss (ghm²); N is the number of population; edr is the per

capita ecological profit and loss (ghm²/p); EC is the ecological carrying capacity (ghm²); EF is the ecological footprint (ghm²).

The ecological footprint is more than the ecological carrying capacity, that is, the ecological deficit. Ecological deficit indicating that the production and consumption activities for one country or region has exceeded the scope of ecology can carry. Table 4 shows that the per capita ecological footprint of Xi'an is 0.99 hm²/person in 2001, however, the per capita ecological carrying capacity is only 0.13hm²/person seen from Table5. Therefore, the ecological deficit is 0.86 hm²/person in Xi'an. Because other research methods differ in classification and calculation, the results of this study are in discrepancy with the results of the relevant research. But these data can still explain that people's production and life has caused the imbalance of the ecological system in Xi'an city in a certain extent, so the appropriate control of population size is imperative.

4. Optimum Population in Xi'an

The ecological footprint model judges whether the local development is sustainable, and whether the production and consumption activities in this region are coordinate with the local ecological system, through comparing the local biological resources and energy consumption with the ecological carrying capacity of the local area. If the ecological carrying capacity is less than the ecological footprint, ecological deficit appeared indicates that the ecological system in the region can not meet the ecological needs of the current economic activities and the model of regional development is in a relatively unsustainable state. If the ecological carrying capacity is larger than the ecological footprint, it indicates that the ecological system can meet the needs of the current economic activities, the regional development model is in a relatively sustainable state.

The so-called moderate population, generally refers to the number of the optimal population can be supported for one region in a certain range of objectives and conditions. Its size is not only determined by the balance between the regional natural economic carrying capacity and the regional population. We should also analysis the appropriate population size from the perspective of maintain the stability of the ecological system and ensure the sustainable use of natural resources, that is, the ecological moderate population has begun to become a research hotspot. It helps to understand the dependence on the natural system, and to coordinate the relationship between economic development and the protection of ecological system, so as to ensure the sustainable development of human beings.

In the calculation of population carrying capacity, the ecological carrying capacity represents the resources and environment conditions the region has been offered, the ecological footprint on behalf of the consumption levels of the population. Within the ecological carrying capacity, the optimum population of certain areas, it can be said that sustainable population capacity of a region. It may be formulated as follows:

$$P = N \times EC / EF$$

P is the optimum population of the region; EC is the per capita ecological carrying capacity which is actually used, EF is the per capita ecological footprint, N is the current population.

The total population of Xi'an is 6.95 million in 2001, the per capita ecological footprint of Xi'an is 0.99 hm²/person, the per capita ecological carrying capacity of only 0.13 hm²/person. After calculated, it can come to the ecological modest population is 0.91 million people in Xi'an.

5. Discussion

From the perspective of resource consumption, environmental protection and ecological balance, through calculated, the per capita ecological footprint of Xi'an is 0.99 hm²/person in 2001, the per capita ecological carrying capacity of only 0.13 hm²/ person, their ecological deficit is 0.85 hm²/person, total population of 6.95 million, a ecological modest population is 0.92 million. The ecological development of Xi'an has a deficit, people's production and life has caused some degree of imbalance in the ecosystem of the city. Population capacity is one of the most practical problems in urban sustainable development research, which can not ignore. This paper mainly from the perspective of the ecological system to consider the current population of Xi'an has exceeded the Xi'an's moderate population, which requires us to pay more attention to the development of economic and ecological system in Xi'an and its future development.

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ISOCARP
Knowledge for better Cities

MAASTRICHT

How to overcome national borders?



THE CONVIVIAL REGION IN THE WORLD

Wassey Bacharyar DeCoBa France

1 . INTRODUTION , Regional offices of Isocarp and regional areas in the world :

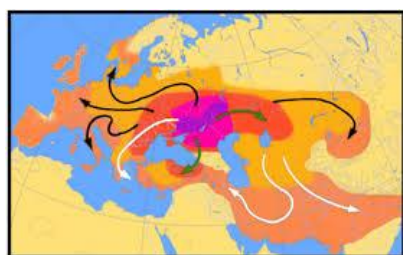
The International Society of City and Regional Planners (ISOCARP) has no regional office in the world, everything is centralized from its headquarters in The Hague in Holland. The Convivial Regions approach may apply in other countries of Europe and the world and it could lead to a division of the world in convivial regions. Such a study was decided at a meeting of the International Association of Planners (ISOCARP) in Paris following the World Congress of the Isocarp in Istanbul on 2008. The result of this study is as summarized in this report and requires further study

The division of the world into 15 convivial regions is obtained by considering all the structures of international organizations as a first step acquired in the direction of a peaceful agreement and multilateral cooperation between countries. In some areas of the world do not yet exist an international regional organization, proposals have been made to end the complete convivial regions in the world.

2. JUSTIFICATIN , CASE STUDY :

REGION OF CAFTA, Central Asian Free Trade Agreement :

If we look at the map of the expansion of Indo European peoples, we find that the west 25 countries in the European Union is well established. However for the same historical reasons, geographical, cultural and economic, the Union 9 countries in eastern Indo-European world, a need that is proposed in this report to start their cooperation initially under the name of CAFTA Central Asian Free Trade Agreement. CAFTA is composed of three countries of the former CENTO dissolved in 1979, 5 countries of the former USSR and Afghanistan This region is one of 15 convivial region of the world which lies in west of Central Asia. It is also the birthplace of one of the oldest civilizations, the territory of the Indo-European peoples that their languages have the same origin



The peoples of Indo-European

Pact of Cento, 5 Republics of former USSR

CAFTA 9 COUNTRIES

Central Asian Free Trade Agreement CAFTA :

COUNTRY	AREA	POPULATION	DENSITY	GOUNERN	RELIGION	LANGUAGE	CAPITALS	GDP2012
1- AFGHANISTAN	650 000 Km ²	31 108 077	48	REPUBLIC	ISLAM	DARI, PASHTOO	KABOUL	19 910
2 -IRAN	1 648 000	79 853 900	48	REP	ISLAM	PERSAN	TEHERAN	548 900
3- KAZAKHISTAN	2 717 000	17 736 896	7	REP	ISLAM	KAZAKHI	ASTANA	196 400
4- KIRGHISTAN	198 000	5 548 042	28	REP	ISLAM	KIRGHIZI	BASKIK	6 473
5- OUZBEKISTAN	447 000	28 661 637	64	REP	ISLAM	OUZBEKI	TASHKAND	51 170
6- PAKISTAN	804 000	193 238 868	240	REP	ISLAM	ORDU	ISLAMABAD	231 900
7- TADJIKISTAN	143 000	7 910 041	55	REP	ISLAM	TADJIKI	DOSHANBE	7 592
8- TURMENISTAN	488 000	5 113 040	10	REP	ISLAM	TURKMENI	ESHKABAD	33 668
9- TURKEY	781 000	79 749 461	102	REP	ISLAM	TURKI	ANKARA	794 500

CAFTA (ORIENT)	8 874 000	448 919 962	67	UNION REP	ISLAM PERSAN , TURKI à DEFINIR	1 890 513
SAARC (INDE)	3 686 018	1 463 530 377	397	REP	BOUDHISME ORDU DELHI	1 890 000
USA	9 600 000	319668 500	33	UNITED . S	CHRETIENS ANGLAIS Washington	15 680 000
UE	4 380 000	503 663 600	115	Europe Union	CHRETIENS F et A BRUXELLES	16 360 000

3. THE CONVIVIAL REGIONS IN THE WORLD :

Regions as decentralized territories exist in France and worldwide at the end of each government can better exercise its power locally and run a number of its projects more effectively. The administrative divisions of the regions are the work of the central government of a country but they do not often reach the satisfaction of citizens in each region due to lack of resources. A new concept in the region is emerging: the friendly regions. This new conception of the region is a desire of people who want to participate actively in the progress and development of their region. Friendly region is defined in terms of the historical cultural, geographical, and socio-economic development of a region could exceed the current limits of the region and would be more extensive. Thus, according to our research division metropolitan French regions will increase from 22 to 13 which could have more economic impact by reducing budget too inefficient and costly administrative structures. This new division of 13 regions, I proposed to the Prime Minister of France for its implementation. Which fortunately is being done.

In a democracy there is no 100% in favour of a proposal or a particular political view, but from a broad participation and full consultation with local residents, the success of a large majority participatory willingness of people are better served in a friendly Region Today people like to present themselves as Alsatian, Breton, Corsican ... then as French. Later, a day will come when people will arise as citizens of the great friendly regions like American, European, African, Asian and Australian (north, south, east and west).

The 193 countries that make up the political division of the world of small and large sizes often in a forced choice. Some of these countries have a subsistence economy and other economies has great power. However, the differences between people in different countries will increase in the coming years. There is still time to think about a new division of the world in friendly regions for a better choice of existence and participation of people in the world to their economic and social development for better living together on this unique land. There are currently 243 countries and territories worldwide, including 193 independent countries are represented at the UN.

- 1 - NAFTA North American Free Trade Agreement ,
- 2 - CAP Central American Parliament and CARICOM Caribbean Community ,
- 3 - MERCOSUR Southern Common Market3 - MERCOSUR Southern Common Market ,
- 4 - The South American Andean Com Trade Pact ,
- 5 - EU European Union ,
- 6 - THE Arab Union Arab Maghreb Union Arab League AMU, GCC Gulf Cooperation Council ,
- 7 - ECOCWAS The Economic community of Central West African States, ECOWAS CEMAC ,
- 8 - The IGAD Intergovernmental Authority with on Development (Eastern Africa) ,
- 9 - The SADC Southern African Development Community ,
- 10 - CIS UME of Independent States ,
- 11 - ECSC Central East of Asia Cooperation, Shanghai Cooperation Organization SHCO ,
- 12 - CAFTA Central Asian Free Trade Agreement or Ariana Union ,
- 13 - SAARC South Asian Association for Regional Cooperation ,
- 14 - ASEAN Association of Southeast Asian Nations ,
- 15 - PIF Pacific Islands Forum ,

Number of 15 Convivial Regions could be more or less according to the detailed studies

Names of the Region	Population	Area	Density
1 - NAFTA	646 476 539	21 572 965	22.09
2 - CAP	106 052 432	972 169	109.08
3 - MERCOSUR	295 770 009	13 189 297	22.43
4 - ASEAN	96 151 475	3 932 301	24.45
5 - EU	533 900 700	5 239 593	101.89
6 - ARAB LEAGUE	393 108 938	13 798 113	28.49
7 - ECOWAS-CEMAC	201 508 430	7 175 627	28.08
8 - IGAD	192 941 250	2 124 902	90.80
9 - SADC	297 720 010	9 878 582	30.13
10 - COM	10 176 041	38 017 490	10.06
11- ECSC	1 624 015 700	11 774 200	137.93
12 - CAFTA	435 399 550	7 874 069	55.30
13 - SAARC	1 463 530 377	3 686 018	397.05
14 - ASEAN	613 967 830	4 474 885	137.20
15 - PACIFIC	34 319 460	8 420 005	4.08
TOTAL	6 940 415 900	131 612 886	52.73

On the population of 7 090 547 397 inhabitants in the world in 2013 there are 150 131 353 inhabitants or 2.1% smaller countries linked to the economies of larger neighbouring countries

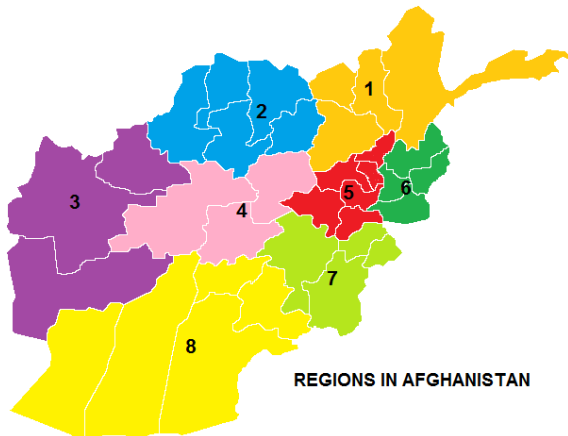
4. THE EXPECTED RESULTS, PEACE IN THE WORLD

The region is the favourite space of the citizens of the world to become identified some with regard to the others. This space limits itself sometimes inside a country and sometimes widened in several countries to establish the big regions of the world. The regional development has often more efficiency than a development at the national level, but doubtless the town and country planning basing itself on the harmony and the coordination of the development of the various regions would be the best strategy of development of a country. The man in every case is the craftsman, and master of his works. As the man is mortal on this earth, his work will remain immortal. It belongs to each means leaving something behind him as we inherited the works of our predecessors. **My book " Convivial region " a support for the peace also has this purpose.**

The book " **FOR CONVIVIAL REGIONS** " is developed with the aim to provide an overview of what I have done for years in many countries of the world. This book will serve primarily as a source of information and then it will allow those who want to continue on the path to give to others even better living conditions and housing in different regions of the world. The chain of continuity of architectural and urban works will be among the most solid and useful to the evolution of mankind in the future. Builders as peacemakers have medals of honour on the destroyers of cities and some villages either their countries resulting in the death and injury of human beings have permanent censure of human society.

Between the conception of an architectural, urban works, and other works and their achievements there is a long way to go. Humanitarian aid is also following a long journey. The most important obstacles and constraints are the politic, administrative and financial decisions. However the solutions exist, I could complete the projects over what I expected and the results are encouraging. In my recent proposals: the division of Afghanistan into 8 regions and that of the 13 regions in France, they were made and there remains the CAFTA the region for the 9 countries of the Middle East and 15 Convivial regions of the world where I am optimistic, these proposals will go their paths to achieve their realizations because common sense will always prevail

PROPOSALS FOR 4 KIND OF REGIONS IN THE WORLD



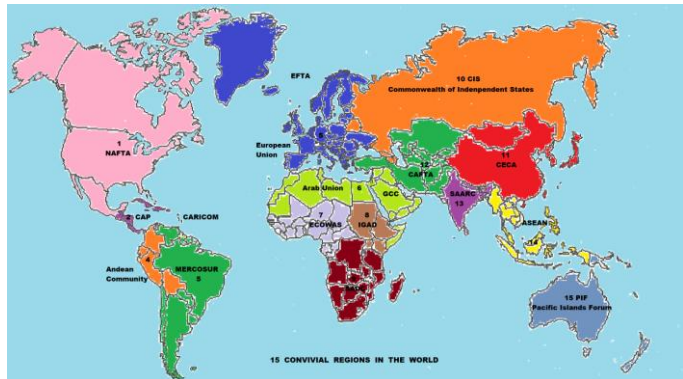
1 - 8 REGIONS OF AFGHANISTAN
PROPOSED AND APPLIED



2 - 13 REGIONS OF FRANCE
PROPOSED AND APPROVED



3 - REGION OF CAFTA 9 COUNTRIES
TO STATE LEADERS



4 - 15 REGIONS CONVIVALES PROPOSED
REMAIN TO BE APPROVED

An architect as the builder of the shell of the man and a urban planner the organizer of social space are the peacemakers, it is time that their universal works are recognized at their just values. It must land as a support to build a construction and a city, I propose the 15 Convivial regions as a support for the peace in the world.



Dr. Abdul Wassey Bacharyar savored PEACE before the two towers of the World Trade Center and hopes that his proposal for dividing the world into 15 Convivial regions be discussed at the UN in New York as a global city seats for Peace and for a better life in the World **The countries of the 15 Convivial regions in the world maintain their sovereignty and develop their cooperation in order to avoid conflicts to achieve peace** , **THE REPRESENTATIVES OF THE 15 CONVIVIAL REGION IN THE WORLD CAN PARTICIPATE IN THE SECURITY COUNCIL OF THE UNITED NATIONS BESIDE OF ITS 15 PERMANENT MEMBERS. THIS IS THE GLOBAL DEMOCRACY** .

References : International organizations

- African Union
- Arab League
- Asia Cooperation Dialogue
- Association of Caribbean States
- Association of Southeast Asian Nations
- BBIN
- Caribbean Community
- Central American Integration System
- Commonwealth of Independent States
- Community of Latin American and Caribbean States
- Council of Europe
- Economic Community of West African States
- Economic Cooperation Organization
- Eurasian Economic Union
- European Union
- GUAM
- Gulf Cooperation Council
- Latin American Parliament
- Melanesian Spearhead Group
- Mercosur
- NATO
- Organization of American States
- Pacific Islands Forum
- Polynesian Leaders Group
- Regional Comprehensive Economic Partnership
- Shanghai Cooperation Organisation
- South Asian Association for Regional Cooperation
- TAKM
- Turkic Council
- Union of South American Nations
- NORDEFECO

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Brazil's Federal District Economic Development Integrated Region (RIDE/DF) and the regional mobility management

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This paper presents the capital of Brazil and its Economic Development Integrated Region (RIDE/DF), which comprehends twenty-two cities from two different states. We are going to understand the challenges involving transportation in a metropolitan region by making an analysis of public policies implemented in the RIDE and their role in improving urban mobility.

1. Integrated Economic Development Region – RIDEs

1.1 Origins and definitions

In many places around the world, it is possible to observe massive and densified urban areas that offers attractive, which can be commercial, industrial, political, etc. These cities empower the growth of neighboring cities, creating a relationship of interdependence. To this kind of organization, it is given the name Metropolitan Region.

In Brazil, this urban phenomenon was presented in the Brazilian Federal Constitution of 1988, giving the states the right to make laws for its own metropolitan regions, according to the Article 25, paragraph 3: “The states can, by supplementary law, institute metropolitan regions, conurbations and micro regions, constituted by boundary municipalities, in order to integrate the organization, planning and execution of the public functions of common interest.” (Brazilian Constitution, 1988)

The conurbation process, in certain regions, happened by aggregating cities from different states. Since the Federal Constitution gives the states the management of metropolitan areas, it created another rule for this new imminent form of organization in the Article 43, giving to the Union its management: “For administrative purposes, the Union can coordinate its action in a same geo-economic and social complex, seeking to its development and reduction of social inequalities (...) Supplementary law will rule about: I - the conditions for integrating developing regions; II - the composition of regional agencies which shall implement, under the law, regional plans, as part of national plans for economic and social development, approved jointly with these.” (Brazilian Constitution, 1988)

While the Metropolitan Regions law talks about consolidated urban areas, the law related to the Integrated Economic Development Region – RIDE, as they were called, talks about regions with growth potential that, through an integrated management, could generate social and economic growth for the municipalities.

The supplementary law indicated in the writing of the Constitution took shape in 1998, creating the first RIDE in the region of the Federal District and its neighbour cities from the states of *Goiás* and *Minas Gerais*.

1.2 RIDE/DF

The Integrated Economic Development Region of the Federal District and Surroundings was regulated by the Supplementary Law No. 94 in 19 February 1998. It establishes as participants of this process the Federal District and 22 municipalities. *Abadiânia, Água Fria de Goiás, Águas Lindas, Alexânia, Cabeceiras, Cidade Ocidental, Cocalzinho de Goiás, Corumbá de Goiás, Cristalina, Formosa, Luziânia, Mimoso de Goiás, Novo Gama, Padre Bernardo, Pirenópolis, Planaltina, Santo Antônio do Descoberto, Valparaíso* and *Vila Boa*, in the state of *Goiás*. *Unaí* and *Buritís*, in the state of *Minas Gerais*.

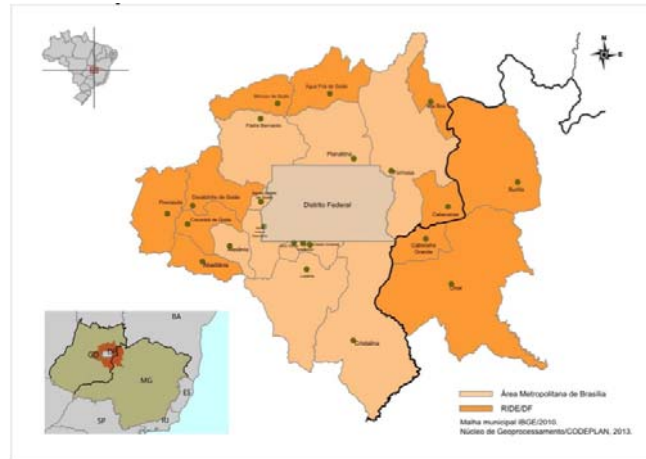


Figure 1: The RIDE/DF territory
Source: IPEA/CODEPLAN (2013)

Nowadays the agency responsible for the region is the Superintendence of Midwest Development, reactivated with the purpose of creating the Midwest Development Plan. Its main goals are to reduce the regional inequalities, enhance regional economy competitiveness and social equality. (SUDECO, 2015)

The main activity of RIDE is agriculture, followed by tourism. There are 3.7 million inhabitants, which represents 2% of the population and 26.5% of the Midwest's population. Of this population group, the Federal District participates with 69%, which corresponds to about 2.5 million. The other municipalities of Ride / DF represent 31% of its population, with a total of 1,154,021 inhabitants. (IBGE, 2010)

2. The Federal District (DF)

2.1 The creation of Brasília and its “Administrative Regions” (RAs)

Brazil had several capital cities throughout its history. The last change was conceived by President Juscelino Kubitschek, who sought to move the capital to the Midwest and create a development center in the central region of the country, part of its modernization program for Brazil. In September 19, 1956, Law No. 2,874 established the transfer of the federal capital to the *Planalto Central* region where the Federal District would be created.

The Federal District is characterized by the Brazilian constitution as a safety area for the federal capital. It was created inside the original territory of the state of *Goiás* and has an area of 5,802 square kilometers.

Designed by architect and urban planner Lucio Costa in 1956, Brasília was developed in an area free of any previous urban intervention. For the new capital, in addition to administrative buildings and leisure areas, the urban planner developed residential blocks called “*superquadras*”, estimating a population of 500,000 inhabitants. Before construction had begun, the creation of urban settlements could already be seen in the surroundings of Brasília, the oldest being called “Free City” (currently *Núcleo Bandeirante*), created in 1956. It should originally be gone by the time the city was finished but stays until now. Many of these spaces were created for the temporary housing of the builders of the new capital, others were formed by those who saw in the new capital a chance to settle down.

Over the years, with the construction of Brasília finished, temporary settlements were consolidated creating new urban areas within the limits of the Federal District, called “satellite towns”. The solution found to regulate these spaces was to create a new form of administrative organization, since the DF is not a state itself. The “administrative regions” were created on December 10, 1964 for decentralization purposes and coordination of local character services (Federal Law 4,545, 1964). For administrative purposes, the capital

designed by Lucio Costa also became an “administrative region” of the Federal District, called the RA-I – Brasília - also referred as *Plano Piloto*.

2.1 The Federal District nowadays

Fifty-five years after the creation of the new capital, the urban context of the Federal District has changed: where originally there were eight “administrative regions” today there are thirty. In 1956, when the city was being built, the Federal District region had 12,000 inhabitants, considering existing settlements and rural areas. According to the 2010 census conducted by the Brazilian Institute of Geography and Applied Statistics (IBGE), the DF is home to 2.57 million inhabitants. Considering its whole territory, the density of DF is equal to 440 inhabitants / km², considered high (IGBE, 2010).

Plano Piloto (original conceived Brasilia area) holds the lowest population density but is the “administrative region” where the greatest number of jobs are concentrated, reaching 47.72% of the existing in the DF. It is also the region with the largest number of residents working where they live, with 93.6%, followed by SIA - a mainly industrial “administrative region”-, *Brazlândia* and *Planaltina*, those with rates already below 50% (Miragaya, 2013).

Interestingly, as the Pilot Plan concentrates the majority of jobs, there is a high flow of DF inhabitants commuting to the central areas every day, as observed in the surrounding municipalities. Recently, the Federal District government has implemented some strategies aiming the decentralization of job posts by transferring part of its employees to Taguatinga, “administrative region” located in the southwest of DF that is already presenting itself as a possible articulator of a new commercial hub and services.

3. Brazilian political and administrative organization

Brazil is organized political and administratively in Union, State, Federal District and Municipalities. All have administrative, legislative and tax powers. Altogether there are 27 Federal Units (26 states and the Federal District). The states are composed of municipalities, and the Union is responsible for the national management of the country.

The federal government is represented by the Union and has among its main competences to control the national and interstate transport and develop guidelines for urban development. It is shared responsibility of states and municipalities to tax and apply their revenues, create, organize and suppress their districts (in the case of states, its municipalities) and urban development standards.

3.1 Competences in transport management

In Brazil, the public passenger transportation service is classified mainly due to the geographical levels of action. They refer to short shifts, medium or long distance and to their competence, according to the rules of the political-administrative division of the country. The Land Transport National Agency (ANTT) is the competent institution for the concession and monitoring of permits and authorizations for the operation of transport services in Brazil, through Business Corporations legally constituted for this purpose.

Among the existing types of public passenger transportation, the metropolitan system of RIDE/DF is set as a semi-urban interstate road transport (Decree 2.521 / 199819). It is qualified under the Resolution No. 16/02 of ANTT, because, by extension, it travels a maximum of seventy-five kilometers, has urban transport characteristics and transposes the limits of State, Federal District or Territory.

The RIDE operates to coordinate administrative actions in the region. Its creation law establishes an Administrative Council, whose task is to administer the Common Interest Public Functions - FPICs. It is about activities and services that affect municipalities within the metropolitan region, such as intercity transportation and regional road system. The FPICs becomes even more critical in inter-state environments with urban characteristics, as is exactly the case of the RIDEs.

The FPIC Transport's role is to set up the road structure for the metropolitan environment, from the implementation and regulation of the transport system to the road infrastructure and diversification of transportation modalities.

However, it is observed that the FPIC transport is an issue addressed by the Federal District alone, ignored by state governments and suffered in the municipalities that integrate the RIDE/DF. As the Federal Government is the only sphere of management with the legal authority to manage the semi-urban transport, through the Land Transportation National Agency (ANTT), the Union has been active in RIDE/DF and has suggested connections with the district and state governments.

4. The regional urban structure

The urban concept of the road system was designed primarily for automobile use, since the development of the automotive industry was part of Juscelino Kubitschek modernization plan by the time Brasilia was conceived. The structure of the urban region is characterized by discontinuities and dispersion. The urban fabric develops over long highways towards the neighboring towns. The cities are sprawled, with low density and large distances between the urbanized cores.

The commuting relations in the region are intense, especially towards the *Plano Piloto*, where most formal employment and collective facilities of regional scale are concentrated. The motorization rate in the region (0.4 vehicles / inhab.) is higher than the national average (0.3 vehicles / inhab.) and the vehicle load factor characterizes individual use (1.57 person / vehicle). These indicators are reflected in traffic jams and crowded parking spaces and are important indicators of an inefficient public transport system. Combined with tax incentives from the federal government for the purchase of new cars in recent years, these elements contribute negatively to mobility in the RIDE.

The motorization rate of the surrounding cities exceeded the DF rate in 2007. This phenomenon exerts intense pressure on the road system in the Federal District, since most of the population of nearby towns travels to Brasilia every day. From 2000 to 2009, the growth of the DF population was 22%, while the fleet grew by 94%. In the same period, in *Goiás* municipalities in the metropolitan area of Brasilia the population growth was 21%, while the fleet grew 222% (PDTU 2010).

The road network of RIDE/DF is composed of urban roads and federal and state highways. The road network is directly involved in the articulation of urban centers and is the primary road network used by Federal District's Public Mass Transportation System and the semi-urban transport of the DF surroundings. The road system is a responsibility of the Department of Highways of the Federal District, whose duties involve its implementation, maintenance and operation.

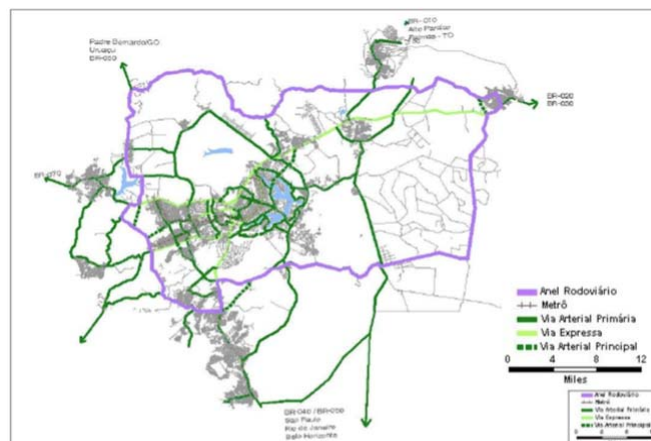


Figure 2: Regional Road System
Source: PDTU (2010)

Although the mesh formed by the Regional Road System presents a great space availability to traffic, the demand in key parts of the network has been continuously increasing, resulting in relations between volume and traffic capacity that reach saturation. According to studies, the system may reach collapse in 2020 (PDTU 2010).



Figure 3. Traffic jam in Brasília south exit
Source: g1.globo.com

The main modal used for public transportation in the region is the bus. The contracts are bid by ANTT and private companies provide the service, supervised by the government. Few companies provide the connection between Goiás and DF daily, although the interstate semi-urban public transport between the DF and the surrounding areas is the busiest in the country. According to the 2010 survey, approximately 89 million passengers are transported annually on 551 lines in the region (ANTT, 2014).

However, the semi-urban service does not have any kind of integration or connection with the DF transport network, even though they share physically roads and urban facilities, which causes overlapping of lines.

The subway system in the region is operated by the state company "METRO-DF" - Company of the Subway of the Federal District. It opened in 2001 and currently has 42,38km of extension. It works only within the DF, reaching five administrative regions, with two lines, 24 stations and trains operating at 80km / h, serving about 130,000 users per day. The number of trains and limited routes make the subway system sub-efficient. Works to expand the system have been widely discussed since the beginning of its construction in 1992.



Figure 4: DF subway lines and stations
Source: wikimedia.org

5. Masterplans and urban mobility in the RIDE/DF

5.1 *Midwest Development Strategic Plan 2007-2020 (2007)*

Created to guide and organize the initiatives and actions of governments and society, it features among its macro-objectives “integrate territories and states in the Midwest with the reductions of intra-regional dynamism and income level inequalities, and formation of an integrated and hierarchical cities network”. Also, “improve the quality of regional road network with increase in the percentage of roads in good condition of conservation and traffic as a result of investment in the restoration and maintenance of the road system”.

5.3 *Land Management Master Plan – PDOT (2009)*

It lists amongst the sectorial guidelines for the transport of the Federal District, the “promotion of multimodal integration implementation of public transport services” and the “establishment of a transport planning process integrated to the planning of urban and rural development”. Chapter ten deals with the integration of the Federal District and its neighboring municipalities, and links such integration to the development of plans, programs and joint projects. Also, it indicated the PDTU as an urban policy instrument, still to be developed by the time the PDOT was published.

5.3 *Federal District and Surroundings Urban Transport Master Plan – PDTU (2010)*

Prepared by the Secretariat of Transport of the Federal District government, it included the RIDE/DF in its title and scope, but did not considered its totality in the territorial planning area, in the same way as other studies have done. The PDTU admits the existence of an urban agglomeration with metropolitan proportions and dynamic, which has strong interdependence, formed by DF and eight municipalities in the state of *Goiás*, namely: *Águas Lindas de Goiás, Santo Antônio do Descoberto, Novo Gama, Valparaíso de Goiás, Cidade Ocidental, Planaltina de Goiás, Luziânia* and *Formosa*. That is the most comprehensive planning tool in terms of transportation for the region and does not recognize the RIDE/DF in its original spatial configuration.

6. Projects for regional urban mobility

We present below some actions that have been or are currently being implemented in the region in order to improving transport systems and mobility for DF and surroundings.

6.1 *Technical Cooperation Agreement to carry out the Technical, Economic and Environmental Viability Studies, of Brasilia-Luziania trains and Brasilia-Annapolis-Goiânia (ANTT Partnership / Sudeco)*

The existing rail spur 80km long, currently used for cargo transportation only, is subject to economic feasibility, operational and environmental study for passenger transportation on the stretch between the town of *Luziânia*, in the state of *Goiás*, and *Brasília*. The goal is to relieve and reduce traffic accidents, diversify the public transportation system and contribute to the solution of modal integration in the region, benefiting various urban agglomerations located on the edge of federal highway BR-040 or connected to it.

The winning consortium for the execution of the studies was defined in January 2014. There will be executed diagnosis, characterization of the transport system and the technical design and operational service. The R\$ 1.8 mi contract, funded by the Federal Government, has a term of ten months from the date of signature. There is no further information on the completion of studies, although the deadline is already over. Each train composition will have four cars and will transport 800 people, which should benefit over 500,000 residents. The expectation is that at least 40,000 cars are taken off the roads that connect *Luziânia* to *Brasília*.



Figure 5: Proposed railway between Luziânia and Brasília
Source: SUDECO (2014)

The construction of the railway line that will connect Brasília to Goiânia, another important attraction pole of the region, through the municipalities of *Águas Lindas*, *Santo Antônio do Descoberto* and *Anápolis* in the state of *Goiás* is a partnership between the governments of the state of *Goiás*, the District Federal, the Ministries of Transport and National Integration, the National Department of Transportation Infrastructure (DNIT), Valec Engineering and Railways, SUDECO and ANTT.

With an extension of 200km and trains medium speed of 150 km / h, the route between Brasília and Goiânia may be undertaken in just one hour. The contracts will be financed with World Bank funds, received in June 2013. The stations and terminals have been preset in February 2014, in partnership with municipal governments. The winning consortium for the implementation of technical feasibility studies, economic and environmental was set in May 2014. The contract of R \$ 3.2 mi has a term of eighteen months from the date of its signature and studies should be completed by the end of 2015.

6.2 Grant Plan for the RIDE/DF (ANTT partnership)

The plan presents new strategies for procurement of semi-urban lines in the region of the Federal District and the nearby municipalities of *Goiás* state. It has been approved by the Court Union and in Public Hearing in December 2012. The scope of the Plan considers eleven municipalities in *Goiás*, divided into four lots and 33 shares for assignment of exploration of semi-urban transport services to be procured.

The premises to define the lots sought to keep at least the number of companies currently operating in each municipality of surrounding area, to promote competition in the market through public bidding process, to enable, through cross-subsidy in lots, the total attendance now existing and seek similar tariff coefficients in different lots.

The benefits pointed out by Grant Plan's strategy revealed planning according to the socio-spatial reality of the region. This understanding is, on one hand, beneficial, as it may lead the government to achieve the population's real needs, but does not reveal a look of integration with the public transport system of the Federal District, which currently undertakes other strategies and efforts.

For the first time, in the granting of this type of public service in the region, it was carried out proceedings of equal opportunity for social participation. With diverse audience and diverse contributions, the validation of the Concession Plan of semi-urban lines in the Federal District and Surrounding Region has proved to be an efficient instrument of social participation of various sectors.

6.3 PAC projects related to FPIC Transport in the RIDE/DF

The Growth Acceleration Program (PAC) was launched in January 28 2007 and re-released on March 29 2010. It is a Brazilian federal government program that includes a set of economic policies planned for the following four years, whose goal is to accelerate Brazil's economic growth, with investments in urban infrastructure as a priority.

Type	Project name	Investment 2011-2014	State	Municipality
Urban Mobility	Bus Corridor - <i>Brasília</i> / FD - West axis <i>Ceilândia</i>	-	FD	<i>Brasília</i>
Urban Mobility	VLT: Line 1 / Section 1 (Airport / Terminal <i>Asa Sul</i>)	-	FD	<i>Brasília</i>
Urban Mobility	Metro - <i>Brasília</i> / DF - Metro FD Expansion	-	FD	<i>Brasília</i>
Urban Mobility	Passenger transportation system <i>Gama</i> / <i>Santa Maria</i> / <i>Plano Piloto</i> - South axis	R\$ 785,34 mi	FD	<i>Brasília</i>
Highways	BR-070 / GO - Duplication - FD / GO - <i>Águas Lindas</i> - Marginal Way and remaining works - GO	R\$ 1,06 mi	<i>Goiás</i>	<i>Águas Lindas de Goiás</i>
Highways	BR-020 / FD / GO - Capacity Adequacy - <i>Sobradinho</i> - <i>Planaltina</i> - Km 0.0 - Boundary FD / GO - lot 02 - FD	R\$ 1,8 mi	FD	<i>Brasília</i>
Highways	BR-020 / FD / GO - Capacity Adequacy - <i>Sobradinho</i> - <i>Planaltina</i> - Km 0.0 - Boundary FD / GO - Lot 01 - FD	R\$ 7,01 mi	FD	<i>Brasília</i>
Highways	BR-450 / FD - Adequacy - <i>Granja do Torto</i> - Entrance DF 051 - FD	R\$ 23,01 mi	FD	<i>Brasília</i>
Highways	BR-060 FD / GO - FD Stretch - Duplication - <i>Brasília</i> - Boundary FD / GO - Complementary Works - FD	R\$ 17,23 mi	FD	<i>Brasília</i>
Highways	BR-251 / MG – Urban Crossing of <i>Unai</i> - MG	R\$ 15,13 mi	<i>Minas Gerais</i>	<i>Unai</i>
Airport	Brasilia airport - Reform of the Passenger Terminal of the Central Body	R\$ 5,54 mi	FD	<i>Brasília</i>
Airport	Brasilia Airport - Operating Module 2 Implementation	R\$ 4,55 mi	FD	<i>Brasília</i>
Airport	Brasilia Airport - Airport Concession	R\$ 2,85 bi	FD	<i>Brasília</i>

Table 1: PAC projects related to FPIC Transport in the RIDE/DF
Source: IPEA/CODEPLAN (2013)

Based on these data, it is possible to identify a concentration of investments in road and airport system. In addition to the Union's efforts to improve transportation in the Federal District and region, the local government itself has invested in the renewal of the bus fleet and greater control and supervision of the operation of the road transport system. However,

such actions are dissociated from an integrated perspective with the metropolitan municipalities of RIDE/DF and do not reflect the need for efficient displacement of a large number of people from neighboring municipalities to *Plano Piloto*.

7. Challenges and possibilities

7.1 Political coordination and integrated management

In general, Brazilian governments have shown low efficiency in project management and execution of budgets, generating waste of resources and limiting the impact of the governmental actions. This situation is also evident in the management of transport and urban mobility in RIDE / DF. Initiatives to stimulate the integration of public policies and institutional coordination in all segments of civil society organizations (including NGOs), reduce waste of public resources and to combat corruption in public administration are efficient ways to strengthen the management capacity.

It is necessary to restructure the possible forms of cooperation among Federal, Federal District, state and municipal governments. Also, to rethink the federal and state funding allocations to municipalities, review competences and attributions of each of the governance levels, decentralizing and giving greater autonomy to municipalities to plan and execute transportation and mobility policies, preferably in an integrated manner, either with other municipalities or the state governments.

Some reflections may be taken from what we investigated in this article:

- (1) There is public transportation management in the Federal District, limited to the quadrangle, with efforts of the Federal District government and the Union, through the Growth Acceleration Program, held by the federal government;
- (2) There is interstate semi-urban public transport management by the ANTT serving eight surrounding municipalities;
- (3) The result of two disjointed efforts is the absence of metropolitan and regional management, caused mainly by insufficient action of the Management Council of the RIDE/DF and by Union centralization as planner and executor of infrastructure works.
- (4) Of the 22 municipalities of RIDE/DF, only 10 of them have public transportation actions considering the Federal District as attractive pole. The management becomes more complicated given that the limits for the RIDE do not always match the reality of regional interdependence, especially considering urban mobility.

The impact of the lack of planning and integrated management of transport in the municipalities members of the RIDE appear in low quality of public transport in the region, held solely by bus transportation. Users of semi-urban lines in the 11 municipalities constantly report the precarious situation of the service. On the other hand, the urban transport system in Brasília, which is undergoing a makeover in terms of PDTU's recommendations regarding the granting of lines, and great works of the PAC, is overloaded with the demands of semi-urban lines in the city road system, but does not provide integration with them. That way, the actions of the Management Board of RIDE/DF becomes necessary to plan, coordinate, supervise, propose and implement urban mobility policy in the region able to overcome the territorial barriers.

7.2 Socioeconomic development of municipalities

The result of the expansion of urban areas within the Federal District and of surrounding urban areas without integrated public policies is reflected in structural problems that compromise both social and economic well-being. In these areas, you can see the deficiency in the supply of well-located and articulated public services, insufficient provision of jobs, poor housing for low-income people, a strong presence of informal land market and urban mobility and infrastructure problems.

SUDECO has been working together with the Ministry of National Integration for the economic development of the RIDE population with specific programs for agribusiness and training people to work in the tertiary sector. However, such actions will only be effective for

improving urban mobility when associated with the reduction of socioeconomic inequalities between the municipalities. By generating new job positions in the surrounding region, and thus reducing the need for commuting and enabling the growth of those neighboring municipalities, cities become no longer only dorms, but established economies, capable of meeting the needs for jobs and services of local people.

7.3 Public participation

Despite significant progress made in recent decades, Brazilian public administration is still not transparent and democratic in its decision-making processes. Although the participation of society has greatly expanded in the discussion of development priorities and projects, politics and government technicians still harshly control decisions. To increase the participation and democratization of public institutions, it is necessary to increase the organization of society and broaden the channels of representation and participation. Initiatives to involve local people in decision-making regarding transportation and mobility in the RIDE has been under taken, including holding public hearings to discuss issues of collective interest, receive contributions and answer questions of the population about projects. However, it is noted that municipal actors have been completely absent in the process of discussion of the semi-urban transport system. At the public hearing held by ANTT in Brasilia about the Grant Plan, mentioned earlier in this article, no representative of the involved municipal governments attended. The most important actors in this case were the entrepreneurs and workers of the interstate bus companies. In discussions about the railroad network, which has two ongoing studies in the region, difficulties related to financing studies were brought to the academic community and the possibility of setting up a scholarship program for studies related to the development of railway lines was discussed. Researchers at the University of Brasilia seemed positive with the perspective of participating in that process and even reported the existence of some studies already being developed on that subject. However, as we saw earlier in this article, private companies were hired to make the analysis for implementation of the railways, eliminating the integration with the University.

8. Final Remarks

The initiative to construct a proposal for integrated actions was expressed in several instruments of planning, including the very decree that established the RIDE / DF. Although, due to the absence of a participatory planning for integrated development involving the federal entities and the various regional actors, the initiative did not actually materialize until today, almost 20 years later.

Without integrated planning and management and better coordination of the federal entities involved, the power of regional mobility management lies in the hands of the bus companies entrepreneurs, linked to the public administration for the provision of public transport services. Without regulation, the only concern of those responsible for the transportation becomes the profit, with no commitment to service quality or improving mobility in the region. It is crucial to think urban mobility based on the integration between different modes of public transport. To this end, it is necessary to diversify and expand the public transport supply, with investments in rail and subway networks and promote tariff integration, reducing travel costs for the population.

The lack of a metropolitan plan for the RIDE / DF makes it difficult to raise funds to solve the problems of urban mobility in the region, since there is no integration between state efforts and more effective measures - such as consortia or partnerships – meant to link their urban transport systems.

The public functions of common interest were idealized to address the needs shared by different municipalities located in the same interstate region with urban features - such as the RIDE / DF. They are still far from the desired goal. Currently, actions are being held unrelated to a plan that thinks the metropolitan area as a whole and highly centralized in the federal government.

Thinking this region as an integrated area of action is crucial for its development. The mobility situation is one of the main challenges that need to be overcome by the states governments in order to achieve a homogeneous growth of the RIDE. Good physical connections would improve the possibilities of economic exchange between the cities. Such reality can provide efficient communication between researchers in public development as well as exchange of specialized workers and supplies for local industries.

9. Acknowledgements

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From a barrier to a bridge: Nicosia and its national borders.

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Synopsis

Nicosia, the divided capital of divided Cyprus, offers unparalleled perspectives on the issue of transboundary cooperation and movement. This paper provides inputs on how a barrier can be transformed into a bridge, even when such a transformation is perceived as unthinkable.

1. Introduction

While in most parts of the developed world borders are losing their restricting functions, there are still some places facing extreme border control and alienation. This paper investigates an example from the second set of countries. Cyprus, a divided island for more than half a century, with its capital city Nicosia, heralded as “the last divided capital in Europe” by its southern Nicosia Municipality, shelters unique experiences on transboundary cooperation.

Nicosia is the capital city of two different ‘countries’ divided through its middle by a buffer zone identified by two ‘national’ borders. A capital city to shelter national boundaries is an uncommon theme, since capitals are seats of power that represent the cultural, socio-economic and political strengths of their respective countries on the international arena. However, what makes Nicosia special is not only that it shelters national borders, but that it has also been a stage for overcoming these borders through transboundary cooperation for decades.

In this framework, as an introduction, an overview of the history of division will be explained before moving on to the history of bridging the divide. The latter refers to the transboundary cooperation initiatives that have taken place since the beginning of division.

1.1 History of division

Sadly, one cannot talk about Cyprus’ history without simultaneously talking about division. Validating this fact, ‘this has turned in to Cyprus problem’ is a frequently used phrase by the islanders to define insoluble or extremely prolonged situations. The roots of the contemporary Cyprus problem originate from approximately three thousand years ago when Greeks began settling on the island around 1500 BC. About 3000 years later, Ottomans conquered Cyprus from Venetians and introduced the Turks to the island for the first time. Although Cyprus has been dominated by outsiders throughout its history—including Persians, Romans, and Byzantines—Turks and Greeks remained as the permanent socio-cultural groups of the island to this day.

By 1878, when British took control of the island from the Ottoman Empire, these two communities were already demonstrating a level of physical separateness. The British continued to rule the island with little change to Ottomans’ *millet* system (Kadioğlu, 2010) where the two communities lived peacefully side by side; either in separate villages or in separate parts of the same village (Webster and Timothy, 2006).

Following the independence of Greece in 1821, Greek Cypriots’ (GCs) propensity to identify themselves as Greek grew. GC struggle for *Enosis* (union with Greece) and its nationalistic rhetoric found resonance within the Turkish Cypriot (TC) community in the form of claims for division and unification with Turkey (*Taksim*). It is generally agreed that the ‘divide and rule’

policies of the British accelerated this nationalistic opposition between the two groups by exploiting interethnic differences among them (Kliot and Mansfeld, 1997, 1999; Loizos, 1988; Papadakis, 2006; Hocknell, 1998).

Due to growing discontent with British rule and years of discord between the communities, conflict between Turkish and Greek Cypriots intensified and culminated into interethnic violence in 1955. The first barricade, formed of barbed wires and known as 'Mason-Dixon Line', was erected in parts of Nicosia in 1956, splitting the historic Walled City into two.

Independence was gained in 1960 under such troublesome circumstances as the British wanted to avoid further conflict and weigh off the pressure. Britain retained 2.7% of the island and Greece and Turkey were given the right to station small military garrisons as guarantor states. However, the issue of separate municipalities continued to generate dispute among the two communities (Markides, 1998), ultimately leading to another round of interethnic violence starting from 1963. United Nations peace-keeping forces landed on the island in 1964 and by using the previous separation line (Mason-Dixon Line) as a base, drew the Green Line to separate the two communities.

The conflict carried on in a fluctuant manner for a decade, eventually resulting in absolute division of the island. Hence, the division of Nicosia, essentially in place since 1956, became permanent with the military intervention of Turkey in 1974. This intervention took place after a coup, organised by the military junta government in Greece, against the President of Republic of Cyprus (RoC), Makarios, in order to install a pro-Enosis regime. Turkey used its treaty rights and reacted by taking hold of a third of the island, from northern shores up to the Green Line, dividing the walled city of Nicosia into two. During the next 18 months, some 185,000 Greek Cypriots relocated in the southern two-thirds of the island, while approximately 45,000 Turkish Cypriots moved north (Webster and Timothy, 2006). In 1983, the TC President, Rauf Dentaş, declared this territory as a sovereign republic, the Turkish Republic of Northern Cyprus (TRNC), today only officially recognized by Turkey (Figure 1). With this event, the political, social and economic landscape of the island was altered permanently, and the border was sealed for members of both ethnic groups (Kliot and Mansfeld, 1997).



Figure 1: The Divided Island of Cyprus (By the author)

In 2004, a week before the accession of RoC to the EU, a referendum was held on the island for a UN agreement plan (Annan Plan). Even though 65% of TCs said yes, the plan was rejected due to the no answer of 76% of the GCs. As a consequence, the RoC entered the EU unilaterally, representing the whole of the island, however, excluding the territories and people of TRNC. The EU had now carried a land in conflict into its borders.

1.2 History of bridging

Today, the two parts of Nicosia—Turkish north *Lefkoşa* (Lefkoshia) and Greek south *Λευκωσία* (Lefkosia)—are physically connected via a sewerage system and three gates. In addition, bi-communal projects bridging the two communities also took off from the urban scale with the urge to protect common cultural heritage through joint planning activities and conservation committees. The importance of city-scale is apparent, and inevitably, Nicosia as the capital has been the stage for bridging the divide in Cyprus for decades.

Transboundary cooperation in Cyprus initiated in 1977, four years after the sealing off of the borders. Despite many setbacks, in 1978, two mayors of Nicosia, TC Mustafa Akinci and GC Lellos Demetriades, signed an agreement to co-manage the sewerage system that remained in northern Nicosia following division.

In 1979, the two visionary representatives decided to extend their collaboration to prepare a physically-oriented master plan for the whole of the city. The Nicosia Master Plan (NMP), was actualised with the assistance of United Nations Development Programme (UNDP). It “sought to increase the capacity of the city’s services and to improve the existing and future human settlement conditions of all the inhabitants of Nicosia while acted as a means of building confidence between the two communities” (Petridou, 2008). An underlying innovative aspect was the idea that close and systematic technical co-operation can foster new bonds of understanding. NMP process was managed by bi-communal teams and provided opportunities for young Greek and Turkish Cypriot professionals to meet regularly, to work together and to be trained by international experts on necessary areas (Petridou, 2008).

According to a great variety of scholars, NMP is a unique approach, where collaborative planning has reached unexpected levels of achievement in very difficult political circumstances (Abu-Orf, 2005; Gaffikin and Morrissey, 2011; Charlesworth, 2006). What makes NMP special is that it was not conceived as an end-product, but a *process* which has brought ongoing cooperation between the two communities up till today. New phases start to take shape according to requirements of the period, and each phase is constructed under the umbrella of NMP. It has won two awards since its inception; World Habitat Award for ‘innovative housing and planning ideas’ in 1989; and Aga Khan Award for Architecture for the ‘rehabilitation of the Walled City of Nicosia’ in 2007.

In spite of NMP’s cross-border experience, the Green Line was sealed off for civilians until April 2003 when a small number of checkpoints opened up around the island. Two of these were in Nicosia, however, situated away from populated areas, on the western outskirts of the city. The first crossing to directly connect residential and commercial areas opened up in 2008 (Lokmacı/Ledra Gate). Due to its historical importance as the centre of social activity, it was the first street to be closed with barbed wire in 1956, with the Mason-Dixon Line (Jacobson et al., 2009). Even though it was reopened after independence in 1960, the events of 1963-64 led to a total cessation of movement along the Green Line. Restrictions were relaxed to some extent between 1968 and 1974, only to be completely sealed off again from 1974 to 2008.

In the following sections, firstly, issues of transboundary cooperation that have emerged following the bi-communal NMP, its repercussions via cooperative projects and the problems faced will be investigated. Secondly, transboundary movement following the opening up of the borders and changing perceptions and experiences of local populations and its physical consequences will be evaluated. As a conclusion, the interrelationship between these issues and their complementary effects will provide inputs on how a barrier can be transformed into a bridge, even when such a transformation is perceived as unthinkable.

2. Transboundary Cooperation: The Nicosia Master Plan

It is hard to situate NMP in conventional typologies of urban planning approaches. This is why different planning models have been suggested by scholars for divided cities (see for example Bollens, 2007). One of the most appropriate classifications for NMP would be that of a 'cooperative urban strategy', where two distinctive (and divided) ethnic groups cooperate to achieve a common vision with equal access to the agenda-setting process (Öztoprak, 2005).

NMP started off with a development objective of "the improvement of the existing and future habitat and human settlement conditions of all the inhabitants of Nicosia" (UNDP/UNCHS, 1984). The first phase of the joint plan was between 1981 and 1984. The aim of this phase was to produce a comprehensive planning strategy. The approach had to be flexible enough to accommodate the unsettled political atmosphere. Therefore, a radical scenarios approach was developed with two scenarios; divided and reunited (Figure 2). This is one of the most important strengths of the project; that it did not depend on a formal peace agreement in order to handle the city as a singular entity (Charlesworth, 2006). Policies and proposals regarding urban development, functional areas (residential, commercial, industrial etc.), transportation and traffic, Walled City, open space and recreation and economic and financial tools were presented according to the two scenarios.

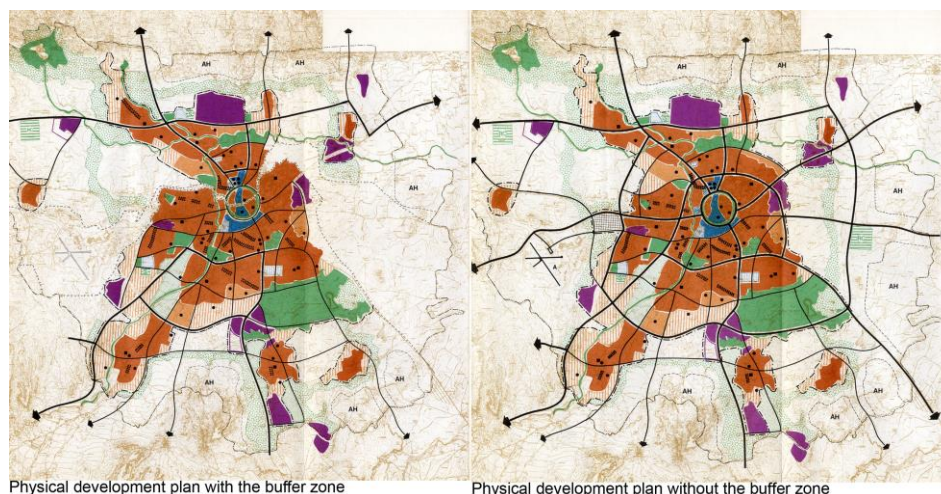


Figure 2: Physical Development Plan With and Without the Buffer Zone (UNDP/UNCHS, 1984)

The second phase (1984-1986) focused on a more detailed operational plan for the city centre, including the walled section and the adjacent CBD. Decay of the urban core was the main concern for NMP teams. The Walled City constituted a common heritage for all the communities of Nicosia and therefore was seen as the most precious part of the city by the bi-communal NMP team. Eventually, this phase focused on a series of pilot projects, both north and the south of the border. The NMP team saw housing as a priority since it brought social—not just economic—revitalisation (Charlesworth, 2006). This is why, implementation started with two housing rehabilitation projects, Chrysaliniotissa in the south, and Arab Ahmet in the north.

Since the NMP adopted a planning horizon of 20 years (1981-2001), another project stemmed in 2003, called New Vision for the Core of Nicosia and concluded with a final report in 2005. The aim was "to evaluate the achievements and challenges during the implementation of the NMP and to help update the plan to meet current and future challenges" (UNDP/UNOPS, 2005). Urban Heritage-Based Regeneration was the main theme, which "adopts cultural tourism and education as the 'prime movers' to stimulate future residential and commercial

activity” (Hadjichristos, 2006). This project is now in the implementation phase via cooperative projects focusing mainly on the Walled City and aims to “search for opportunities to overcome continuing development problems of the Walled City as a unified centre for the rest of Nicosia” (Öztoprak, 2005).

Another recent phase (2000-2004) of NMP was to undertake a survey of the Buffer Zone in the Walled City of Nicosia. The aim was to survey the existing buildings’ (238 in total) structural conditions and examine possible measures to save the threatened ones (Michael and Flahutez, 2008). The NMP team identifies the Buffer Zone as the most important ‘glue’ in the functional integration of the city and attains a rich role for it, including vital contemporary functions like universities to bring people together in a future unified Cyprus.

As can be seen, implementation phase with various restoration and rehabilitation projects for the walled city has been ongoing since the 80s. Most of the follow-up projects have seen the light of day such as pedestrianisation of Ledra Street; improvement of public open spaces; restoration of architecturally significant buildings which are an important part of cultural and social life of old Nicosia, such as Büyük Han (Great Inn), Bandabulya (Bazaar) etc.; and, improvement of traffic flow and transportation (Figure 3).

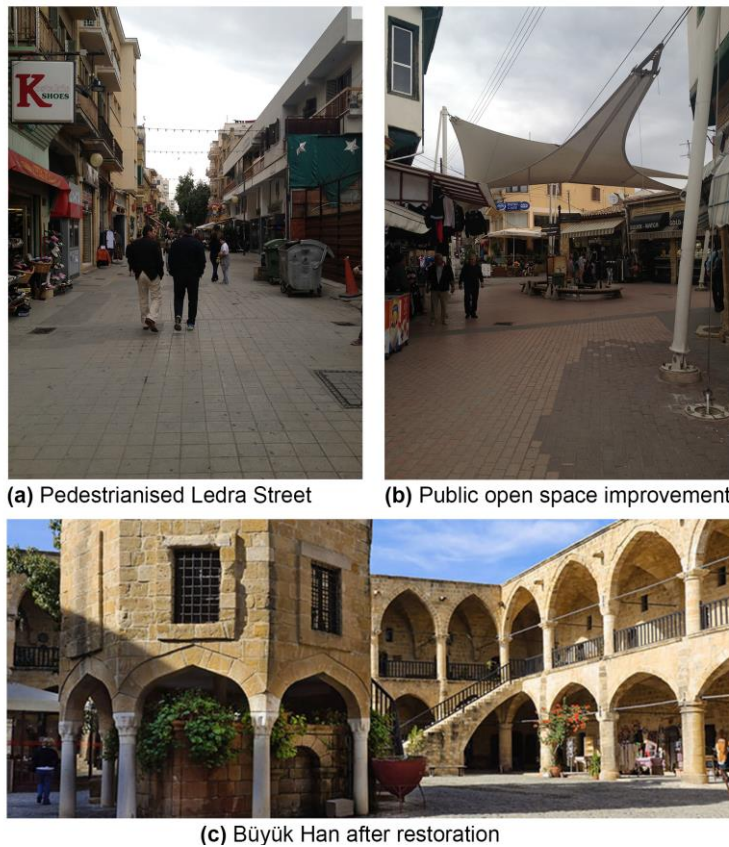


Figure 3: Examples of implemented NMP follow-up projects [(a) and (b) by the author, (c) <http://dj-travel.webs.com/Buyuk.Han.Nicosia.Cyprus.jpg>]

These projects had significant socio-economic outcomes for the Walled City and transformed the physical appearance of the city centre on both sides. Restored Ottoman and Venetian buildings became major tourist attractions and created new businesses. Coupled with the political agreements to open up a gate in the most important part of commercial activity (Ledra Street), the face of Old Nicosia changed tremendously.

2.1 Problems faced during transboundary cooperation

Despite its achievements, some aspects of NMP are regarded as unsuccessful by prominent professionals in NMP teams who were interviewed by the author in 2013. One of the most pronounced downsides was the perceived leverage of international organisations. This issue was brought up by most of the interviewees, especially regarding the twinning housing rehabilitation projects (mentioned above) for Chrysaliniotissa and Arab Ahmet. Here, the NMP team wanted to infill these areas with local young families, whereas, the international consults did not agree with displacing the immigrant families who were already living there (G. Constantinides, personal communication, March 26, 2013). So for the NMP team, the projects were successful in terms of preservation and restoration, but socially, they were not. The fact that financial contributors are international organisations and that their consultants are effective in the process makes the end-product shaped according to them instead of the locals.

While evaluating collaborative planning approach of the NMP, Abu-Orf (2005) reveals that power relations and distortion was actually in effect during the planning process. The issue is more pressing when relations between the two sides are considered. Distribution of financial resources for undertaking the projects is one of the examples that can be given for such nuisances. International resources are provided to the two sides according to their population. An interviewee asserted that, in contrary to their low population, the north has limited resources and needs more money than the south. "When this issue was brought up in bi-communal meetings, the south rejected this notion and emphasised that they are the majority, and they will get the 80%" (L. Topcan, personal communication, March 29, 2013). Additionally, seemingly very small issues, like street names on common maps, may cause quarrels between the two sides. This is why; bi-communally produced touristic brochures do not include a map (A. Çıralı, personal communication, March 24, 2013).

One of the most significant disadvantages of the NMP is that, on legal terms, it is not binding; it needs to be implemented separately under the legislation of the respective sides. In other words, while the preparation of the plan was done together, implementation has to be carried out separately. Disconnections between the two sides made the NMP blurry and personal interests became pronounced (M. Akıncı, personal communication, March 25, 2013). Bi-communal monitoring, revising and updating of the master plan was not accurate due to the lack of a higher committee to coordinate the process (E. Öztekin, personal communication, March 27, 2013) and lack of resources (G. Constantinides, personal communication, March 26, 2013). "The orthodox way of doing this is to have a joint committee of people from the two sides. But we had difficulties in doing that. We had recognition problems" (L. Demetriades, personal communication, March 25, 2013).

A strong emphasis among those interviewed was that different actors had different interests and expectations from the planning process. As one of the participants observed, mayors were more focused on actions (projects) rather than long-term financial and social proposals of the NMP. As a consequence, the follow-ups of NMP (Second Phase-Revitalisation of the Walled City; New Vision for the Core; Buffer Zone Surveillance) were all physically oriented projects. Even though the projects have helped to create a consciousness for preservation and restored the lost vitality of certain districts, it is possible to observe on-going decay and dereliction in other parts of the Walled City—specifically, right adjacent, or in close proximity to the project areas.

Lastly, although the NMP was prepared to address problems of the city without awaiting a peace settlement, its mutual and compatible implementation relies on the political climate (A. Kanlı, personal communication, March 29, 2013). This indicates an important delicacy of the NMP; that it depends on the goodwill of the leaders and commitment of the NMP team members.

All in all, most of the Greek and Turkish Cypriots interviewed perceive themselves as contributors to a future peace process. They have the belief that important steps have been taken to get Nicosia ready for a future reunification and that this has been done in the name of urban planning. Despite the apolitical attribute of the master plan, they have been involved in a political negotiation process throughout decades. This proves that planning can be used as a pioneer tool as well as the basis for transboundary cooperation and peaceful living in cities.

3. Transboundary Movement: Border Crossings

As mentioned before, the Green Line was almost totally impenetrable until 2003 for ordinary Cypriots. Between 1974 and 2003, although there were isolated instances of visiting sacred sites or relatives on the other side (Webster and Timothy, 2006) border-crossings were not allowed. In the immediate aftermath of 1974 events, non-Cypriot visitors, however, were permitted to cross to the north on foot, but crossing from the north to the south was not allowed. In addition, non-Cypriots who crossed to the north had to return the same they and they were not allowed to bring anything they purchased on the north in to the Republic (Webster and Timothy, 2006).

In 2003, following an agreement between Turkish and Greek Cypriot officials, restrictions on the Green Line were removed to a certain degree. Two checkpoints were opened in Nicosia: the Ledra Palace crossing for pedestrians immediately west of the Walled City; and the Agios Dometios/Kermiya crossing on the western outskirts of Nicosia for vehicular movement (Figure 4). Although both of these crossings are far from central locations of the city, a record number of Cypriots crossed the border on the first day, April 23rd: approximately 5,000 GCs and 2,000 TCs (Talas, 2003). As claimed by the US Department of State's (2004) Bureau of European and Eurasian Affairs, in the 1,5 years between April 2003 and December 2004, more than four million crossings had been made by the island's population (Webster and Timothy, 2006).

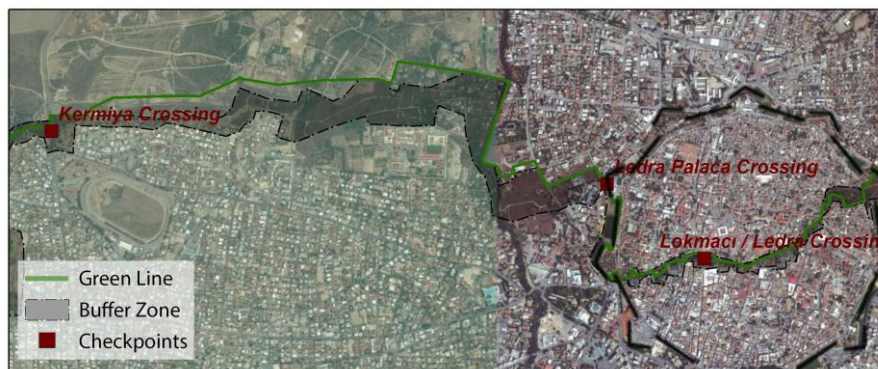


Figure 4: Checkpoints of Nicosia (Caner, 2014)

Webster and Timothy (2006) examined the motives of Greek Cypriots for crossing or not crossing the Green Line, following the opening up of the border in 2003. According to the survey conducted in 2004, 57% of the GC population would not cross to the north, main reason for this being the refusal to show an ID/passport. Principal rationale behind this is that showing a form of identification is considered as a political act that legitimises the existence of an unrecognised Turkish Republic of Northern Cyprus. However, apart from nationalistic impulses, they note that several responses illustrated a level of disinterest as the reason for not crossing. Greek Cypriots who cross the Green Line, on the other hand, indicate their

reasons as visiting their ancestral lands, followed closely by sheer curiosity about the other side. Webster and Timothy (2006) give additional motives for crossing as casino gambling and prostitution, which have begun to grow as touristic attractions in the North.

There is a limited number of studies conducted after the opening up of the border in 2003 which investigate the motives of both Greek and Turkish Cypriots to cross or not to cross. However, the fact that GCs are more reluctant to cross the border than the TCs is clear from the border crossing data (Table 1). The gap between these numbers can also be explained by reasons other than the hesitancy of GCs to cross to the 'occupied zone'. TCs cross the border for a great variety of reasons including working, medical care, education services, and shopping from world brand stores do not exist in the north, while GCs do not.

	2003	2004	2005	2006	2007	2008
GCs	1123720	1173825	1319899	897044	601351	708656
TCs	1371099	2159541	2222199	1638734	1116990	1298325
Total	2494819	3333366	3542098	2535778	1718341	2006981

Table 1: Crossings through the Green Line (Jacobson et al., 2009)

Intra-island trade became possible after the border opening, in August 2004 with the Green Line Regulation (GLR). As stated by Yorucu et al. (2010) this is a type of trade regulation which demonstrates a complex set of rules governing trade between the two sides. The authors point out in their findings that these border openings did not generate a significant trade creation effect due to the complicated nature of the GLR (Yorucu et al., 2010). According to them, it was not until the opening up of Ledra Street that border crossings had a significant effect on the commercial and social life of the city.

In Yorucu et al.'s (2010) words:

"[...] Ledra Street in the Walled City of Southern Nicosia has survived as the busiest high street with modern shops, cafes and restaurants, whereas on the Turkish side, Arasta Street and Kyrenia Avenue and the old commercial centre originating from the Ottoman period have continued to exist [Figure 5], yet, with physical scars of political isolation and trade embargo". (Brackets by the author)

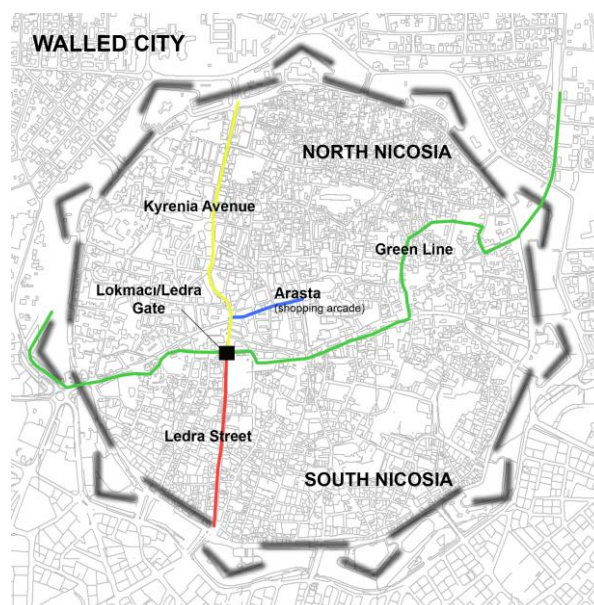


Figure 5: Map of the old city of Nicosia showing the Green Line, Lokmaci/Ledra Gate and major commercial axes close to the Gate (adopted from NMP - UNDP/UNCHS, 1984)

Owing to these unique characteristics of Ledra Street, the opening of Lokmaci/Ledra checkpoint had an impact on the immediate surroundings of Old Nicosia. Right after the opening up in April 2008, this most important part of the barrier was transformed into a bridge. In the first week alone, 20,000 people crossed the border, and in a month, this number exceeded 101,000 (Jacobson et al., 2009).

In order to evaluate the impact of Lokmaci/Ledra Gate opening on 1| peoples' perceptions and experiences and 2| revitalisation of the Old Nicosia, we will reside with a study undertaken by Peace Research Institute (PRIO) in July 2008. The results are summarised below (Jacobson et al., 2009):

- 60% of GC and 90% of TC users of the crossing said that they regard the opening as positive.
- 48% of GC and 50% of TC users said they visit the other side more often since the opening.
- GCs cross to the north primarily for sightseeing; TC cross to the south primarily for shopping.
- 24% of GC and 62% of TCs have contact with the respective other when they cross the border.
- 57% of the GC and 34% of the TC said they visited the centre more frequently since the opening.
- Both Turkish and Greek Cypriots purchase mainly clothes on the other side.
- Overall, both Greek and Turkish Cypriot shopkeepers in Nicosia's old centre experienced increasing revenues after the opening in terms of turnover.

The study revealed that the opening of Lokmaci Gate led to increased social contact between Greek and Turkish Cypriots across the Green Line and acted as a trigger for the revitalisation of old Nicosia's commercial sector.

The latter has also been suggested by a similar research conducted by Yorucu et al. (2010). This study focused on cross-border trade liberalisation following the opening up of Lokmaci/Ledra Gate. According to them "Trade expansion in the immediate vicinity of the SME [Small- medium- enterprises] sector around the Ledra Street/Lokmaci Gate has [...] generated an increasing multiplier effect, causing investment in new commercial ventures as well as restoration/renovation of old buildings in the Old Walled City". New bars, restaurants, cultural facilities and other vital urban functions emerged and made a great variety of the population to re-discover this part of the city which was once perceived as a no-go zone (especially in the North). Eventually, trade creation has resulted in cultural enrichment, where, the area, rich in cultural and historical heritage sites, has been eventually revitalised.

Yorucu et al. (2010) conclude that due to the opening up of the Gate, the gains have been especially significant for the North, which has long suffered from trade embargo. However, Jacobson et al. (2009) suggests that South has also positive gains, concluding: "[...] rather than one side gaining and the other losing from the new crossing, the opening provides evidence of a win-win scenario for Cyprus".

A continuous Ledra Street (without borders), was an anticipated condition by the NMP teams and their follow-up projects included scenarios to support such a situation. When the Gate opened, it made a significant contribution to the ongoing revitalisation of the Walled City. Today, as supported by the fact that more than 2,000 TCs cross to work in the south each day (Bray, 2011), two parts of the divide show a degree of interdependence. In terms of urban life, a dynamic daily activity zone has emerged around the crossings and within the Old City.

4. Conclusion

As a conclusion, the two reinforcing effects (i.e. cooperative projects and opening of the Gate) seem to have broadly similar impacts in the Old City. Consistent with Yorucu et al.'s (2010) results, it can be observed that earlier revitalisation/restoration works provided complementary positive effects on trade creation that occurred after April 2008. In other words, the opening of the Gate has supported earlier revitalisation projects and helped to reverse a steady process of decline in Old Nicosia.

The common belief among TCs and GCs that a reunification may bring economic downturn to their community is asserted to be a myth by the studies investigated in this paper. The surveys have resulted that, apart from the benefits of a revitalised urban core, opening up of the border has created economic advantages for shopkeepers on both sides.

On the other hand, it can be argued that the positive effects of Gate openings and NMP follow-ups are highly localised. Elsewhere, Nicosia continues to be divided and even in areas within the Walled City which are in close proximity to the checkpoints or main commercial axes, urban decay remains to be an important problem.

Although there is a history of transboundary cooperation and movement, Cyprus still remains politically and physically divided. As we have seen, both the NMP process and the border openings rely on politically stable relations and the goodwill of leaders. Recent optimism in the political climate which lead to opening up of another border and removing visa requirements at checkpoints are a case in point. These positive movements can reverse the GCs propensity to not to visit the other side and open new channels for social contact and reconciliation. These realities emphasize the need to support bottom-up dynamics such as civil-society exchange programs, which had had an impact on opening up of the Ledra Street in 2008.

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Trans-boundary Urban Development Cooperation as the New Global Growth Engine: The Research on Mechanism of Sino-Singapore Cooperative City Building Practices

(The New Global Growth Engine: A Discussion on Mechanism of Sino-Singapore Cooperative City Building Practices)

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Abstract:

The paper mainly elaborates the study on mechanism of Sino-Singapore cooperative city building practices through the discussion on trans-boundary urban development cooperation as the new global growth engine, with analysis models built from four Sino-Singapore cooperative city building cases: i) Sino-Singapore Suzhou Industrial Park; ii) Sino-Singapore Tianjin Eco-city; iii) Sino-Singapore Nanjing Eco High-tech Island; and iv) Sino-Singapore Guangzhou Knowledge City. The dynamics and patterns beneath the surface will be illustrated to rethink about future city development. In the same time, the paper unfolds a discussion on the concept of "sustainability" on such kind of cooperative ways in building cities with the win-win goal. Implications from the mentioned four projects towards city building activities under the situation of cross-border collaboration would also be highlighted.

1. Introduction to the Study

In the unprecedented trends of urbanization, globalization and informatization nowadays, cities are no longer developing by traditional means with limitations of locality and capacity. The occurrence of new urban issues such as population explosion and urbanization, global markets and international capital brings us on the way to explore a sustainable approach concentrates on building better urban future. Asia, the continent where gathers a large part of global population on this planet, from the developing countries to the highly developed countries, has a variety of human settlements forms in existence. The era background finally let the dynamic flow between human capital, social capital, financial capital and etc. become possible. Emergence of more and more trans-boundary urban development cooperation actions has become the contemporary new global growth engine of urban development in a wide range all over the world. Among all examples, the cooperative city building practices based on collaboration between the Government of China and the Government of Singapore may be good annotation to the efforts pursuing sustainable future urban development and transformation.

2. The "Glocal" Age: Dynamics in Urban Development from Local to Global

2.1 The Classic Local Growth Engine: The City as the Urban Growth Machine

Before the era of globalization and informatization with population explosion and unprecedented process of urbanization, researchers focused on and discussed about urban issues more from the local perspective. The concept of growth machine is defined by a characterization of local governments, i.e. that municipalities are basically growth machines that produce wealth for those in power by encouraging real estate development at the taxpayers' expense. Sociologist Harvey Molotch observed in 1976 that a common interest in growth is one of the few issues that unites and politically mobilizes those in the upper echelons of the social hierarchy (Molotch, 1976). As stated by Logan and Molotch (1987) later, "*place is a market commodity that can produce wealth and power for its owners*" (Logan and Molotch, 1987, pp. 199). They emphasized local elite groups around questions "*Who governs?*" and "*For what?*" mentioning that the issue that consistently generates consensus among local elite groups, while separating them from people who use the city principally as a place to live and work was the issue of growth (Logan and Molotch, 1987).

All of this competition, in addition to its critical influence on what goes on within cities, also influences the distribution of populations throughout cities and regions, determining which ones grow and which do not. The incessant lobbying, manipulating, and cajoling can deliver the critical resources from which great cities are made (Logan and Molotch, 1987, pp. 200).

The local elite groups which contribute to stimulate growth and development also have been given the highlight in their explanation:

Although virtually all places are subject to the pervasive rule of growth boosters, places with more active and creative elites may have an edge over other areas. Cities with reputedly more powerful elites tended to have stronger growth rates. This may mean that active elites stimulate growth, or it may mean that strong growth emboldens elites to actively maintain their advantage.....we stress that the activism of entrepreneurs is, and always has been, a critical force in shaping the urban system, including the rise and fall of given places (Logan and Molotch, 1987, pp. 201).

Generally in speaking, Logan and Molotch state the role of growth machine as a driving force and a driving dynamic in urban development that has long been a factor in history. Cities are always set in the position to affect 'factors of production' which are believed to "*channel the capital investments that drive local growth*" (Hawley, 1950; Summers et al., 1976; Logan and Molotch, 1987, pp. 204). The coalition of the growth machine mobilizes cultural motivations, legitimizes and channels them into activities that are consistent with growth goals. Here politicians, local media and utilities are considered as the major groups in the coalition of the growth machine. In promoting and maintaining growth, certain institutions including universities, museums, theaters, professional sports, organized labor, self-employed professionals, small retailers, corporate capitalists and etc. play the auxiliary role. Resulting from the dynamic process, the effects of growth are mainly categorized on i) fiscal health; ii) employment; iii) job and income mobility; iv) eliminating social problems; v) environment; vi) accommodating natural increase; and vii) satisfying public taste (Logan and Molotch, 1987).

Though the cases used were mostly in context of American cities, the exploration beyond the borders of urban development and transformation phenomenon still could give us the entry point to rethink about dynamic urban change process in the context of developing countries.

2.2 The New Global Growth Engine: Dynamics from Global Market and International Capital

In the last three decades changes have emerged under the effects from the trend of globalization. This trend drives increasingly number of cities all over the world into the new urban development and transformation era; cities are no longer grow only due to the local growth engine with most dynamics inside the cities themselves, but gradually grow due to the new global growth engine with more and more dynamics outside the cities --- global market and international capital. The global economy is defined by as "*works in real time as a unit in a worldwide space, be it for capital, management, labor, technology, information or markets*". (Castells and Hall, 1994). Since then, the borders of nations have become "indistinct" on various levels from politics, economy, society to culture, comparing with the past traditional definitions for them in the framework of administration and territory. These dynamic boundaries that beyond traditional meanings and limitations let us define them from new angles again. Therefore under the influence of global market and international capital, the views and relative analysis on a city should combine both of the classic local growth engine and the new global growth engine.

In 1990, Susan Fainstein put forward the two ways of analyzing cities in '*The Changing World Economy and Urban Restructuring*' :

- i) The first approach works from the global side, examines the international systems of cities, as well as its national and regional subsystems. This model attributes them to the specific node within the overall network which a city takes place while noting particularities.
- ii) The second approach on the other side works from the inside-out, examines the forces which create the particularities of a specific place. These include the economic base, the social divisions, the constellation of political interests, and the interest of participants (Fainstein, 1990).

Within the first approach, differences among cities are "*manifestations of the varying components that comprise the whole*"; while within the second approach, urban diversity is traced to "*internal forces and the tactics used by local actors*" (Fainstein, 1990, pp. 110). Houston was taken as the example to illustrate the point:

Using a world system approach, we see Houston as building its prosperity on its unique function as the center of the US oil industry and the headquarters of firms dominating world petroleum exploration and marketing.....Most important, this approach provides insight into the general relationship between macroeconomic forces and urban outcomes.....The inside-out approach to explaining urban restructuring, on the other hand, allows us to identify the dynamic factors driving Houston's adaption to changing circumstances (Fainstein, 1990, pp. 110-111).

Fainstein (1993) later examines other examples through major redevelopment efforts in New York and London, to uncover the forces behind these investment cycles and the role that public policy can play in moderating market instability, in her studies of government and public

policy based on property development in New York and London. Analyzing the political and economic processes underlying physical changes in these two cities during the last two decades, she uncovers the role played by developers' perceptions and strategies in their interactions with both public policy makers and property markets (Fainstein, 1993).

According to elaboration above on "the classic local growth engine" and "the new global growth engine, we may here point out that the "glocal" age has come. The "**glocal**" here is defined as "**global impacts on the local**" (Bjønness, 2008). Maybe for a city a certain time ago it would be fine to develop only based on attention paid on the development of itself; but nowadays, no matter in convergence or on divergence, well addressed in the global market and allocate the international capital in an optimizing way in the framework of win-win model will benefits all fields of a city in reality.

3. Trans-boundary Urban Development Cooperation

3.1 Urban Development Route of Singapore: Miracle and Experience

In 1965 when Singapore was just independent, the whole country suffers from the difficulties all around; the lack of resources, the very poor situation in infrastructure construction, the urgent needs for housing and the ways for the nation to survive under such terrible conditions. As Lee Kuan Yew mentioned in '*One Man's View of the World*', the problems he was facing were that among the neighborhoods with abundant natural resources and human resources, and more expanse living space, how Singapore could survive, how Singapore could be unique while comparing to its neighborhoods. He then pointed out that if the nation's system is not incorruptible, they should let it be incorruptible; if the nation's legal system is in chaos, they should act in strict accordance with law; if an agreement or a decision has been made, they should abide by it. They need to create the stable and trustable figure for the investors. They need to have the world-class infrastructure and the world-class service staff while all the people accept English education. Marine transportation and air transportation should all be good; the cables should be good; and now the internet communication should be good (Lee, 2013). Today, the legend story of urban development by Singapore as a world famous gorgeous garden city in the past fifty years has witnessed the magic exploration and practice on the way towards ecological and sustainable urban development. Yet under the surface of the prosperity and stability of this beautiful garden city, there actually have more strengths in answering why Singapore could use the time of only one generation to ascend from the third world to the first world.

3.2 Sino-Singapore Collaboration

Deng Xiaoping made the famous southern tour of China in the spring of 1992 to reassert the economic agenda and policy, stressing the importance of economic reform in China while criticizing those that against further reform and opening up. Just in this famous tour, he indicated that the social order of Singapore is good with strict management, China should learn from Singapore's experience. This speech raised the trend of "*Learning from Singapore*" in China at that time. Just in time, Lee Kuan Yew, the Singapore's founding Prime Minister also hoped to find a place in China to "copy" and "record" the successful experience of

Singapore. He later put forward the strategic image of Sino-Singapore cooperation on building the industrial park. In 1994, the project of Sino-Singapore Suzhou Industrial Park initiated as the pioneer project at the national level as the first model of Sino-Singapore cooperative city building practice. Since established the diplomatic relations in 1990, China and Singapore have communication and cooperation in all fields from culture to economy and trade with increasingly growth. But actually however, the hint of cooperation between the two countries started even much earlier. In the memoirs of Lee Kuan Yew, the founding Prime Minister of Singapore considered Singapore's bilingual way as his "*life challenge*" (Lee, 2013). Though meeting lots of challenges and obstacles, his insists on promoting the bilingual way in Singapore never vacillated. The motivation of this action was let the nation establish national identity and cultural confidence, through building the united country that most people are both good at English and their native language after being forced to be independent from Malaysia. But after the unexpected economic rise of China in the later future, the bilingual way of Singapore let both countries have more possibilities in all-round cooperation. By now, with enhancement of territorial trans-boundary connection and with rapid social and economic development in China, Singapore has been able to bring "financial, technological and management capitals" to target at its outer market.

4. Case Study and Analysis

Case study and analysis are based on the following four Sino-Singapore cooperative city building projects:

- 1) Sino-Singapore Suzhou Industrial Park
- 2) Sino-Singapore Tianjin Eco-city
- 3) Sino-Singapore Nanjing Eco High-tech Island
- 4) Sino-Singapore Guangzhou Knowledge City

In regional locations, the distribution of the projects have covered the Yangtze River Delta, the Bohai Sea Rim Region, and the Pearl River Delta, geographically ranging from the eastern part, to the northern part, and to the southern part of China. In time spam of 15 years from 1994 to 2009, after the initiative of Sino-Singapore Suzhou Industrial Park, in the years of 2007, 2008 and 2009, Sino-Singapore Tianjin Eco-city, Sino-Singapore Nanjing Eco High-tech Island, and Sino-Singapore Guangzhou Knowledge City successively initiated.

4.1 Brief Review on the Four Cases

Four Cases	Sino-Singapore Suzhou Industrial Park	Sino-Singapore Tianjin Eco-city	Sino-Singapore Nanjing Eco High-tech Island	Sino-Singapore Guangzhou Knowledge City
Starting Year	1994	2007	2008	2009
Regional Location	The Yangtze River Delta, P.R. China	The Bohai Sea Rim Region, P. R. China	The Yangtze River Delta, P.R. China	The Pearl River Delta, P.R. China

City Location	Suzhou Jiangsu Province	Tianjin	Nanjing Jiangsu Province	Guangzhou Guangdong Province
Area	Planning Area: 288 km ² Administrative Area: 278 km ² Sino-Singapore Collaboration Area: 80 km ²	Planning Area: 30km ² Start-Up Area: 4km ²	Area: 15.21km ²	Planning Area: 123 km ² Developable Land Area: 60 km ² Start-Up Area: 6.27 km ²
Population	Resident Population in Sino-Singapore Cooperation Area: 781,000	Planning Population: 350,000	/	Planning Population: 540,000 Employment Population: 270,000 Start-Up Area will house around 77,000 people, and provide estimated 35,000 people.
Pillar Industry	<ul style="list-style-type: none"> ■ Leading Industry: Electronic Information Manufacturing and Machinery Manufacturing Industries, towards high-end oriented and large-scale development ■ Modern Service Industry: Finance Industries, Service Trade Innovation, Commercial Logistics, Cultural and Creative Industries, Tourism Messe ■ Emerging Industry: Nanotechnology 	<ul style="list-style-type: none"> ■ Technical Research and Development Industries ■ Energy Conservation and Environment Protection Industries ■ Cultural and Creative Industries ■ Modern Service Industries ■ Ecological Tourism Development 	<ul style="list-style-type: none"> ■ Information Technology Service Industries ■ Ecological and Environmental Protection Service Industries ■ Urban Service Industries ■ Modern Agricultural technology Service Industries 	<ul style="list-style-type: none"> ■ Next Generation Information and Communication Technology (ICT) ■ Biotechnology and Pharmaceuticals ■ Clean Technology ■ Next Generation Materials ■ Cultural and Creative Industries ■ Science and Education Services
Government-Enterprise Relationship	/	Mainly proposed by government, and implemented by enterprise.	/	Mainly promoted by enterprise, supported by government

4.2 Mechanism and Institutional Structure

Mechanism and institutional structure of Sino-Singapore cooperative city building practices have a comprehensive system (*Figure 1*). The core meaning of the mechanism is the national

level agreement on studying and implementing the appropriate experience on economy, public administration, urban development etc. from Singapore in the specific cooperative building areas in China. Generally speaking for the details of the model, in the Sino-Singapore cooperation framework, the governments and the enterprises taking participation in each project are relatively independent in administration. Within the cooperation framework, there are two general levels, the government-to-government cooperation level and the private sector cooperation level. Six work committees are contributed to handle project works on the ground due to different levels and situations.

At the government-to-government cooperation level, the Sino-Singapore Joint Steering Committee, which is co-chaired by Chinese Vice Premier and Singapore Deputy Prime Minister, in charge of strategic directions and decision making for major issues. Affiliated to the Joint Steering Committee, the Sino-Singapore Joint Work Committee which has two parts that one is composed by Ministry of Housing and Urban-Rural Development and other relevant government agencies of China, and the other is composed by Ministry of National Development and other relevant government agencies of Singapore, macro controls the progress and implementation of the projects and targets the milestones. Actions and practices on the ground of the fields are managed by the Sino-Singapore Bilateral Work Committee, composing of Chinese city municipal governments and other relevant city local area government agencies, with relevant Singaporean local management bureaus.

On the other side of the government-to-government cooperation level, the private sector cooperation level sets the Sino-Singapore Investment and Development Co., Ltd. as the core. the Sino-Singapore Investment and Development Co., Ltd. is formed by Chinese investment consortium, including Chinese enterprises like China Development Bank, TEDA Holdings etc., and Singaporean investment consortium, Singaporean enterprises like Keppel Corporation, including Sembcorp, Yanlord Land Group Limited etc.

Both sides of the government-to-government cooperation level and the private sector level finally all in convergence with the Sino-Singapore Project Administrative Committee, the functional institution which is the "project manager" as well as the "implementer" in the fields and practices of the projects. In the project of Sino-Singapore Suzhou Industrial Park, there are also some auxiliary institutions for the Committee: the project office that in responsibility of using Singapore's experience in sustainable city building and development as references, cooperating with the relevant or similar project offices in Singapore. The mechanism and institutional structure in the four cases that we could refine as the following key points: i) Sino-Singapore cooperation as the foundation to aim at sharing resources, experience and professionals cross-border on urban issues including ecological urban planning, water treatment and purification, environment protection, high-tech industry development etc. ii) government-enterprise separation administration model; iii) under supervision of governments; iv) on operation with enterprises; v) in development control by urban planning; vi) the development and building model in constraint from economic and technological index. This model of mechanism and institutional structure to some extent contributes positively to the achievements of the four projects as an approach towards sustainability; for the innovative model of trans-boundary cooperation and administration, the transparent way of operation and management, and the efficient way of practices and implementation.

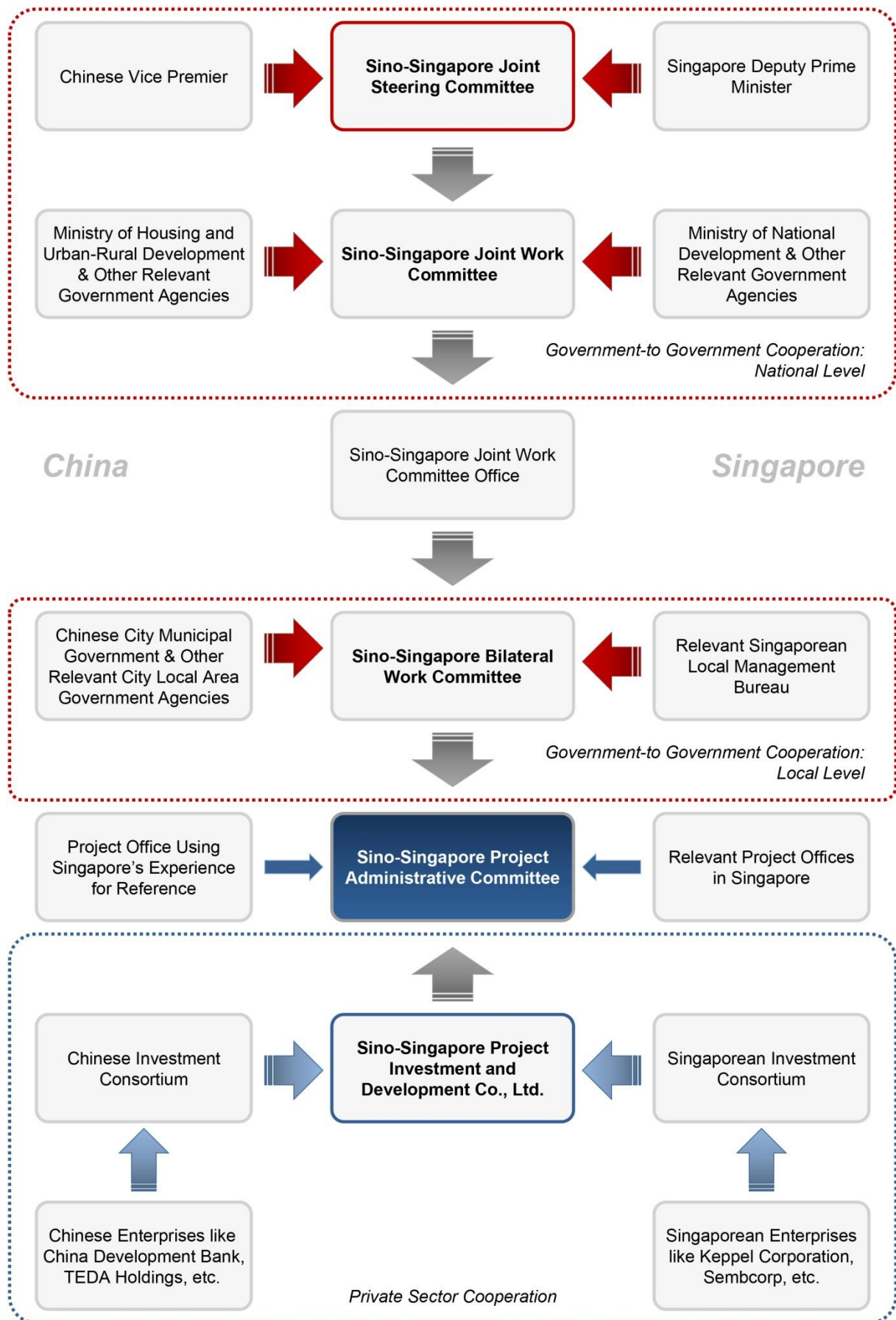


Figure 1: Mechanism and Institutional Structure of Sino-Singapore Cooperative City Building Practices

The mechanism and institutional structures themselves in the mean time represent the practices from the perspective of polycentric-governance (Ji, 2014). In the governance framework, the case of Sino-Singapore Tianjin Eco-city is built as mainly lead by the government, while the case of Sino-Singapore Guangzhou Knowledge City is built as mainly promoted by enterprises. There is a diversity of leading or main promotion power in different cases, but on the common ground, they are all co-construction mechanism on the basis of government-enterprise separation, obeying the principles of "separating governments and enterprises, operating with marketization" and "small government and big society; small management and big service". (Ji, 2014). According to Ji's (2014) elaboration, the polycentric-governance reaches three goals: i) the main body of governance is multicomponent; ii) the power of governance is non-monopoly; iii) the mode of governance is democratic.

4.3 Sustainable Approach within the Four Cases

Though pillar industries in each project are various, all of the industries aimed with similarities at the ecological and sustainable vision. All of the four cases show the harmony in coexistence of people and people, the harmony in coexistence of people and economic activities, and the harmony in coexistence of people and environment. The concepts and sustainable approaches of "eco-cities" and "smart cities" have been emphasized in each project, which are defined as the thriving cities, which are socially harmonious, environmentally friendly and resource-efficient, a model for sustainable development (Ministry of national Development, 2007; Koh, Gunawansa and Bhullar, 2010). Besides, the three pillars of sustainability are recognized as useful tools worldwide for defining the complete sustainability issue ---- the economic pillar, the social pillar and the environmental pillar. Generally in concept, the sustainable approach for sustainable cities states "*the importance of simple, environment-friendly measures and good governance in modifying existing cities or creating environmentally sustainable cities*" (Koh, Gunawansa and Bhullar, 2010).



Figure 2: Sino-Singapore Guangzhou Knowledge City – a unique, vibrant and sustainable city
(Source: <http://www.ssgkc.com/gkc-project/overview>)

5. Implications for the Future Development

The pattern of the Sino-Singapore cooperative way in building cities has already opened a new chapter in global urban growth and urban development, while let each party involved in think out of the box, learn from each other and stand together in aims of a better urban future. Singapore is in lack of: i) territorial resources and urban development space; ii) labor resource; and iii) stable development hinterland, which are meanwhile the resources that China is in sufficient of: i) adequacy land resources and potential development space; ii) abundant human resources; and iii) development hinterland. However at the same time, in developing countries urban development is sometimes "out of control" while planning efforts are fragmented and incremental (Bjønness, 1998), and Singapore has its own distinct and incomparable advantages from the following four aspects: i) well highly developed economy and tertiary industry; ii) adequate and effective access to the funding and international financial channels with good quality; iii) networks widely link and communicate with the international society; iv) wholesome and world first class management; these are all what China urgently need too. All in all, the resources that both sides of China and Singapore have are coincidentally in complementary situation.

Sometimes, "*one plus one is greater than two*". Trans-boundary urban development cooperation through the carriers such as the mentioned four Sino-Singapore cooperative city building practices has revealed the way of bilateral work to integrate local resources and international capitals, to address local knowledge and professionals in the context of global market with regional experience knowledge, and wisdom sharing, in the reasonable way achieving the sustainable and ecological illustration from the economic, social and cultural visions. Cross-border cooperation thus has become the choice meets each side's, no matter China's or Singapore's strategic development pursuit. Singapore's explorations and practices in the past three decades have formed the market economy with its own characteristics. As a matter of fact and as a good and successful example, Singapore is not only the reference for China to go on the way of building and developing cities in an ecological and sustainable way, the unique experience Singapore has on social governance and administrative management like incorruptible government construction, social cohesion cultivation could also be a very good lesson for us.

6. Conclusion

Maybe it's still immature or too early to simply judge the Sino-Singapore cooperative city building practices through the four research cases as "successful" or not till today, but the mechanism, institutional structure and dynamics beneath those cooperative city building practices aiming at a sustainable approach have still give us the great starting points to think about building better urban future out of the limitations from the boundaries by definition of traditional geographical meanings. From the pioneer project, the Sino-Singapore Suzhou Industrial Park, to the latest Sino-Singapore Guangzhou Knowledge City, the cooperative city

building practices between China and Singapore have walked together for twenty one years. The transnational cooperative way under background of urbanization, globalization and informatization opens the new window for more potential cooperation opportunities with international capital in global market. There stands a chance that the similar cooperative way of city building model to be promoted to a wider region, for our brighter, ecological and sustainable city future.

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Build A Trans-Boundary Urban System From the Top Design to Bottom

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1. Abstract: From the very beginning the urban design has been divided from architecture design, so we regard it as a branch of architecture. As time passed, with the development of science and technology and many other subjects, even the social life itself, influence the urban design so much and make it greatly breakthrough the original root. So how to build a new trans-boundary urban system in a broad sense, not only the nation or land, but also the achievement of all subjects related and how to integrate and optimize them is an important theme and methodology we face today, in different level from the top design to bottom practice of urban system.

Key words: Trans–Boundary System and Organism Scientific Rationality and Distinct Feeling Strict Discipline and Changeable Reality

Thanks for the invention of the IC technology, our world becomes a global village. Comparing with last several centuries, it is much easier for us to understand and communicate with different nations, so does the transportation to us. Even one of the famous western philosophers one century ago, realized that western and oriental people need to learn from each other according to the demand of self-improvement of human beings. Headvocate the complementary relationship between individual and group, scientific discussion for truth and practical usage for kindness, competing strictly and cooperating harmony, conquering nature and letting nature take its course, and so on. What I concentrate in this paper is made up of four principle points:

In order to rise to the difficulties and challenges nowadays, first of all, we have to break through the rationality and intuition. Construct a new bridge between the oriental wisdom and western intelligence in our minds, so that we can have a new world understanding and learning from each other ideally.

It's true that today every nation has met its challenge and chance. But it is not absolute, it depends on the opinion to them, challenge is chance and chance is challenge too, because we have so many ways to develop beyond the past time, in the global village, we are one part of it. One development chance can increase more challenges and chances for others, while we are one whole, we can optimize them, balance and make things better. When different nations meet the same situation, different solution appears, each nation is good at some kinds of thinking, technologies, methods, which help them to develop, proceed, meet and solve problems.

Not only adjacent nations, but the western and oriental country people also have different opinion through rationality and intuition. In a sense, science is the theory proved by the facts, distinct feeling and those cannot be called rationality has not been proved completely. It is one of the essential opinion of Imre Lakatos, the famous scientific philosopher wrote, each scientific research programme, such as Newton's law of gravitation, Einstein theory, quantum mechanics, Freudianism, has particular protected hard core, which has its flexible protective belt, carefully considered solution approach. Even then, "Each of them, at any stage of its development, have unsolved problems and undigested anomalies." We can be inspired from the pure scientific research greatly.

Secondly, City is also an organism, different city has its own gene, working system and discipline, with which city can keep healthy and lively and which needed to be recognized and known better and better. With the achievement of science and technology, also appreciated for the traditional heritage, we have the ability to proceed the trans-boundary process of itself today.

More than 70 years ago, Eliel Saarinen(1873-1950) has compared architecture and urban as organism, social order is the precondition of existence and development of the social organism, derivative outgrowth of "organic order"----the dominated all power principle. The first and most important thing for a city is to make sure the gene of it. This is the base of all works. It needs not only ration and scientific method, but also real experience and distinct sense through its history, climate, geographical advantage, natural resources, infrastructure level, welfare system, architectural heritage, culture and tradition, education and entertainment, roads and internet, economic and industrial production, dwelling people, visitors, governors, managers, related interest groups... What we need is to make clear the key of the city from yesterday to tomorrow, the root of the city.

No matter how many years passed, how to graft it, it's the characteristic nature itself. As Sarenen has said in his book, the amazing valley, mountain, river, lake and sea, the vineyard grapery, the decorated architecture and beautiful forum, will be the extraordinary views people love to see, to experience forever. So these are absolutely precious for us, protect them as good as possible no matter how big interest it may take. We come from nature, it's the home of mankind. Different attitudes to it make the world colorful and meaningful.

If we compare city to a big tree, the more should be based on leafy shoots, full of branches, fruits, and the fruit finally show in flower beautiful city of wisdom, as the economy developed, the residents and visitors live a better city or village life. Every building in the city is part of the tree, like the leaves, is the general form of cities, simple but full of vitality and lasting year after year, as most European cities today show us that, the amazing church, city hall and square, a new landmark building, there are a large number of simple but robust residential and office buildings, concise, beautiful, interesting, to meet the use function of reasonable and reflect the real building, beautiful appearance, a large number of such leaves full of "innovation" coordination, it is the basis of the coordination and have a certain charm city level, it should be our today's urban construction guide. Therefore, a large number of construction also is, we really need to determine the basic positioning tone, as the basic unit of city construction, if under this benchmark it cannot pass, as a basis for the evaluation and decision, otherwise, the nationwide lamp tower demonstration effect is impossible, the wisdom, the flowers, tree, organism will be reduced to a slogan. And flowers is the centerpiece of the city and the feature of city, structure of road network from the city to the flowers are at the level of group, flower node, which embody the beauty of the flower and wisdom. This is we need to focus on demonstrations, bold carefully innovation part. Even if the tree has a unique grafting part, it should be based on the original body of ascension, there are some common genes, which includes part of the trees.

Thirdly, deep Analysis, broad synthesis, integration and optimization to let every branch system of the city rooted to the practice level and into details, with dissimilar methodology and means to improve so that to find and construct the right system to make the fair and reasonable decision according to the complicated and changeable reality, at the same time, it is the process which every citizen knows from the bottom of our daily life and feeling.

Meanwhile, when all systems of the city has established according to the circumstance, a whole relationship has set up, the most important step is to make it reality and feedback in time, it's a positive cycle, with fair and common-sensed basic principle and flex efficient rules for those who practice, the principle and rules then return to people who live and work there beyond it. People will fulfill and enrich them through the smart of daily life and

works, they will also suggest or upgrade them, as they are included as the member of the city's construction. People will help the root deeply inside the soil of the city, and the micro-root will be more fitted to the certain soil. Grasp the overall situation and sense the character of one tiny part, through the little change and sensor we can make the system run easily, whether it's urban area or rural area, national or between the territory border, cooperation can make win-win, it's an essential foreign fair we have to face the years coming. Benefitting from the transportation, people can travel from one nation to another, especially have a look nearby, the similar or same theme for tour to visit. So, to establish sister-city relationship near or far is an efficient way for the cities. Just make each other more well-known and cooperate easily, territory border is not a barrier, on the contrary, it's a symbolic of exoticism, which can make the city or village more attractive. For example, we can also make the travel route for them all, cooperate with the airline and car-renting company, with attractive aircraft ticket price, to let normal people visit several countries of the world and have more eyesight and economic activity chances for both people and cities.

Finally, Break down the walls between nations and cities, men and women, children and grown-ups, between different kinds of people, subjects, respect ourselves and each of them, at last when we can emancipate our mind and enrich enough to accept the adaptable philosophy, concept, methodology, all sorts of achievement of mankind from history to the latest science and technology and so on, we can build our glorious city in the coming future. Break down the walls between nations will be the best way for future. We face one world, we have the same destination, to live a better life, respect and be respected, have freedom to learn, to live, to work, to travel, a whole-life journey. City need manage and plan, people need to go and fro freely in order to find new ways to live, to experience. Only when everyone live in the city the way they like, live out themselves, the city can be more valuable and charming. Factually those scenery not only give people fun but also finding their destiny. Searching for hero inside oneself is just like searching for the root of the city, parting somatotype of the world. From the beginning, urban planning is a dream, the dream gradually become true.

Every city has been built by the people, for the people, it has greatly influenced by the people living in it. In fact, it is from the people, instead of the ration and laws. People make the law and find the orders existed before, but we must face the time, the reality today. We need to make up our minds to care for the people more and make the fitted law, flexible plan and design with the rapid scientific and technology progress.

How to conquer these and make more progress? With new thinking, new technology, new methodology, and new fitted people involved to help.

Different period urban design has changed greatly with the development of science, technology and other factors. We need to break-through and build a trans-boundary urban system in a broad sense, beyond the achievement of all related, integrate and optimize them with adaptable methodology and systems from the top design to bottom practice.

Exploring Equity Dimensions of Rail Transit Impact: A case study in a Chinese large city

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Abstract

Many Metro systems are being built or upgraded, especially in rapidly developing Asian cities, with the aim of redeveloping and regenerating new neighbourhoods. There are direct impacts (in terms of improved travel convenience), and also indirect impacts (such as land use, economic, environmental and social changes) associated with the transport investment. Empirically, the challenge is to isolate a myriad of factors and to show changes relative to counterfactual trends. There is an emerging body of evidence suggesting that regeneration effects triggered by urban transit system exert different types of impact not only on geographic locations, but also on population groups. There are different 'winners' and 'losers' from investments. Disparities in social equity, in relation to public transport provision, arise due to different levels of accessibility. Moreover, value uplifts in land and property price, changes to the physical and social environment, living cost and employment opportunity etc. also have diverse impacts on population groups. Transport provision can often fail to meet specific or even minimum needs in terms of social characteristics, ability, affordability, preference and attitudes. When a distribution of different types of impact across spaces and groups has a disproportionate amount of benefits or burdens, a problem of inequity emerges. Lessons are derived from the author's PhD research in Chongqing – a newly emerging, and rapidly developing, large city in China. The analysis explores how the impact of rail transit on development and regeneration differs depending on location and population groups, assessing the equity dimensions from the upgrading in value associated with transit investment. The analysis also explores what associated policies and planning interventions should be introduced to achieve greater in equity outputs.

1. Introduction

There is a substantial body of evidence (Hall and Hass-Klau, 1985, Banister et al., 1995, Davies et al., 2004, Vickerman, 2008) suggesting that rail transit system tends to benefit certain locations rather than others. Multiple factors which might cause the difference were previously researched but highly context-dependent. Moreover, it is put forwards by plenty of research (Feitelson, 2002, Geurs et al., 2009, Jones and Lucas, 2012) that regeneration effects of rail transit aggregate to exert different impacts not only on geographic locations, but also on population groups. However, dispute still exist that according to what criteria certain groups of population were defined as the winners or losers, and in what aspects they gain or lose. What's more, the methodology to quantify the disproportionate distribution is yet to be developed.

In response to this emerging dispute, this research explored the equity dimension of the rail transit investment in a case study example, a newly emerging large city Chongqing, in China. The paper integrates other influential factors with the transit investment in the methodology and result interpretation synthetically. It defines in what aspects different groups of people benefit or loses disproportionately and quantifies the result. As a conclusion, in contrast to the previous empirical studies, there is no viable dichotomy of absolute winners or losers in the transit impact. The transit convenience beneficiaries are also those who receive most adverse impacts. To add to the previous knowledge, the trend of benefit distribution tend to be a curve in which it tends to benefit a certain group of people most. This research suggests a threshold of capability relating to social economic attributes as criteria of actively competing for and achieving equal benefit distribution from the transit investment, which make the low

income people not in this position. These aggregations can trend, which potentially causes social inequity problems.

Furthermore, as suggestions to achieve greater in equity outputs, firstly a comprehensive appraisal system should be established to assesses the potential winners and losers of a given public transport investment, which is currently missing. Associated policies and planning interventions should then be introduced with an explicit focus on how benefits can be effectively delivered to socially disadvantaged groups in urban rail investment. To ultimately prevent an adverse impact on socially disadvantaged groups, community participation is crucial. Meanwhile, institutional cooperation, supplementary policies, and service planning such as housing, health, education, and other social service, should be incorporated along with transport investments.

2. Literature review

General regeneration effects of transport investments and policies consist of four widely recognized aspects including travel convenience economic, urban, and social effects.(Banister and Berechman, 2003, Banister and Thurstain-Goodwin, 2011) In actually, plenty of evidences have indicated that all the other three aspects have their social effects. Besides, the distributional effect is argued to be an independent dimension worth discussion. (Jones and Lucas, 2012) It directly points to the equity issue which is widely considered as implications of these cumulative distributional impacts. (Feitelson, 2002) However, the method to quantify the distribution extent, if ever disproportionate, are not well developed. Most of the previous research are interpreted in quality level.

In conventional environmental equity analysis, results of comparisons between hazards affected zones and unaffected zones are criticized to be influenced by transport indirect effects. (Geurs et al., 2009) It has also been argued that research on the relevance of social impacts should not only focus on spatial distributional effects, but also expand to include socio-demographic effects. (Jones and Lucas, 2012)Not all groups, as is suggested, for example differentiated by income, gender, race, ethnicity, age, geographical region, etc., will be affected evenly by specific transport policies or investments. (Geurs et al., 2009) Considering the way to explore the benefit distribution on different groups, a proper comparison between a typology of users versus those affected by the environmental cost are raised. (Feitelson, 2002) Other research also looked gains or loses according to income level, minority percentage, age, ect...(Mennis and Jordan, 2005, Gebreab and Roux, 2012)

Accessing interactions in the social network is argued to be hugely unevenly distributed, which made is a growing source of inequality. (Urry, 2012) Therefore it is useful to introduce the concept of motility, which integrates the two aspects of spatial and social mobility. It is defined as “the way in which entities access and appropriate the capacity for social-spatial mobility”. The key component of access can be affected by spatially unequal distribution. Besides, components as competence to recognize and make use of access, appropriation as interpreting or acting upon perceived or real access is greatly influenced by the skills and abilities of the population, which relate closely with their social-economic attributes. (Lucas, 2012, Cass et al., 2005, Kaufmann et al., 2004)

Therefore, transport disadvantage should be understood as an outcome not only because of disparity of transport provision or spatial accessibility. What makes the situation significantly worse is when the disadvantage interact with other social-economic attributes such as age, skills and abilities, etc. Besides, the emphasis of motility on both actual and potential movement possibilities addresses the importance to explore not only people’s social-economic characteristics in the specific social context, but also their perception, attitudes and behaviour, which indicates potential movement possibilities. Apart from these, it has also

been argued that, a lack of influence on decision-making, for instance, locking out of the planning process, also plays a great part in transport disadvantage of people. (Schwanen et al., 2015) These provide a way of contemplating how to explore social inequity from transport investment, in what aspects the inequity emerges and to what extent it is.

3. Methodology:

A rich range of literature has shown that transport was not a sufficient condition but a constraining factor on development. There must be other forces simultaneously working to contribute to the impact, and transport is just a part. But to what extent the transit can contribute to the development, research difficulties exist in quantifying development directly caused by transit project from a number of supporting measures which were introduced in parallel. (Hall and Hass-Klau, 1985) However, as is also argued, rather than on discerning the net effects, more emphasis should be on identifying the combinations of factors and the synergic measures to augment the effects. (Banister and Thurstain-Goodwin, 2011)

The research tend to include consideration of the other factors as the framework of the methodology, as shown in *Figure 1*. They are economic externalities, investment factors, political factors and some other factors. (Banister and Berechman, 2003) It will focus on exploring the transit effect by identifying its effect in the synergic augment and controlling other factors in comparison.

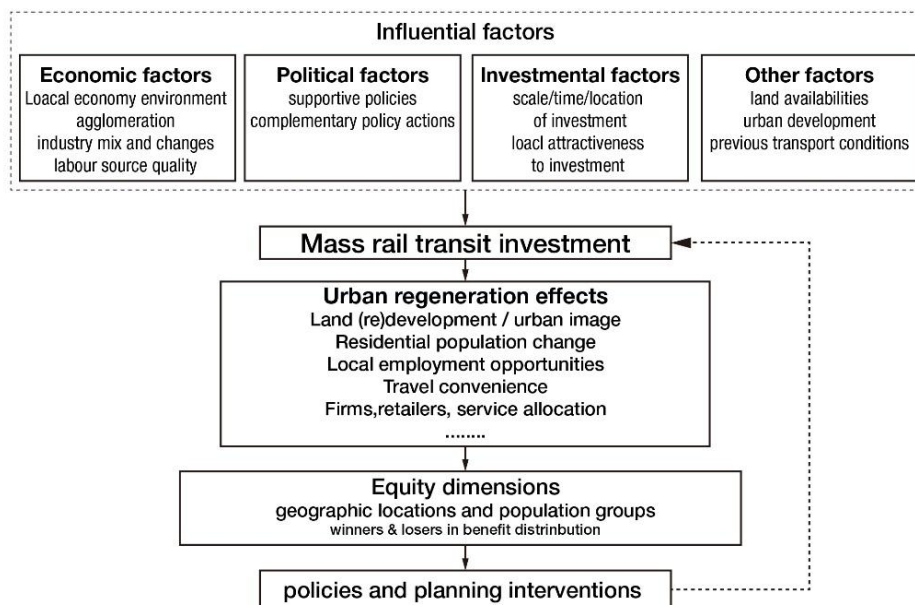


Figure 1: Research Framework

3.1 Context of case study areas in comparison:

As shown in *Figure 2*, three reference regions were selected according to the demographic census boundary. Within these reference regions, four station catchment areas and one non-station affected area were selected. A radius of around 500m catchment area was identified. One of the reference regions is in the old city region, which is called Daping Sub-district (DPSD in short). The other two reference regions are in the fast developing region on the north bank of the river, which are called Longxi Sub-district (LXSD in short) and Longta Sub-district (LTSD in short). Many old residents reside in DPSD in a poor living condition, either redundant workers or previous farmer years ago. It is also a popular destination of migrants to the city. Now it is experiencing massive urban regeneration with the refilling trend to the city centre. New investment have been developing lands to commercial centres, offices and expensive residential properties. In LXSD and LTSD, a small proportion of the residents are

once-reallocated farmers living in dismantling and setting communities. Most of the residents are new well- offs moved from the old region or outside the main city area along with the urbanization trend in China. They live in the new luxury communities.

Within Daping Sub-district, the transit station catchment area is called DP for short. The two catchment areas in LXSD are called Jiazhoulou (JZL) and Huahuiyuan (HHY). The catchment area in LTSD is Hongtudi (HTD). Both DP and JZL are fast developing areas and experiencing large scale land development of commercial centres and office buildings at the station. HHY and HTD are both mature developed residential areas. Residential communities in HHY are mostly developed in the 1990s, while those in HTD were recently developed within the last 10 years. In comparison of locational factors, JZL located along the main transit corridor linking the airport in the north and south of the city. DP is also along the east-west corridor in the old city, but less developed due to the economic context and restriction of the topography. Both HHY and HTD are long Line 6 which also running north-south but off the main transport corridor. The control area Luneng is located in Longta reference area. It is a large residential area called LN for short. The land is restored years ago and being developed patch after patch gradually in the ten years. Though off the transit corridor and without public transport access within 500m, it is a comparatively wealthy residential area.

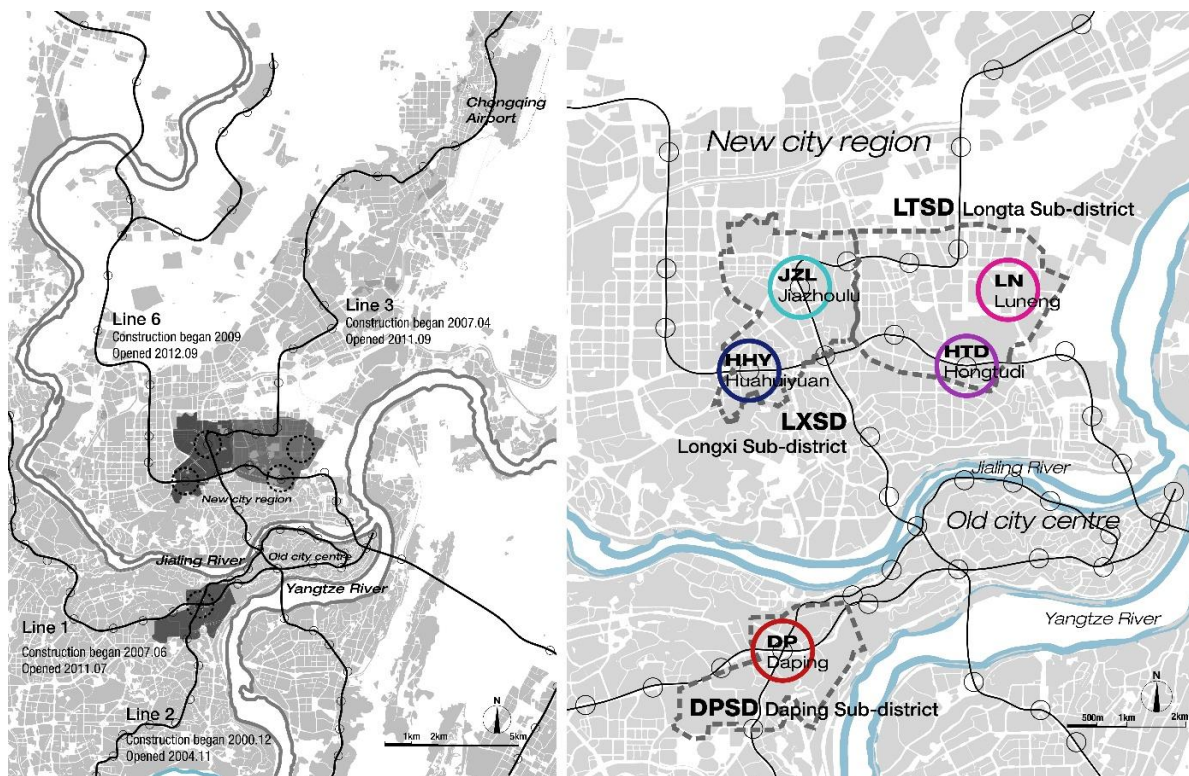


Figure 2: Reference regions, station catchment areas and control area

3.2 Research method:

This research adopted a comparison study across geographic locations and population groups. Changes across time in transit station catchment areas are compared to those in reference and control areas. Within both direct and indirect dimensions of rail transit impact, indicators selected to analysis are travel pattern, population, employment and income level change. As shown in Figure 3, these categories of data had been collected at four time points, which are in 2007, 2009 before the transit network formed with the opening of three new transit lines (Line 2 opened in 2004, Line 1,3 opened in 2011, Line6 in 2012) and in 2011, 2013. Data sources were both published Chongqing statistical yearbooks (2006-2014) and a great amount of reports collected from different levels of government.

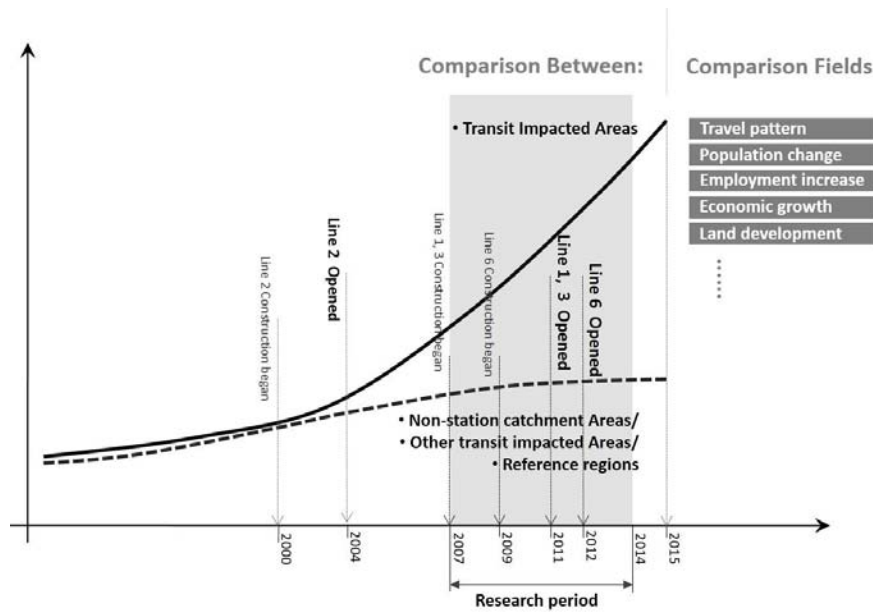


Figure 3: Census data analysis method

Both actual and potential mobility possibilities were emphasized to indicate inequality of motility (Kaufmann et al., 2004). A survey research is therefore quite indispensable, which aims to explore people's perception and attitudes towards rail transit's effects and impact on their living, as important indicators of their potential mobility possibilities. In the survey a total 1100 questionnaires were sent out. About 30-40 questionnaires were sent to each community in the station catchment areas. A total 1000 questionnaires were returned and 752 were reliable after checking.

In the questionnaire, respondents were asked a series of questions relating to each aspect in the dimensions of economic, physical and social environment, and travel convenience. Economic impact indicators include "property price" and "property rent", and "living cost". Indicators relating to physical environment includes "urban image and open spaces", "pedestrian environment", "noise", "safety", "commercial and service facilities". Social environment indicators include "local employment opportunity", "community population change" and related "community harmony". Specifically, the community population change reflex the population accumulation effect promoted by the new transit system, and along with the migrant trends in Chinese large cities. Travel convenience indicators include "accessibility for daily commute" and "weekend commute" are also explored. Each one of these aspects was asked twice in two different ways. One facet aims to explore their perceived transit effects on their living area in these thirteen aspects. The other one aims to explore impacts of some transit effects on their lives or importance of these changes to themselves.

4. Exploring social equity issues across locations and groups:

4.1 Social equity in different geographic contexts

With quite similar increase rate in both reference sub-districts, a slight faster increase exhibit after the opening time 2011. (see, Figure 4) In the old city region, there was a significant increase in 2010 in the catchment area DP which was due to a new residential property development. Taking into consideration of its lower base value, this change can still be regarded as significant to its population density. However, it returned slow again after that, and no much discernable change after the opening of Line1. Not surprisingly, for those developing areas, such as catchment area JZL, there is a strong increase right after the

opening. For those mature station catchment areas, such as HHY and HTD in the new city region, though a slightly faster increase were seen after opening, the increase rates are still slower than their corresponding reference regions. In contrast, population density in the non-affected area also exhibits quite a strong trend of increase due to residential property development. That is to say, in maturely developed areas, the effect of transit on population accumulation is not so obvious in a short period of time. But in an area with a strong developing speed, either in the new city region or in the redeveloping old city, the population accumulation trend is quite marked. Here the transit investment seems to support the existing trend for development.

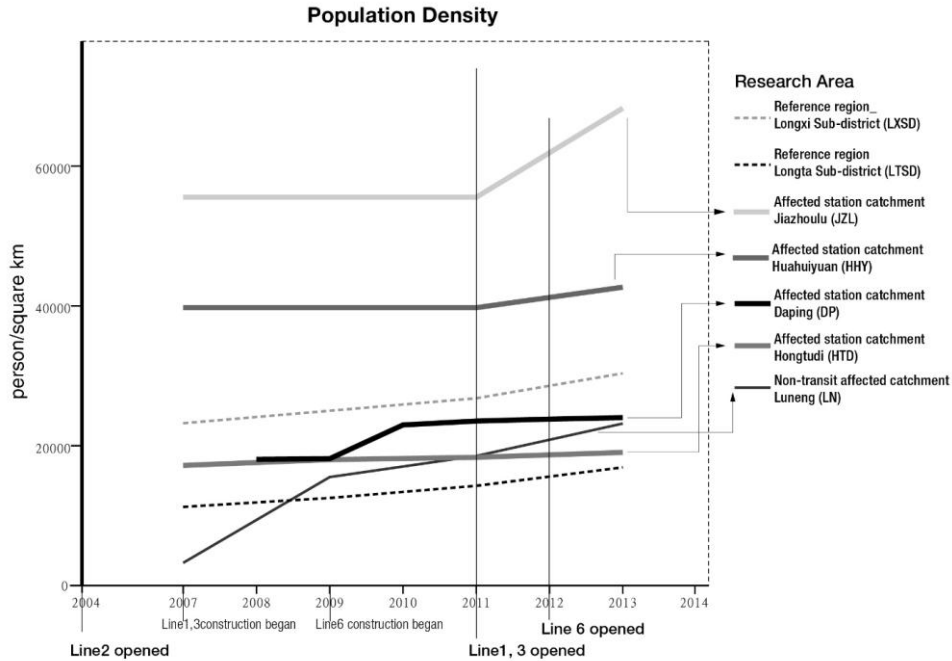


Figure 4: Population density in research areas
Source: Chongqing census data

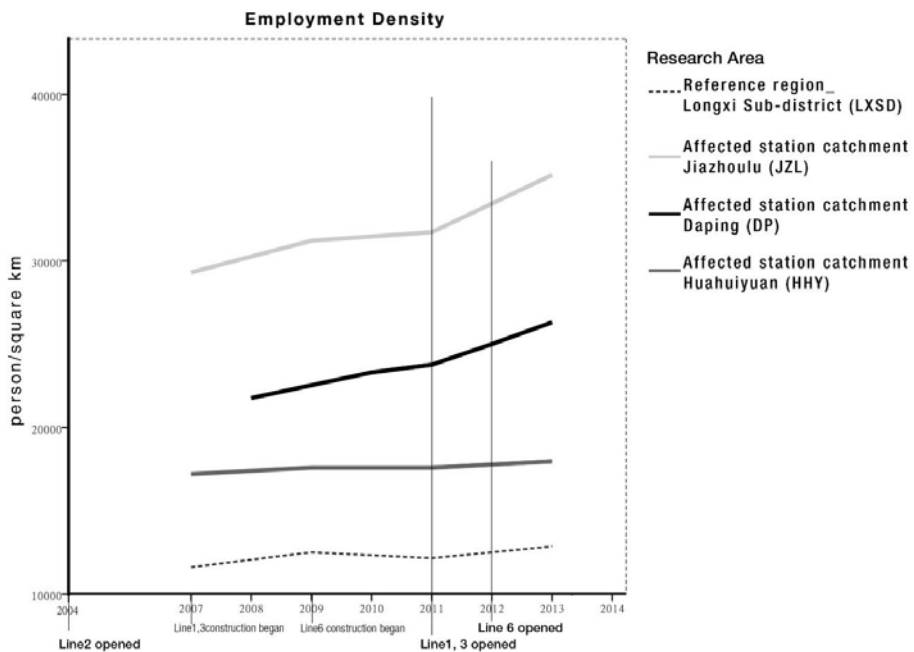


Figure 5: Employment density in research areas
Source: Chongqing census data

As is shown in *Figure 5*, in the old city region, in catchment area as DP, employment increase is indeed obvious. It suggests business and economic development in the old city are promoted by regeneration trend in the area. On the other hand, as expected, in the developing region, in station catchment area as JZL, the employment increase is promoted greatly by the opening of the transit system, as the slope is much steeper than before. And the increase rate is much higher than the reference region. However, for station catchment area as HHY, which is maturely developed but off the main transport corridor, even with the opening of a new transit line station, both employment and population increase is not distinct.

The diagram in *Figure 6* exhibits the change of the amount of residents who work locally in DP. It plummets steadily with a steeper rate right after the opening year of 2011. It indicates that although there has been plenty of employment created here in the local area, they did not provide many job opportunities for the local residents to work in the local area. The increased jobs are provided to people residing outside the area. The question comes, what benefit of employment increase, which might be promoted by the transit system, has been distributed to local people.

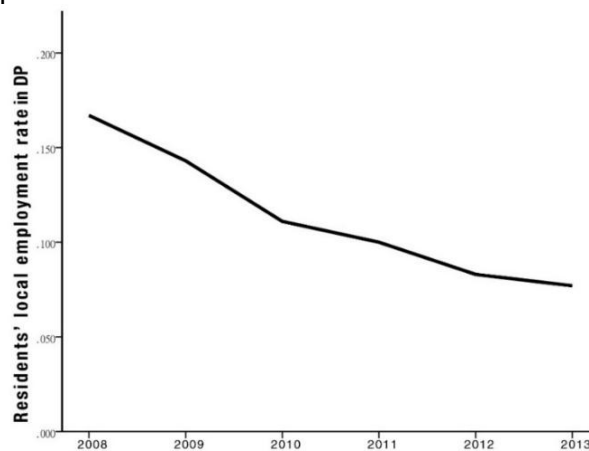


Figure 6: Local employment rate change in Daping Sub-district (DP) Source: Chongqing census data

As shown in *Figure 7*, residents in the three station catchment areas earn higher income compared to the average level of urban households of Chongqing. The income level in Jianzhoulu and Huahuiyuan is higher than in the reference region JX sub-district and the old city, and the former increases faster than the latter ones.

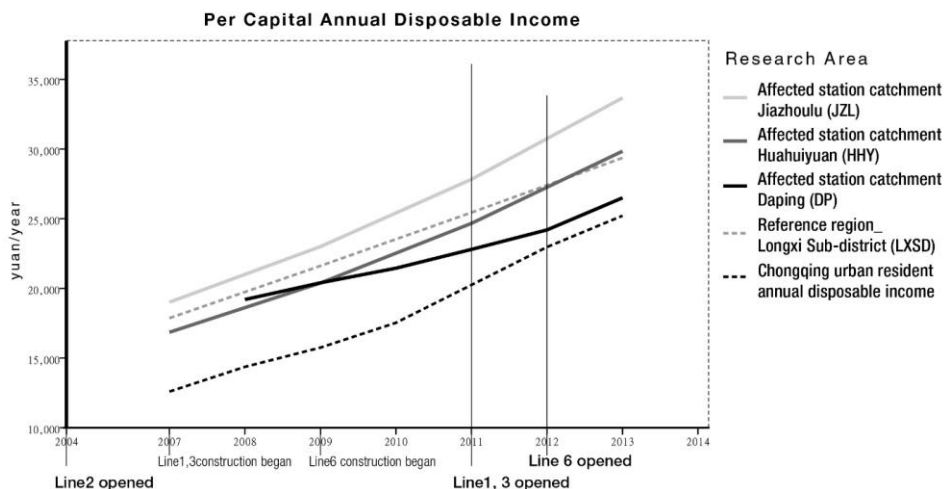


Figure 7: Income level: comparison of different locations

In order to further explore the gap between the witnessed development and potentially risen

social equity issues, it is necessary to explore deeper into the data to see how the composition of the people is in the local areas, and what their social economic characteristic are. Because this will help to explain the gap discovered in the analysis above. With this aim, the rest of the paper will explore the attributes of the local residents, their behaviours, perceptions and attitudes.

4.2 Social equity among different population groups

Taking into the specific economic situation and the residents’ income and consumption level in Chongqing, the respondents of the survey are divided into four groups as shown in *Table 1* below. They are namely “Lowest income group”, “Mid low income group”, “Mid high income group” and “Highest income group”, and Group1, Group2, Group3 and Group4 for short.

Group number	Group income level	Annual household income (RMB_yuan/year)
Group1	Lowest income group	Below 50,000
Group2	Mid low income group	50,000-100,000
Group3	Mid high income group	100,000-200,000
Group4	Highest income group	Above 200,000

Table 1: Income groups definition

In order to find the difference among population groups further statistical analysis are applied as MANOVA and following up discriminant analysis. MANOVA is adopted for situations in which there are several dependent variables. It can avoid the errors which mount up when carrying out multiple tests. However, MANOVA looks at whether groups differ without providing how they differ between each two groups. Discriminant analysis breaks down the linear combination in more detail. It looks how to best separate groups by reducing the dependent variables to a set **linear variates** which are called **“functions”**.

1) The perceived effect of rail transit

In the MANOVA analysis, there was a significant differentiation ($p=0.000$) among groups on perceived rail transit effect by a linear combination. The following up discriminant analysis revealed three discriminant functions. In combination these discriminant functions significantly differentiated the income groups. The values in the structure matrix (see *Table 2*) show the standardized **canonical variate correlation coefficients** of dependent variables. The coefficients in the table exhibit the relative contribution of each dependent variable to the variates. Some dependent variables have high scores in the table while others have low ones. The ones with high values means high correlations which contribute most to group separation.

Perceived transit effect	Functions		
	1	2	3
Q25 Living cost	.761*	-0.320	0.208
Q23 Property price	.645*	-0.095	-0.291
Q39 Neighborhood safety	.527*	0.115	0.173
Q40 Employment opportunity	.476*	0.338	-0.172
Q43 Community harmony	0.466	.571*	0.320
Q44 Daily commuting convenience	0.239	.549*	-0.296
Q41 Commercial and service facilities	0.378	.516*	0.223
Q42 Community population change/ floating population	0.278	.492*	0.298
Q36 Land development, urban image and open space	0.314	.374*	0.286
Q37 Pedestrian environment	0.294	0.048	.401*
Q38 Noise	-0.041	-0.054	-.100*

Table 2: Structure matrix: perceived transit effects of different income groups

The group centroids are shown as black squares. As shown in Figure 8, the graph plots the

variate scores for each person, grouped according to the grouping method (Group 1, 2, 3 and 4) to which that person belonged. The graph (see *Figure 8*) shows that the first function discriminated the lowest income Group1 from the highest income Group4, and the second function discriminated the mid-low income Group2 from the rest groups, Group4 and Group1. In general, “Living cost”, “Property price”, “Neighbourhood safety” and “Employment opportunity” contribute to the differentiation of Group 1 and 4. And “Community harmony”, “Daily commuting convenience”, “Commercial and service facilities”, “Community population change/floating population”, “Land development, urban image and open spaces” contribute to the differentiation of Group 2 and Group 1 and 4.

Canonical Discriminant Functions- Transit Effects

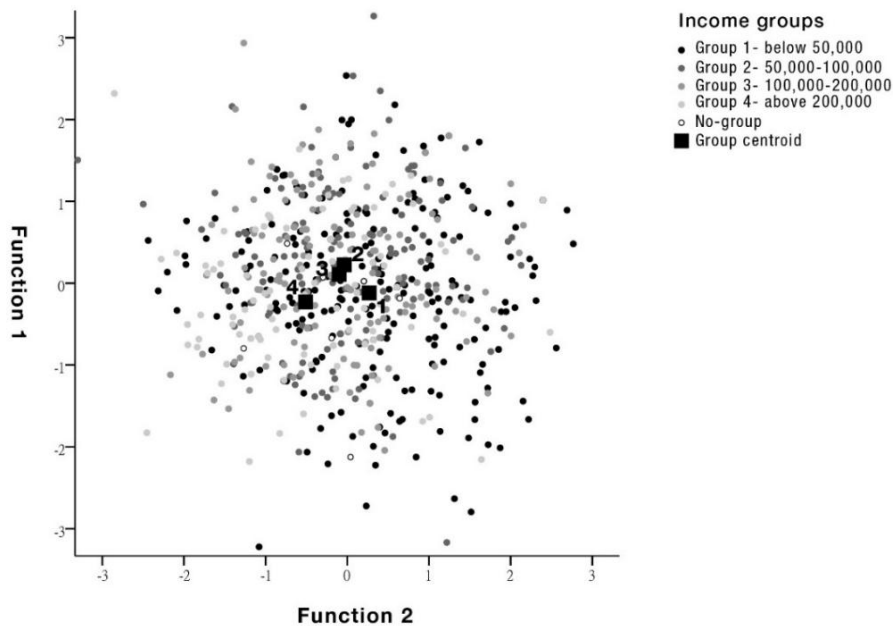


Figure 8: Canonical discriminant functions of perceived transit effects

2) The impact on individuals

Similar statistical analysis process was conducted on outcome variables of individual impact and importance of transit effects. MANOVA analysis suggests there was a significant differentiation ($p=0.000$) among income groups by a linear combination. The following discriminant analysis revealed three significant discriminant functions. (*Table 3*)

Structure Matrix		Functions		
Individual impacts of some transit effects or importance of some changes caused by transit		1	2	3
Q20	Impact of property price rising	.780*	0.322	-0.111
Q22	Impact of living cost rising	.651*	-0.362	0.178
Q30	Importance of employment opportunity increase	-.381*	0.272	0.373
Q31	Importance of commercial and service facility improvement	.329*	-0.057	-0.267
Q29	Importance of neighborhood safety improvement	.205*	-0.111	-0.062
Q26	Importance of land development/urban image/open space improvement	0.009	.560*	0.125
Q34	Importance of daily commuting convenience improvement	0.223	.392*	-0.08
Q33	Importance of community harmony improvement	-0.013	.210*	-0.198
Q32	Impact of community population change/floating population increase	0.238	-0.063	.715*
Q28	Impact of noise	0.012	0.004	-.173*

Table 3: Structure matrix: individual impacts and importance of transit effects

In *Figure 9*, the group centroids and function plot showed that Function1 variables “Impact of property price rising”, “Impact of living cost rising”, “Importance of employment opportunity

increase”, “Importance of commercial and service facilities improvement”, “Importance of neighbourhood safety improvement” in combination discriminated the lowest income Group1 from the highest income Group4, and Function2 variables “Importance of land development, urban image and open space improvement”, “Importance of daily commuting convenience improvement”, “Importance of community harmony improvement” in combination discriminated the mid income Group3 (and Group2) from Group4.

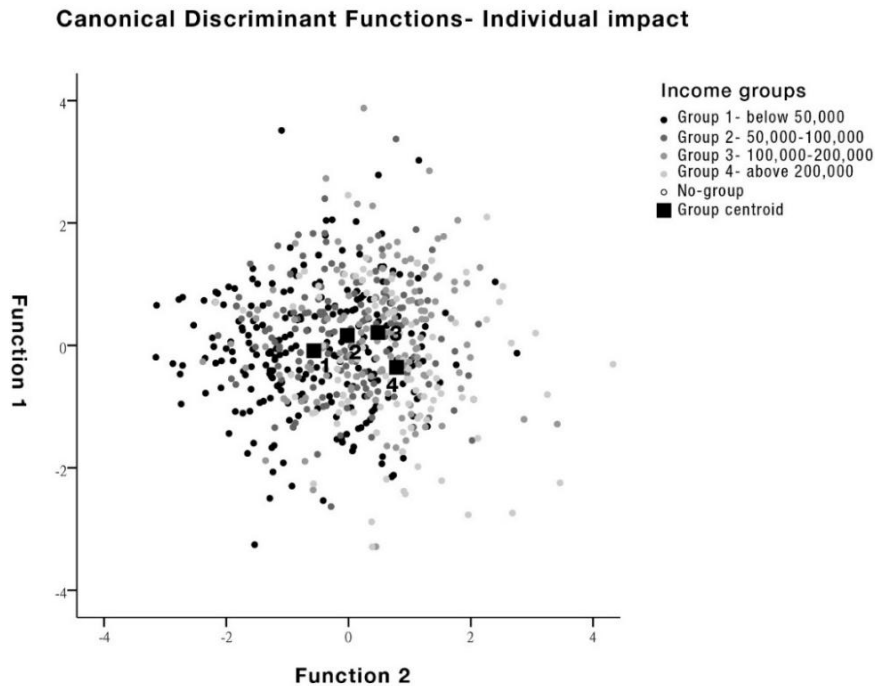


Figure 9: Canonical discriminant functions of impacts and importance of transit effects

4.3 Results

Derived from the MANOVA and discriminate analysis results, variables in the two facets namely perceived transit effect and evaluation of individual impacts, respectively formulate two linear combination of functions, Function1 and Function2. As presented above, in these two functions, a correspondent variable pattern of was exhibited between the two facets. Firstly, variables of Function1 can be amalgamated as “critical issues of living” affected by the rapid rail transit system. Property price, living cost, safety and local employment opportunities together form a linear combination and significantly distinguish the lowest income groups from the highest one, in terms of their perceived transit effects and individual impacts. Secondly, variables of Function2 can be described as “further requirements influencing living standard”. They consist of community harmony, daily commute convenience, commercial and service facilities, community population change and floating population, urban image and open space forms a second linear combination, which significantly differentiates the middle income groups and the highest income group.

In *Figure 10*, Function1 variables are plotted in the diagram above. It shows what discriminate the lowest income group and highest income group are largely the same respectively in the two facets. When looking into perceived transit effects on property price and living cost rise, assessment by the lower income group is much higher than the higher income group; however, evaluation of the impact on themselves is much more adverse than the higher income group. Meanwhile, the importance of local employment increase to the lower income group is also much higher than the higher income ones.

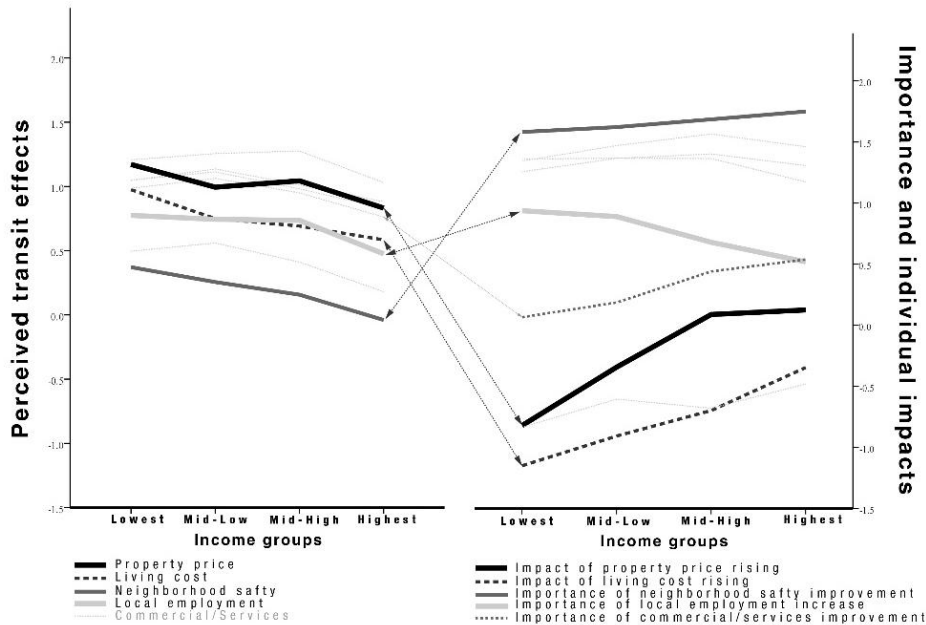


Figure 10: Function1 variables “critical issues of living”

In Figure 11, Function2 variables are plotted. It also shows consistence between the above two facets. Firstly, on commuting convenience effect, the lowest income group shows the least importance of commuting convenience. However, the mid high income group exhibits the highest evaluation of the transit effect on travel convenience, and presents the highest importance of commuting convenience to themselves. Besides, on urban image/open space and community harmony improvement, the middle high income group shows the highest importance to themselves of these aspects. The sensitive issue as the community population change and floating population increase in this area. In responding to the migrants caused by the transit-lead development, the lower income groups exhibit more awareness of this aspect. At the same time, the lowest income group acclaimed to receive the most adverse impact of this aspect.

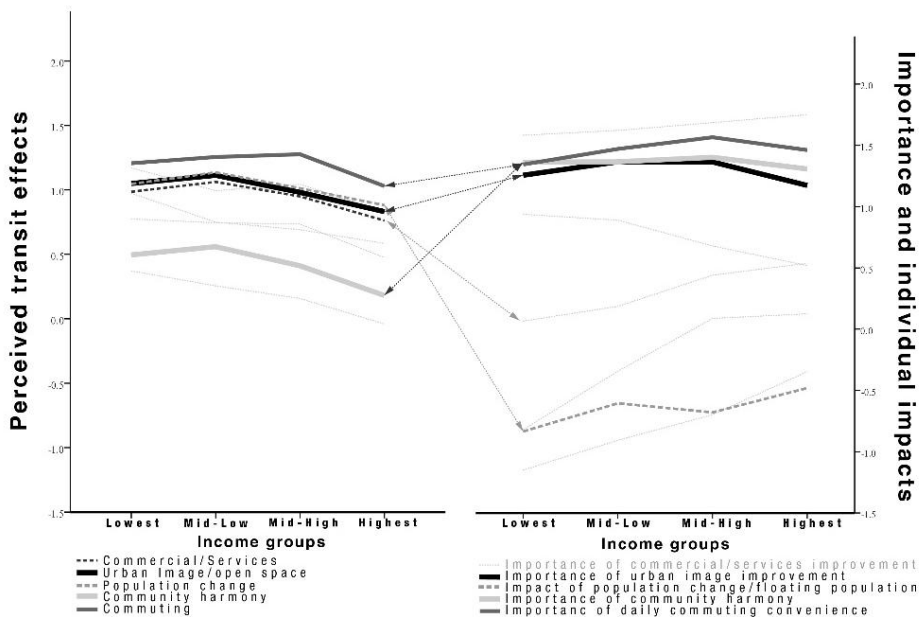


Figure 11: Function2 variables “further requirements influencing living standard”

As a result, the impact of the changes in Function1 variables “critical issues of living” on the

lowest income group are often much worse. They are most adversely affected by the value uplift effect in property price and living cost in the regeneration caused by the transit. They show the least demand on all the above aspects except for local employment opportunity. The importance of some issues in “further requirements influencing living standard” to them are also quite lower. However, for the mid low income group, their evaluation of perceived transit effects is the highest in Function2 variables “further requirements influencing living standard”. At the same time, the mid high income group also exhibits the highest importance to themselves of the Function2 variables. To be surprised, the highest income groups exhibits the lowest evaluation on perceived transit effect on nearly all aspects, although the importance of some issues to them are much higher, especially those in Function2 variables.

5. Conclusion

In environmental equity analysis, it was advised to conduct systematic research on comparisons of the attributes of users of the transport system versus those adversely affected. Therefore, if users are found to differ from those affected in terms of race, ethnicity, age or income, it may suggest the inequity and worth investigation. (Feitelson, 2002) However, this research finds that there is no viable dichotomy of population groups such as users and affected, depending on who benefits or loses. In fact, the most frequent users can also be those who are most adversely affected at the same time. The redistribution effect of the transit cause people to move into the area where there are already low income incumbents. The migrants are attracted by the opportunities generated there, lower property rent, as well as consigned to the travel convenience around the station in the old city. In comparison the lowest income group has much higher transit use frequency daily and weekly than the higher income groups. They are supposed to benefit more from the transport accessibility enhancements. However, the more frequent users also suffer from the adverse impacts that the rail transit provision brings, such as the rising property price, rent and living cost. Meanwhile, community population change and increasing of floating population also make the incumbents worry. Their scanty benefit from travel convenience is diluted by the adverse impacts they bear. As a result, the lowest income group exhibits the lowest evaluation of transit impact on their lives.

Furthermore, there is also a substantial body of evidence suggesting that the low-income group bears the most adverse impact of new infrastructure investment. (Agyeman et al., 2002, Mitchell, 2005, Jones and Lucas, 2012) In this research it suggest more in-depth understanding of the income related distribution implication. Firstly, it is not a linear correlation between the income level and benefit distribution, in which the lower the impact is, the worse impact they receive, and vice versa. The trend of benefit distribution tend to be a curve in which the rail transit system tends to benefit a certain group of people most. Secondly, there is a threshold of capability relating to social economic attributes as criteria for receiving equal benefit distribution. In this case, the mid-low group can be said to benefit most from the transit investment. This group is not so badly affected by the adverse regeneration impacts such as land and property value uplift as the lowest income group does. In fact, they exhibit positive attitudes towards the transit effects and the highest general evaluation of the transit impacts on their lives. However, both ends of the curve line as the lowest and highest income groups receive least benefit.

In order to explore in depth of the curve line distribution and the capability threshold, it is necessary to retrospect to the components of the lower income groups. The migrants who mostly come from the countryside and don't own property in the city, bear the adverse impact of property value uplift around the station. At the same time, the incumbents of the lowest income group, though with proximity to rail transit stations, lack the competence required by the increased employment opportunities. The unemployment proportion is much higher than other groups. With land redevelopment around the station, increased jobs are mostly either

low level service jobs in restaurants and shops, or high level office jobs. Being not capable of taking the new office jobs, the incumbents are also reluctant to take the service jobs which are considered by themselves more suitable for rural migrants. Combined with their economic constrains, many incumbents would rather take the subsistence allowances from government than seek a job far outside their living area. This is why their commuting need is largely reduced.

As has been demonstrated, people's less effective in making and sustaining their spatial and social networks indicates a source of making inequality. (Urry, 2012) However, in this situation, it is not lack of access to transport, money and time that make the situation worse, but lack access of activities, opportunities, and destinations for interaction or commuting that matters. Behind these, the essential reason is lack of skills and ability necessary for competence and absence of aspirations and needs to appropriate the employment opportunities both locally and via enhanced job search areas. In this way, the incumbents are not in a position to actively competing for and achieving their equal benefit from the rail transit system. In contrast, the middle income group can make use of the transport provision as a leverage of their capabilities. As actual and potential social-spatial mobility can be conceptualized as an asset(Kaufmann et al., 2004), insufficiently possessing this asset represents a form of social inequality.

Strategies are therefore proposed to help low-income residents to receive equal benefits from the public facility investment.

Firstly, a comprehensive appraisal system should be established to assesses the potential winners and losers of a given transport investment, which is currently missing in developing countries. This should be a key requirement in the preparation stage, before a project is authorized by the central government. In the appraisal, the attributes of those groups of people whose living, well-being, and behaviours may be affected needs to be identified, in an effort to avoid the incidental damage to the interests of the poor. An appropriate payment and compensation system should then be established and implemented effectively.

Secondly, associated policies and planning interventions should be introduced with an explicit focus on how benefits can be effectively delivered to socially disadvantaged groups in urban rail investment. Specifically, joint efforts should be promoted from local employers, training organizations, and neighbourhood communities, to provide poor local residents with appropriate training. This aims at equipping them with essential skills, abilities, aspirations, and competencies in order to maximize their opportunities in seeking employment both in local areas and in areas made more accessible by new transit systems.

Thirdly, to ultimately prevent an adverse impact on socially disadvantaged groups, community participation should be promoted. Communities should be incorporated in the decision making process and establish communication channels for the concerns of socially disadvantaged groups. For example, adequate consultation with potentially affected parties should be ensured at the project preparation stage, to prevent spin-off effects such as locational disturbance arising from the urban transport construction. Especially for those whose residence is directly affected it is necessary to make sure they are resettled or compensated adequately at no detriment.

Furthermore, housing, health, education, and other social service policies should also be incorporated within urban rail development planning. A statutory planning base also needs to be established to coordinate divergent pursuits existing among different stakeholders and government sectors, such as transport and land use. Only if institutional cooperation, supplementary policies, and service planning are implemented along with transport investments, the needs of low-income people can be targeted appropriately.

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URBIS Decision Support for Integrated Urban Governance

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Abstract

The challenges for the management of cities and city-regions in addressing the economic and societal dynamics facing Europe and Europe's cities today is evident in the complexity and interconnectedness of the global and pan-European drivers of change and their associated socio-economic, environmental and territorial impacts for urban environments. Integrated urban management processes emphasising horizontal integration across the sectoral agencies at the local level, and vertical integration between government agencies from city to EU level is identified as critical to the management of the city-region in relation to the key political objectives defined at both local and EU levels.

The clear need for enhanced intelligence to support inter-agency collaboration and decision-making on territorial development as a central feature of integrated management is identified as a prime opportunity for URBIS solutions. Accordingly this paper presents an overview of the EU funded URBIS project (ICT PSP 2014–17) www.ict-urbis.eu. The project coordinated by GISAT, Prague investigates vacant land potentials in urban areas, and the opportunities for previously developed land or brownfield to support urban regeneration safeguarding greenfield sites. URBIS delivers assessment methodologies and tools to provide accurate up-to-date intelligence on urban vacant land opportunities that is comparable across European cities to support the definition and implementation of sustainable planning and governance strategies in cities and city-regions throughout Europe.

The background to this innovative research and city pilot development are growing pan-European concerns with land taken for urban use, which annually converts almost 1000 km² of agricultural or natural land into artificial areas, as part of a wider European land degradation process. This land take process is driven by urban sprawl and infrastructure development, for example when new urban industrial or commercial areas are built on highly fertile agricultural land, rather than recycling abandoned or underused artificial sites. Land use efficiency is today a prime political objective at both European as well as city level, and the EU Land Communication aims to establish “zero net land take” across the EU by 2050. Central to the delivery of this policy is accurate intelligence on the availability and supply of previously developed “brownfield” land, as a key component of land-use decision making, maximising the net socio-economic benefits from land-use without degrading natural capital.

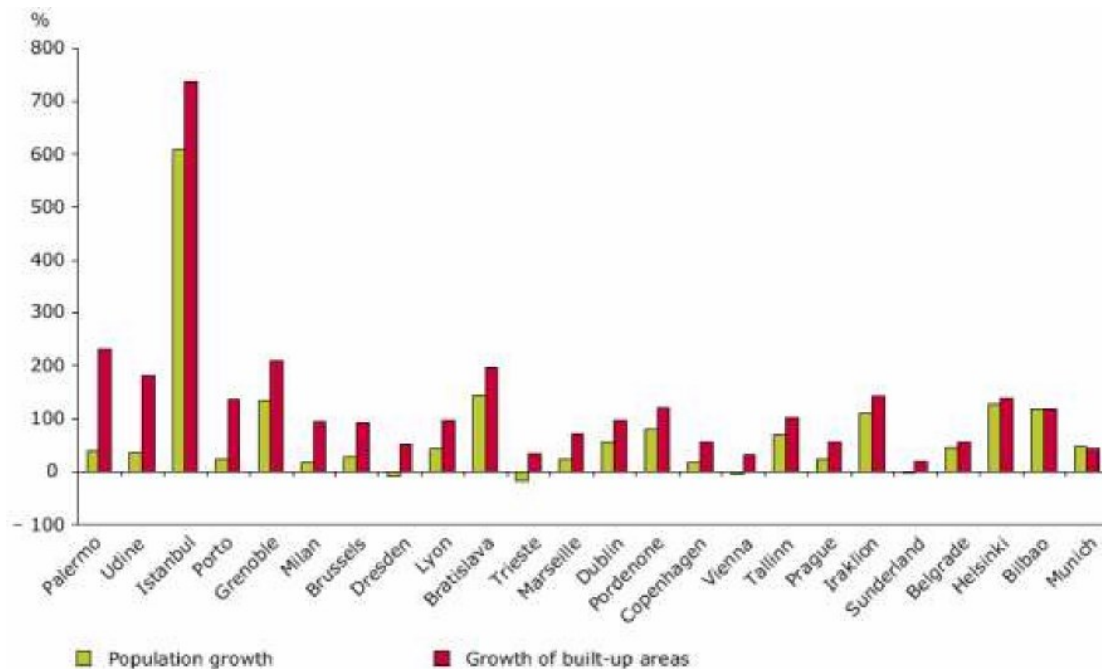
The core objectives of URBIS presented in this paper aims to deliver this intelligence via urban planning decision support tools methodologies and assessments to realise the development potential of vacant and underused land in urban areas.

Keywords: urban sprawl, previously developed land, urban vacant land, EU Land Communication, integrated urban management, planning decision support tools

1. Urban Sprawl in Europe

European urban and regional planning on all levels is increasingly being challenged by economic globalisation and this will continue to intensify over the coming decades. Traditional European cities have developed into regional agglomerations, but planning methods and the associated management tools have not progressed and these are still applied within a “traditional” model of land use planning and non-integrated environmental management. In addition, poorly integrated and unsystematic approaches in land use policies with limited linkage to environmental quality will further impact on the environmental problems seen in many European cities. It could also be claimed that this may increase land-related conflicts in densely urbanised regions and in turn seriously threaten the social function and competitiveness of all European cities and regions, including those in the new Member States. Moreover the current financial and economic crisis has the potential to enlarge land related problems due to the reluctance of financial institutions to take higher risks for projects in the existing urban context.

The never ending extension of built-up areas and migration of the population from rural to urban areas across Europe has been recognised as a long term trend as most of the economic activities are concentrated around major urban areas. A more recent trend is the migration of population and some economic activities from city centres to the urban fringe and neighbouring rural areas encroaching onto “greenfield” land, i.e. land that has not previously been developed. This phenomenon is referred to as urban sprawl and has been recognised as one of the most significant land use changes in the last two decades across Europe (EEA 2006). Urban sprawl is accompanied by the conversion of land to artificial surfaces resulting in soil sealing, thus further increasing the environmental consequences of urban sprawl. Indeed over this period, the extent of built-up areas in many western and eastern European countries has increased by 20 % while the population has increased by only 6 % (cf. Figure 1). Even in shrinking regions, the consumption of land remains on a high level. This poses a very serious threat to the existing nature of European landscapes with significant environmental problems linked to increasing transport distances and volume of traffic, and the increasing use of private modes of transport exacerbating greenhouse gas emissions and climate change. Moreover, these trends endanger the achievement of European environmental goals in areas such as biodiversity protection and water management and also hinder the effectiveness of instruments in these areas, including the Natura 2000 network and the Water Framework Directive.



Source: MOLAND (JRC) and Kasanko et al., 2006.

Figure 1: Population growth and the growth of built-up areas (mid-1950s to late 1990s), for selected European cities

The land and property market across Europe is a multi-billion Euro business. It is difficult to separate the land market from the overall real estate market, but a recent study undertaken by the EPF NPdC (Etablissement Public Foncier Nord Pas-de-Calais, France) shows that in the Nord Pas de Calais region alone, the land property market amounted to 850 million Euros between 2000 and 2002, a 6% increase on the previous period 1997-99. The annual average land area developed represented around 1,000 ha. However, vacant land represents less than 1% of the total of land developed, despite an estimated 1,800 ha of vacant land available for redevelopment in 2006. Moreover, in another report linking urban sprawl and recycling of land, EPF NPdC estimated that if all 1,800 ha of vacant land located within the urban area was recycled it would save an equivalent of 8000ha of mostly agricultural land in the periphery of urban areas. This is possible because vacant land is already close to transport and utilities infrastructure, and so not requiring the construction of new infrastructure.

Unbalanced and uncontrolled development puts high risks on competing market led developments in the redevelopment of urban land and brownfield projects, and could lead to market failure as illustrated in several American cities (e.g. Detroit). These risks are also highlighted in a report by the RICS Foundation (RICS 2012) on the development of land and property markets in central and Eastern Europe where the Czech Republic and Poland are respectively ranked second and third in a combined growth and stability/risk indicator in the region. However, the authors of the report stress the importance of reliable market data and transparency.

At the same time, a significant proportion of artificial areas is not actively used and could potentially be redeveloped instead of encroaching on non-urbanised land. In this context, vacant sites are defined as previously developed land or derelict and vacant land and building sites. This includes any form of development, e.g. former housing estates as well as disused industrial or military sites as well as disused social or technical infrastructures. The term “vacant sites” is preferred to brownfields which are often associated with previous industrial or commercial sites that are

potentially contaminated. In some cases, vacant sites can be represented by gaps in urban structures, without any current nor previous use. They can also include patches of agricultural or natural land surrounded by urban areas. Vacant sites are a natural reservoir of land that can potentially be redeveloped.

One important key to unlocking the vacant site potential is the provision of accurate and up to date land cover/use information. The implementation, validation and wide European adoption of specific inventory, typology and decision support services for vacant lands provide the basis for a system aiming at mitigating urban sprawl. URBIS services enable consideration of the land reuse strategies in the context of ecosystem services whereby the supporting, regulation, provisioning and ecosystem services provided by the vacant sites could be identified to inform future planning policy and decisions to foster a more holistic planning approach critical to sustainable urban development.

The concept of URBIS services is presented in Figure 2 below and is conceptually linked with the circular flow land use management (“Fläche im Kreis”, 2005). Circular flow land use management aims to provide an integrated political and governance approach which includes the whole spectrum of policy areas and fields of activity. It is developed in relation to both local and regional levels and combines planning considerations at both levels in an integrated urban and regional land development policy. The cycle relies on the interplay between strategies and instruments in different fields of activity, and on a suitably comprehensive deployment of tools (instrument mix) in these areas, which includes, land information (the key-focus of URBIS), planning cooperation, organisation and management, investment and support programmes, marketing and legislation.

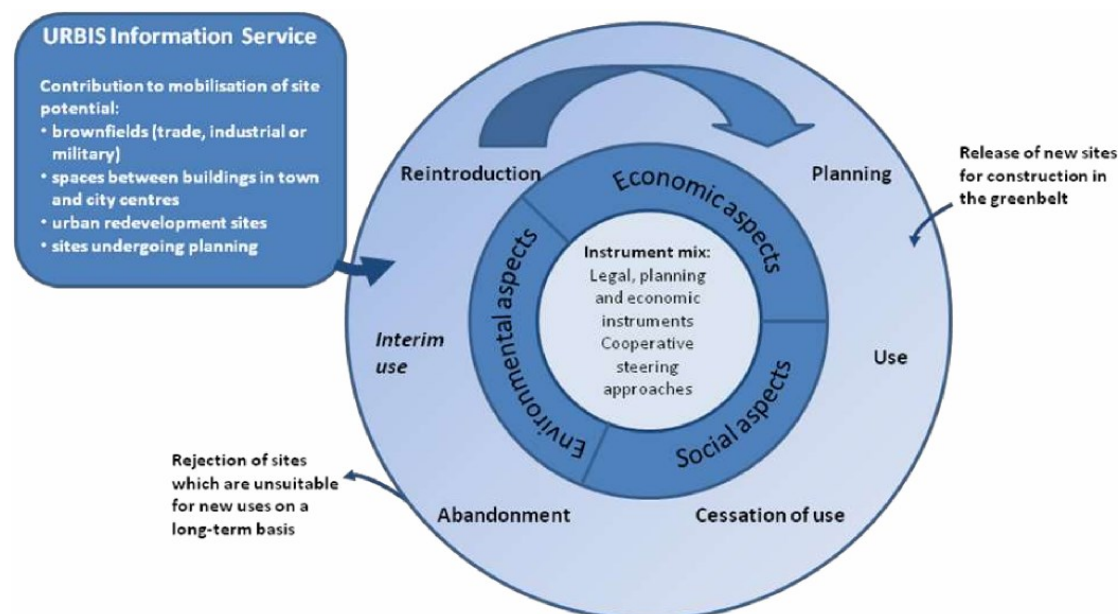


Figure 2: Role of URBIS in the circular flow land use management concept (after “Fläche im Kreis”, 2005)

2. Role of Copernicus Land Monitoring Core Services (LMCS)

Vacant urban land can present very different characteristics depending on the level of development and previous use of the land. As a result, depending on size, location and previous use, vacant land may be redeveloped with minimum inputs (for

example development of a green park from land with no previous use) or at the other extreme require substantial remediation work (for example development of a housing estate on potentially contaminated land). However, lack of knowledge about site conditions and characteristics typically hampers redevelopment, whatever its readiness for redevelopment. Although information exists locally, it is often patchy, incomplete and distributed between different organisations. Moreover, there is a lack of consistent information at the European level making it difficult to exchange and compare data. However, opportunities exist to overcome these constraints via the development of a methodology to develop a European information service on vacant land with the deployment of Copernicus LMCS. In particular, the Fast Track Services (FTS) on Land Monitoring developed by a number of EU research projects including geoland (1 and 2), and the follow-up GIO Land pan-European and local components (Urban Atlas 2012, High Resolution layers) introduce new more detailed layers of information focused on urban areas essential for the development of an information service aimed at identifying and characterising vacant and derelict urban sites. The development of such an information service will play a major role in the promotion of the recycling of existing urban sites, thereby directly addressing the reduction of urban sprawl.

Such an information service currently does not exist or is incomplete. In addition, the various initiatives that exist are locally based and lack a common methodology making it difficult to exchange and compare data. The availability of Copernicus LMCS open data makes it possible to develop new EO services for urban planning. In particular, availability of the GIO Land five High Resolution layers (Imperviousness degree for 2006, 2009 and 2012, tree density, grassland, water bodies and wetlands for 2012) and the Urban Atlas (2006 and 2012) combined with outputs from geoland2 regional and local Core Mapping Services (CMS) and Spatial Planning Core Information Services (CIS) concerning spatial planning provide realistic data to explore and build such a service. The Urban Atlas in particular with its characterisation of "land without current use" facilitates the development of the URBIS proposed vacant land inventory and typology information service. Furthermore, EO data acquired for LMCS services can be easily re-used to gather additional information about urban vacant land, which is not available in the Urban Atlas thematic layer so far (because it often lies under Minimum Mapping Unit of this dataset) as well as to tailor the proposed URBIS service to the specific thematic needs of the users. Without it, the development of such a service would be very costly and time consuming, and the level of sustainability on the data supply side would be questionable.

The Urban Atlas and other core services are primarily for use at European level, but URBIS is also focused on providing an information service relevant at the regional and local levels. In addition, other land cover/use data sources can be used as a basis for URBIS should they be available from user organisations.

3. Open data and GIS

URBIS services will be built upon various sources of open geographical information data from local, regional, national and European level. According to the a recent communication paper from the European Commission (Com 2011) the market size and growth of the geographic information sector shows the potential of public data as an engine for job creation. The German market for geo-information in 2007 was estimated at 1.4 billion euro, a 50 % increase since 2003. In the Netherlands, the geo-sector accounted for 15 000 full time employees in 2008.

Recently, a number of initiatives have made it possible to open up the access to

geographical information. At institutional level, these initiatives are encouraged globally notably through the GEO. The aim of GEO is to build a GEOSS whereby the duplication of data and initiatives is minimised through the development of a system of systems. In Europe, the GEO initiative is supported through Copernicus and INSPIRE. INSPIRE fosters interoperability between information services whilst Copernicus provides core information services on which to build value added services. The fact that most of the Copernicus core services adopt an open data policy facilitates the development of downstream services.

Crowd sourcing initiatives such as Open Street Map will also contribute to the development of URBIS services. Worth noting is that Copernicus core services were initially integrated in Open Street Map for areas where precise field observations were lacking such as in some Eastern European countries.

4. URBIS Objectives, Services, Users

4.1 Objectives

The URBIS project aims to develop, implement and validate in real environment innovative information services related to urban vacant land, based on open geospatial data, to support planning of European Large Urban Zone's (LUZs) in a sustainable way.

The specific objectives of the project are:

- **Objective 1:** To assess the potential reuse strategies of vacant urban land based on its past uses and characteristics and through wide involvement of end-user organisations, to establish common ground for the development of URBIS services.
- **Objective 2:** To develop a methodology for an inventory and typology of European vacant urban land based on Copernicus LMCS FTS Urban Atlas and soil sealing layers and the analysis of multi-temporal imagery to determine potential constraints to redevelopment.
- **Objective 3:** To develop, implement and validate interoperable services on a number of representative LUZs across Europe under operational conditions in collaboration with key European stakeholders/practitioners.
- **Objective 4:** To develop a sustainable operational and business model for the URBIS information services

The proposed service architecture is illustrated in Figure 3 below and shows the main sources of data for the planned URBIS services and linkages between EO based service providers, land development agencies, land use planning consultancies and end user organisations.

URBIS will rely primarily on the Copernicus LMCS FTS Urban Atlas, soil sealing layers and their associated source image data. In particular, the 'Land without current use' category of the Urban Atlas will be further investigated in combination with historical imagery to determine past use. In situ data when available will be sourced from land development agency partners and stakeholders and used to provide local knowledge and contribute to the development of a validation data set.

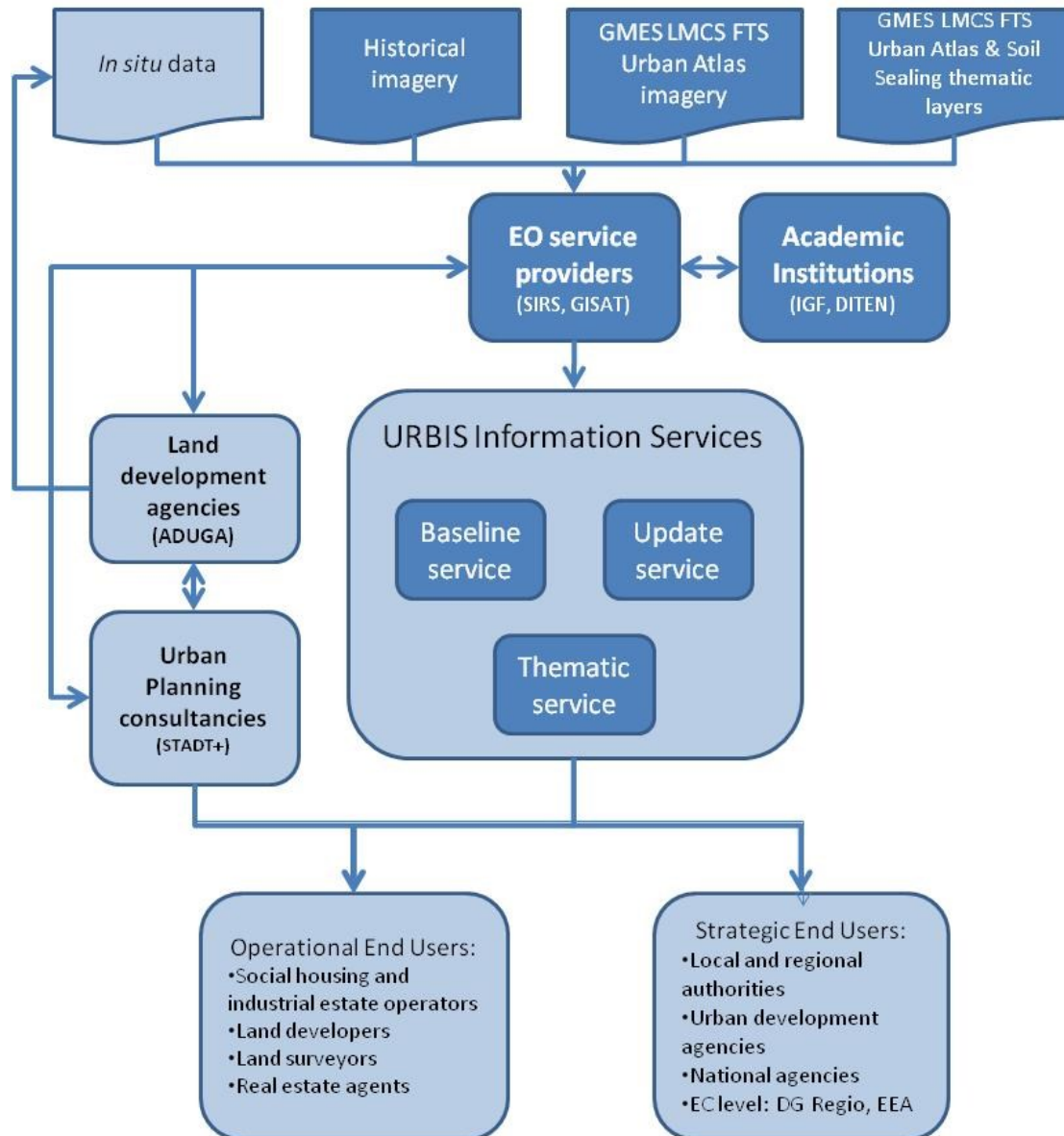


Figure 3: URBIS service architecture

4.2 URBIS Services

The project will develop and implement three main categories of URBIS services:

1. **Baseline services:** initial inventory and typology of urban vacant land, not only to identify sites that can be used for re-development, but also to identify sites that should be preserved and not used for further development (e.g. high ecological value). The inventory will be based on data from the Urban Atlas.
2. **Update services:** an update service, with the regular update of the vacant urban land inventory synchronized with the planned Urban Atlas updates.
3. **Thematic services:** a set of added-value services tailored to end-users (local authorities, policy makers).

In the initial phases of the project, a detailed assessment of end-users requirements was undertaken with following list of requirements identified:

1. Identification of sub-optimally used or vacant sites
2. Identification of inner development site potentials for new urban uses (residential, industrial, etc.)
3. Identification of land use change dynamics (i.e. urban sprawl and urban green areas)
4. Identification of site specific information (i.e. building material, object volume, etc.)
5. Identification of site suitability for agricultural purposes
6. Identification/monitoring of urban green areas (potential for city environment improvement)
7. Automatic detection of the degree of soil sealing in urban areas
8. Identification of risks which can limit future use of the vacant site/PDA

1. Baseline Services

Based on these requirements, as well as on the feasibility of source datasets and available methods, the following **three layers** representing three main domains of users' interest were defined to create the **URBIS baseline service**:

- **Green Layer:** will include both vegetated and non-vegetated "gaps" in urban structure. A two-step approach is applied for preparation of this Green Layer. First, Urban Atlas polygons assigned to classes *13400 - Land without current use* and *14100 - Green urban areas*, selected as a first "basic" version of the Green Layer. This basic version of the layer will be limited by Urban Atlas MMU – 2500m². For these polygons, site specific criteria describing each site, will be further calculated.
Second, sites smaller than this MMU, but larger than 500m², will be detected, mostly using methods based on EO data analysis, to complement the basic version of the layer and create an enhanced version of the Green layer. This analysis will be primarily based on the original Urban Atlas imageries (SPOT5 Supermode, 2.5m pixel size), but also other ancillary data will be utilized..
- **Grey Layer:** will include brownfield sites identified on the basis of local brownfields surveys, with a help of OpenStreetMap or information incorporated in the Urban Atlas thematic layer; each brownfield site will be described by using a set of characteristics which can help to identify the potential for optimal future (re)use of the site. These characteristics will include the following site description:
 - Physical properties (location, area, slope)
 - Shape characteristics (convexity, rectangularity)
 - Statistical and texture characteristics (vegetation index, imperviousness)
 - Land cover (degree of sealing, characteristics of potential vegetation coverage, characteristics of non-vegetated surfaces)
 - Land use (both current and previous)

- Existing development (number and area of buildings, existence of parking lots, existence of storage sites, degree of site deterioration)
 - Existence of infrastructure networks (connection to infrastructure: water, electricity, heating, connection to street system)
 - Surrounding local context (proximity to city and regional center, minimum distance to highway, main road or railway station)
 - Environmental conditions (presence of environmental risk, contamination, presence of protected area)
- **Urban Land Use Typology and Dynamics Service Results:** this will include the information related to the characterization of urban land internal typologies, spatial patterns, and their dynamics. Urban Atlas thematic layers will be a primary source of information, but other thematic datasets will be considered as well. Besides the land-use and land-cover results already available in the Urban Atlas, state-of-the-art processing techniques for land-cover classification and multi-temporal analysis will be applied to the related source satellite data (in particular Urban Atlas imageries – SPOT5 and Pleiades) to derive detailed thematic maps of a restricted set of land cover classes with optimized classification accuracy especially in the case of very-high spatial resolutions.

2. Update Services

Update services are based on the same methodology as the baseline products, synchronized with Urban Atlas updates (year 2012).

In this regard a prime objective of URBIS is the implementation, testing and validation of the above mentioned services in real world environment of 3 Large Urban Zones (LUZ), geographically coherent with regards to partner's location, and which encompass a various set of specific criteria's and requirements in the field of vacant land reuse.

The 3 selected LUZs which will participate to these **pilot studies** are:

- Greater Amiens (France)
- City of Osnabruck (Germany)
- Moravian-Silesian Region (Czech Republic)

3. Thematic Services

URBIS baseline and update products will be used to derive a series of thematic services, which can be specific for different pilot studies. The type and detailed characteristics of these thematic services have been defined and developed in collaboration with end user organizations and will include the following:

Greater Amiens:

- a) Vacant land potential for local plan
- b) Brownfields' renewal potential

City of Osnabruck:

- a) Demolition costs
- b) URBIS Street Photos

c) Activity Map

Moravian-Silesian Region:

- a) Analysis of urban free spaces (including vacant sites and green areas)
- b) Analysis of the urban spatial pattern and its dynamics
- c) URBIS Integration Tool *(an interactive web tool which will permit the display and interactive analysis of the results of the URBIS services. This tool will integrate results of all three main domains of URBIS services (Green Layer, Grey Layer and Urban Land Use Typology and Dynamics) with other ancillary socio-economic datasets (e.g. Urban Audit) into user-defined visualizations or interactive analysis.*

These types of services are also planned to be demonstrated at the EU level.

The definition and content of thematic services can be enriched by the experience of the implementation of the pilot studies during project, when the baseline and update services will be developed. This set of specific added value services will also target the private sector requirement, for example:

- Support the establishment of new business activities: logistic platforms, tertiary and commercial activities areas;
- Allow site identification for housing construction;
- Allow site identification to assist shrinking cities strategies (demolition/Interim Use concepts);
- Inventory of sites with conversion potential to green spaces;
- Identification of sites for creation of natural environments (protection of species, blue and green corridor).

4.3. Users of URBIS services

The first priority users of URBIS services are local and regional planners. In more general terms, end users in the URBIS context can be separated in terms of operational and strategic users.

- **Strategic users:** such as local and regional authorities, European and national agencies in charge of urban planning, would directly benefit from URBIS services as for the monitoring of the implementation of particular territory planning policy (e.g. the 30 ha goal on reduced land consumption in Germany). Furthermore, URBIS services may be used to support the allocation, monitoring and evaluation of ERDF funds in urban areas, or to assess to which extent urban development is meeting targets for the redevelopment of vacant sites.
- **Operational users:** such as industrial estates operators or private land developers are likely to require the URBIS services for meeting the requirements of a specific need such as a to know where suitable vacant sites are located within metropolitan areas greater than a certain size for the construction of supermarkets, or a local authority in charge of social housing looking for suitable sites for the construction of a new project. Financial institutions might be interested in general land data to improve project business plans. Sites from developers are also required to place renewable energy production. Regional and local planners also need information on the different vacant land development options as a critical component of urban and regional planning in relation to the management of urban sprawl, and more generally in relation to the creation of green belts, nature conservation and leisure areas and their connectivity.

URBIS will contribute to the development of a new market for EO derived information (vacant land inventory and typology) led by EO service providers, SME's based on Copernicus products (LMCS FTS Urban Atlas and Soil Sealing layers) and addressing the needs of various stakeholders involved in land development at an operational and strategic levels

EU Dimension

This project is in line with the strategy proposed by the Commission to improve land use planning and management. Many reporting obligations in relation to international conventions (UNFCCC, UNCCD, Agenda 21, UNCBD, Ramsar convention) require land use/cover spatial data. Up until now, most of these reporting obligations were fulfilled by Corine Land Cover. However, new European legislation and policies such as the Water Framework Directive, the Soil Thematic Strategy, the Urban Environmental Management and the Thematic Strategy, European Spatial Development Perspective and the Biodiversity strategy, now require more detailed spatial information.

Reconciling land use with environmental concerns is a challenge that involves all governance levels and sectorial agencies. Monitoring and mediating the negative environmental consequences of land use while sustaining the production of essential resources is a major priority of policy-makers around the world.

In 1999, the European Spatial Development Perspective (ESDP) developed European policy orientations for territorial balance and cohesion, improved competitiveness, access to markets and knowledge, as well as the sustainable management of natural and cultural resources. More recently, integrated spatial development has been addressed by the Territorial Agenda of the EU that aims at mobilising the potential of European regions and cities for sustainable economic growth and job creation.

Efforts to modify land use practices to reduce non-point pollution of air and water include integrated river basin management and, in particular, the Nitrates Directive. Flooding caused by the construction of impervious surfaces (e.g. buildings and roads) and provoked by extreme weather events is addressed by a new European Floods Directive. The cross-cutting nature of land use is also emphasised by the EU rural development and regional policies.

Furthermore, the UNFCCC (UNFCCC 1997) Kyoto Protocol promotes among other practices the reduction of emissions of methane and nitrous oxide from agricultural land. EU policies on climate change adaptation are directly relevant to current and future land use practices and economic sectors depending on this.

The European Environment Agency report demonstrated that urban sprawl is a serious environmental threat evident in city regions throughout Europe. Each country has its own specificities in terms of land and urban characteristics and in terms of indicators and policies as well. Therefore, specific sets of expertise from individual regions are required to develop the URBIS information service based on a common, consistent and up to date Europe wide inventory and typology of vacant urban sites.

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New Development Path for New City Construction: A Case Study on Sino-Singapore Tianjin Eco-City in China

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Synopsis

The paper analyzes Singapore Tianjin Eco-City (SSTEC) and explores new development path for new city construction. SSTEC is the second flagship cooperation project between Chinese and Singapore governments. Under special supervision of governments, the starting areas in SSTEC have been taken sharp so far. However, as the first eco-city in China, the current construction progress does not achieve the original goal and deviates from its original development path. Compared with successful new city constructions in Paris, Hong Kong and Masdar City, the paper put forward new development path for new city construction: Dynamic Development.

1. Introduction

The development of Chinese urban construction is slowing down with economic transformation and upgrading. The urban planning is converting from the initial increment development to the current stock planning. Meanwhile, with the concept of “Eco-city” widely recognized, the new city construction started to focus on the intrinsic quality and sustainable development, other than speed and scale of construction.

The paper focuses on the development of Sino-Singapore Tianjin Eco-City (SSTEC). SSTEC is a flagship cooperation project between Chinese and Singapore governments. As the first cooperation eco-city over national borders, the city’s version is to be a thriving city which is job-housing balance, environmentally-friendly and resource-efficient. The city is one of the typical cases of China’s transformation in new city construction. It is also the very first systematically planned eco-city. The city has taken shape at present. The start-up area was estimated to be completed by the end of 2013. However, it has not reached original expectations in terms of city development.

Based on previous studies on SSTEC, the paper first introduces the special cooperation mechanism between Chinese and Singapore governments. In Chapter 3, according to current construction progress, the paper indicates the potential problems of current developing path. Chapter 4 compares new cities constructions cases with SSTEC, then the paper put forward new development path: Dynamic Development in Chapter 5. At last, Chapter 6 concludes.

2. SSTEC and Its International Mechanism

2.1 The Brief Introduction of SSTEC

Sited on a piece of undeveloped saline and alkaline land (*Figure 1*), the SSTEC is located 40 km from Tianjin and 150 km from Beijing. It is located within the Tianjin Binhai New Area, which is one of the fastest growing regions in China (*Figure 2*). The SSTEC covers a total area of approximately 30 square kilometers.



Figure 1: Original Ecology in Sino-Singapore Tianjin Eco-city

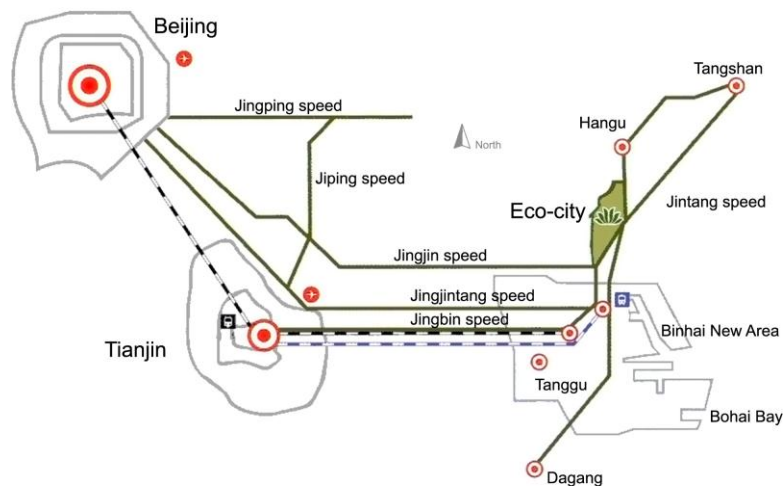


Figure 2: the Location of Sino-Singapore Tianjin Eco-city

The city's version is to balance the social development and environment protection since it is the first eco-city in China. Moreover, SSTECC concentrates on the sustainability development including society and economics. It puts emphasizes on the sustainability of the project itself, which mainly includes three aspects: First, the environment of the Eco-city should be able to maintain a continually increasing economic growth; second, the Eco-city should preserve and enhance the environment while its economic keeps growing; third, the Eco-city should help social development such as improving the income of the poor, improving residents' living and realizing racial harmony.

2.2 The International Cooperation Mechanism of SSTECC

Sino-Singapore Tianjin Eco-City is not an ordinary project. In most of the eco-city projects, the government hardly or never participates in. The eco-city is mainly functioned by the market and dominated by private enterprises, while the government just provides conditions to facilitate the success of the project. And in the Eco-city project, both governments of China and Singapore have not only provided the necessary conditions for the project, but also brought the project progress under the direct supervision of the governments.

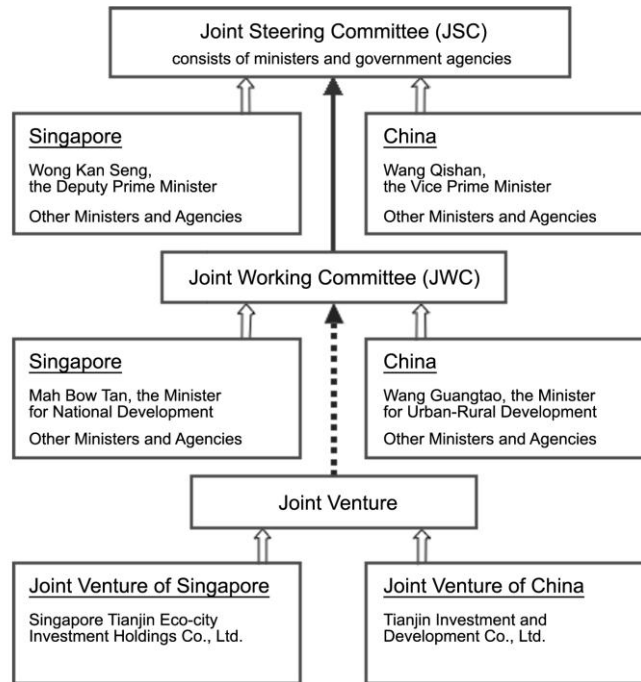


Figure 3: the Supervision Mechanism of SSTEAC

The project was successfully established in the bilateral cooperation mechanism between the two countries. Moreover, a supervision mechanism that includes two main levels was built (Figure 3). In the first level, the Joint Steering Committee (JSC) consists of ministers and government agencies in the two countries, as well as the Tianjin Municipal Government. Wong Kan Seng, the Deputy Prime Minister of Singapore, and Wang Qishan, the Vice Prime Minister of China, serve as co-chairmen of this committee. It supervises all the aspects of the cooperation between Singapore and China, including all the important subjects related to the development of the eco-city. While in the second level, the supervision mechanism is the Joint Working Committee (JWC), which reports directly to the JSC. And the co-chairmen of JWC are Mah Bow Tan, the Minister for National Development of Singapore, and Wang Guangtao, the Minister for Urban-Rural Development of China respectively. JWC takes charges of solving specific problems during the development of the Eco-city, mainly including: confirming the plans and guidelines for the construction of the eco-city; approving the overall design of 30 square kilometers, and the detailed design of 8 square kilometers in the initial stage; approving the work plans and stage markers of the project; specifying the functions, powers and responsibilities of the Eco-City Administrative Committee (ECAC) which is responsible for managing the eco-city. Furthermore, the JWC is also responsible for determining the resources and experts required by the implementation of the project in relevant departments and government agencies. The lowest level in this supervision mechanism is the joint venture, the business element in the implantation of the project, which ensures the project can be carried out according to the basic business principles. In operation, the joint venture supervised by the JWC is an independent economic entity. The joint venture needs to promptly report the progress and problems related to the eco-city to the JWC, so that JWC can assess and help to solve these problems. The joint venture has the initial registered capital of ¥4 billion (\$583 million), and both of the associated companies in Singapore and China invest ¥2 billion respectively, which means the capital structure is 50% to 50%.

3. The Development path of SSTECC, Current Progress and Potential Problems

This part will first compare the planning objectives and the current progress of SSTECC. Then the author will analyze the reason why the current progress fell behind the objectives and concludes the development path of SSTECC. At last, the author indicates the potential problems of current development path.

3.1 The Development of SSTECC

The planned population of SSTECC is 350,000 and it's expected to take 10 to 15 years to complete it. The residential area takes up about 40% of the construction area, industrial area takes up about 10% and business area takes up about 3%. The starting area is about 8 square kilometers and is planned to be built in 3 to 5 years (Figure 4).

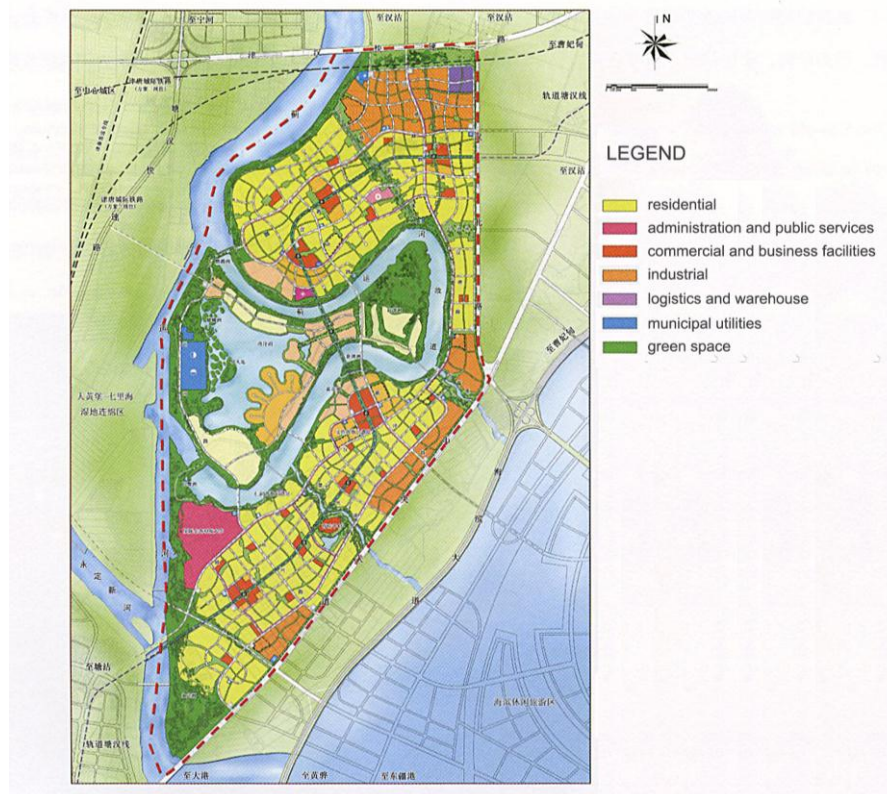


Figure 4: Land-use in Master Plan of Sino-Singapore Tianjin Eco-city

Eventually the SSTECC will assign 4 general sections surrounding the central Eco-Island, and they will be linked by Eco-Valley. The south general section is the 8-square-kilometer start-up area. A three-level Eco-city including Eco-Cell, Eco-Community and Eco-District will be built in this section to establish an ecological and well-equipped residential system. It will develop an employment system in correspondence to the SSTECC industry to increase job-housing balance as much as possible. The SSTECC is planned with extensive green (vegetation) and blue (water) networks to provide an endearing living and working environment. Water bodies in the Eco-city will be linked together for greater water circulation to enhance the ecology and to provide an attractive environment for waterfront development and water-based recreational activities.

3.2 Current Progress of Construction in SSTECC

With the Singapore government and Chinese government's joint efforts, the construction process of SSTECC is relatively smooth and orderly. According to official statistics, the city had taken shape by 2014.

- Currently, there are more than 10,000 residents living in the city. The construction speed of public facilities is fast, two schools had started their operation and a number of hospitals and commercial facilities had been built. 10 square kilometers of infrastructure had been completed.
- In terms of environment management, periodical results had been achieved in sewage and sludge treatment, as well as in the improvement of saline land and river regulation. The city also put into use a large number of energy-saving projects.
- The construction of five industrial parks which mainly consists of national animation industrial park had been accelerated markedly. The total of registered enterprises was more than 700. These enterprises mainly engage in cultural creativity.

However, in contrast with the original planning objectives, the construction process in SSTECH has a slower pace. The starting area was estimated to be completed in 2013. According to the satellite photos of 2014 (*Figure 5*), only about 60% of the starting area was utilized. A lot of projects were still under construction in this area.



Figure 5: the Satellite Photo of Starting Area in 2014

It can be seen from the Statistic on Starting Area Land Use (2012-2014) (*Table 1*) that, residential construction has been the driving force in the land use growth of SSTECH since 2012. The percentage rose from 52.09% in 2012 to 60.66% in 2014. The land for public service and commercial has corresponding growth in order to meet the need for residents. The land for commercial and business do not have rapid growth so far. In contrast, the Industrial land only raised 0.24% since 2012. There are no other massive industries except the national animation industrial park.

Table 1: Statistics on Starting Area Land Use (2012-2014)

Land-use	2012		2013		2014	
	Area (ha)	PCT (%)	Area (ha)	PCT (%)	Area (ha)	PCT (%)
Residential	1.62	52.09	2.47	56.65	3.13	60.66
Administration and Public Services	0.28	9.00	0.38	8.72	0.40	7.76
Commercial and Business Facilities	0.07	2.25	0.07	1.61	0.09	1.83
Industrial	0.70	22.51	0.93	21.33	0.94	18.31
Green Space	0.33	10.61	0.40	9.17	0.42	8.08
Others	0.11	3.54	0.11	2.52	0.17	3.36
Total	3.11	100.00	4.36	100.00	5.16	100.00

We can conclude from the current progress of construction that SSTECC follows the development path of “residence-industry-business-redevelopment”. According to the infrastructure and public facilities that are supported by the government are relatively optimistic. While some areas that are associated with the market usually tends to have a slow pace. Subject to many uncertainties in the market such as the economy development and population mobility, the SSTECC cannot achieve its initial aim. In the following part, the paper will analyze and predicts potential problems of each stage in current scenario.

3.3 Problems at Each Stage of Development path in SSTECC

3.3.1 1st Stage: Residence

According to the statistics, land for residential takes up more than 60% in the starting area. It shows that residence is the priority of the first stage. The master planning of SSTECC indicates residential lands in the city will be 40%. The reason why residence is the priority is that large number of populations can stimulate land development of the whole new city including public facilities as well as commercial facilities. Moreover, populations provide sufficient human resources for the development industries.

However, although SSTECC has more than 10,000 residents at present, the starting area is faced with the shortage of public facilities and public transportation. Public facilities like hospitals, schools and commercials cannot meet the need of residents. The external traffic communication in the starting area is weak. The public transportation within the city cannot link to the surrounding regions efficiently. The inconvenience in daily life and external transportation communication leads to the decline of house price, which, to some extent, affects the rapid development of the first stage’s residence. The planned public housing program in 2013 has not launched yet. Thus the city makes it impossible to attract those families who cannot afford the price of real estate in SSTECC.

3.3.2 2nd Stage: Industry

The SSTECC hopes to establish a rational industrial distribution so as to form a virtuous circle among “population—industry—land development”. The development of industries in the city can offer internal demands for the development of real estate. More importantly, it can also avoid the separation of workplace and residence.

At present, the industry lands within starting area consist of two parts: National Animation Industry which has finished its contraction and some ecological science projects in

Technology Park which is under construction. The growth of land use for industries is little from 2012. Furthermore, due to the inaccurate industry distribution and the unconformity of population composition between the employee and the resident, the city forms a faked job-housing balance. In the SSTECC, most employees are not local residents, in fact, most of them are high-end talents who live in the downtown of Tianjin or live in surrounding towns. Therefore, in future, it is likely to reach an ideal proportion between “the capacity for resident population” and “the capacity for jobs” in the city, but a lot of commuting activities still exists.

3.3.3 3rd Stage: Business

The aim of the 3rd stage is to develop commercial and business facilities in the SSTECC. The development of business could increase the land value and attract more people to the new city. In the master plan of SSTECC, the commercial facilities and business center throughout the city would provide sufficient consumption flow and meet the needs of the residents of the new city.

However, there are only small commercial facilities spread in residential areas, which are too simple to meet the expectations of the residents. If the city has problems in the first two development stages, there is little chance to build large scale commercial facilities or business center. The construction of SSTECC will get into a vicious cycle.

3.3.4 4th Stage: Redevelopment

A simple land use arrangement cannot promote development. Several comprehensive measures should be taken to boost secondary development, i.e. the Redevelopment Stage. In order to promote redevelopment stage of SSTECC, we need to apply public policy synthetically and adopt diversified means as well. The SSTECC and its Joint Steering Committee (JSC) are faced with big challenges.

4 Development Path of New City Construction in Other Cases

This part turns to three successful cases of new city construction, i.e. Marne-la-Vallée in Paris, Hong Kong New City and UAE Masdar Zero-Carbon City. This paper will find out key factors in their development path and compare them with SSTECC.

4.1 New City of Paris: Marne-la-Vallée

Marne-la-Vallée is one of the five new cities in Paris. It covers about 152 square kilometers and is re-assembled into four zones. It is the most successful and fast-developed city at that period in Paris.

Marne-la-Vallée town is divided into four functional areas, which are in fact four stages during its development: Paris Gate, Maubuee Valley, Bussy Valley and European Valley (Figure 6). In the early 1970s, the first initiated division - "Paris Gate" relied on the advanced rail transportation to develop a high-intensity and high-density residential. But jobs were not enough to balance housing at this stage. The new town was split up from the old one. In the middle 1970s, the second division, "Maubuee Valley" tried to increase the job-housing ratio. Research centers and industrial parks with international influence were built, such as the Discarter Science City, etc. In 1985, the third division "Bussy Valley" started to develop business areas basing on its population, industry and transport infrastructure. Meanwhile, the price of land was improved reflected in the secondary residential development. In 1985, the fourth division, "European Valley" is the finishing touch, which implanted touring function through the Disney theme park project.

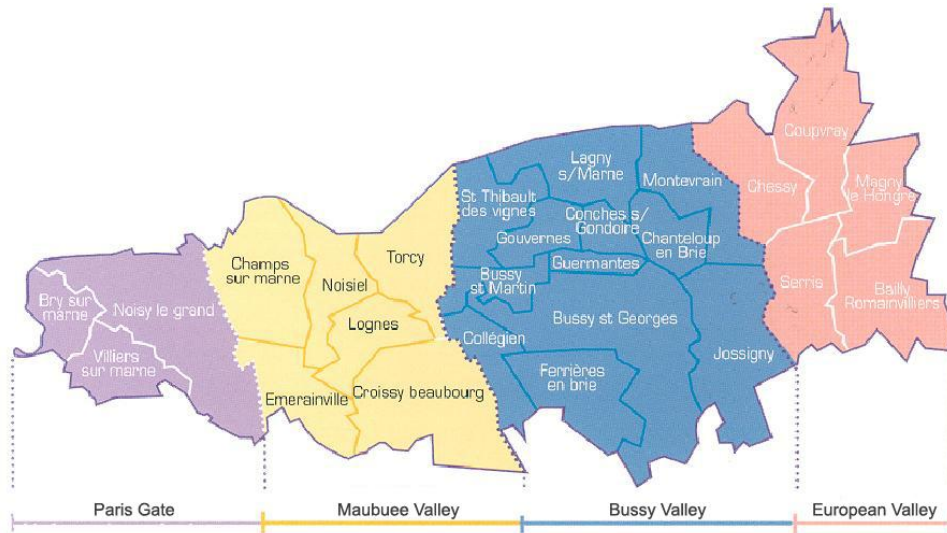


Figure 6: Four Functional Areas in Marne-la-Vallée

The characteristics of Marne-la-Vallee development path can be summarized as a "transprotion - Population - Industry - Bussiness - Complex". The transportation advantage went throughout the whole process.

4.2 New City of Hong Kong

Since the 1970s, Hong Kong have promoted a large-scale construction of new city. There are 8 existing new cities, which owns a total population of over 2.5 million, accounting for 35% of Hong Kong's total population.

Hong Kong New City's land development sequence (Figure 7) comprises: first, land acquisition, ensuring government controls enough available land resources to begin the construction of public housing and essential public facilities; Then the construction of rail transportation and other large infrastructures, including commercial facilities, community centers, schools, kindergartens, clinics, recreation grounds, police stations and fire stations, etc.; Next reclaiming hills and ocean. The reclaimed land from ocean will be provided for industry. Residents settled provide labor resources for industry and also become consumers. Lands obtained from hills will be developed into "cultivated land" and sold to be housings or shops, thus increasing the attraction to investors.

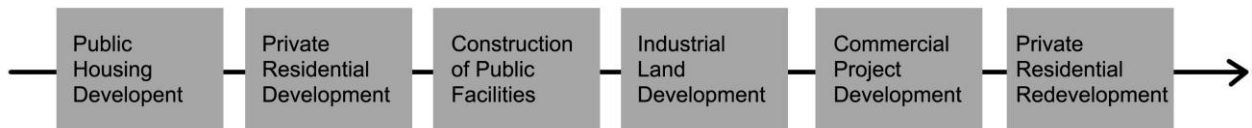


Figure 7: the Development Path of Hong Kong New City

The characteristics of Hong Kong new city's development path can be summarized as "Residence - Industry - Business - Residence", but the early focusing point is the use of public housing to attract the first group of residents.

The government combines new city construction with public housing policies. Due to the lack of housing, citizens' waiting period for public housing may be as long as nine years. The new city has abundant housing resource and good environment, so citizens in old districts are half volunteered to move to the new city, which ensures the resident population.

4.3 UAE Masdar Zero-Carbon City

UAE Masdar Zero-Carbon City is a government-led project, which is the world's first carbon neutral and zero waste polluted city. In the first stage of the starting area construction, Masdar Institute and Energy Headquarters were built with priority. This initiative attracted a large number of professors, scientific experts and students. It is a typical mode where the industry motivates the city construction.

The characteristics of UAE Masdar zero-carbon city's development path can be summarized as "industry - residence - business" and take industries as the key point to lead the development of the resident population. Sticking to "industry oriented", Zero-Carbon City took use of government's strength and the full overlay applications of low-carbon technology to create a successful new city.

4.4 Comparison and Summary

We can see from the three cases that although they follow different development path, a common feature is shared: the new cities usually have some key factors to contribute to sustainable development of the city (*Table 2*). These factors may be stimulation points at the first stage, or sustainable elements throughout the whole process.

Table 2: Development Paths and Key Factors in New Cities Construction Cases

New Cities Construction Cases	Development Paths	Key Factors
Paris: Marne-la-Vallée	Transportation - Population - Industry - Business - Complex	Transportation
New City of Hong Kong	Residence - Industry - Business - Residence	Public Housing
UAE Masdar Zero-Carbon City	Industry - Residential – Business	Industry

In Marne-la-Vallée, the key factor is the construction of convenient public transportation which attracts large numbers of population, while SSTECC is lacking of traffic advantage during earlier stage.

In Masdar Zero-carbon City, the key factor is new energy industries. The growing of industries is the first stage of new city construction and lay the foundation for the city's future comprehensive functions. However, SSTECC's current industry orientation is not that high-end.

Hong Kong public housing program introduce the population into the new city. So its key factor is the residence, while SSTECC is lacking of voluntary residents at the first stage.

5 A New Development Path of SSTECC: Dynamic Development

As mentioned in Chapter 4, SSTECC is different from three successful cases and thus SSTECC could not follow their development path. In this part, the author puts forward a new development path: Dynamic Development. SSTECC should first finish the starting areas as soon as possible and promote residential, industrial and commercial development simultaneously. At the same time, we should assess three major risks of construction of SSTECC and introduce proper key factors into the SSTECC. The Dynamic Development path of SSTECC is explained as followings:

5.1 Step 1: Accelerating Construction of Starting Areas

The construction of starting areas in SSTECC is not only an exploration of Eco-City Construction in China, but also a milestone of SSTECC. The success of starting areas will improve people's expectations and confidence in the new city construction.

5.2 Step 2: Assessing Potential Risks and Preparing Corresponding Measures

The only constant is change. New city construction lasts for decades and circumstances keep changing. China is a developing country so that the economy, policy and politics are not stable. We need to assess potential risks such as market risks, policy risks and cooperation risks in order to prepare corresponding measures.

- **Market Risks:** The market risks of new city construction are mainly consist of market capacity risks, population capacity risk and project competition risks. Market capacity risk is the concern that Binhai New Area, which is a new city program itself, cannot support the project volume. Population capacity risk refers to the concern that SSTECC may not achieve the established population capacity.
- **Policy Risks:** The policy risks mainly include government housing regulation and infrastructure investment policy changes. Policy risks are relatively small, especially in a major cooperation projects between countries like SSTECC. However, once happened, the result is devastating.
- **Cooperation Mechanism Risks:** In this program, capital structure is 50% to 50%, other than dominated by the Chinese in the latest cooperation program Suzhou Industry Park or vice versa. It is difficult to forecast the new capital structure's pros and cons. On the other hand, those joint ventures authorized have to follow the market principles, which may deviate from the original intent put forward by government.

5.3 Step 3: Implanting the Key Factors at Proper Time

After the completion of the starting area development, more construction will certainly take place. This will be a new node that SSTECC's developing path can be revised and an opportunity that the lost key factors are reimplanted. These key factors can be the perfect rail transportation projects invested by the government, can be a national influential industrial project, and also can be large-scale public housing projects.

We can foresee that the changing node will take place periodically if only a milestone is reached or the construction is in trouble. The combination of path changing, factor reimplanting, risk assessment and response makes the dynamic development.

6. Conclusion

Due to the established cooperation mechanism between two countries, Sino-Singapore Eco-City succeeds in certain areas as a transnational project. However, compared with original plan objectives, the SSTECC does not meet the expectations, especially those areas where market plays a significant role. Following the existing development path, i.e. "Residents-Industries-Business-Redevelopment", the construction of the SSTECC faces several important uncertainties and cannot achieve its aim.

The traditional development path is not suitable for SSTECC. In the Chapter 5 the paper puts forward a new development path: Dynamic development. New city constructions are always long-time projects. During such long time, the circumstance keeps changing. The key element of dynamic development of new city construction is acting according to the

circumstances and preparing for changes. In the case of SSTECH, the paper gives specific suggestions: Firstly, the starting area of SSTECH should be completed as soon as possible; Secondly, we should assess the potential risks including changes in market, policy and cooperation; Last but not least, key elements of construction of SSTECH should be implanted at proper time.

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Effects of Spatial Pattern of Province on the Distribution of regional infrastructures

(Why do we need to share regional infrastructure and how to achieve a mutual sharing)

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Abstract: For most countries, the administrative division is an important factor affecting the allocation of public resources. Taking airports as study case, this paper focused on two issues. The first one is whether the spatial pattern of the administrative division affecting the spatial strategy of a province which contributed to the allocation of airports. The other key issue is how this mechanism can be used to stimulate the local government achieving a mutual sharing when constructing regional infrastructures. To answer these two questions, the paper firstly classified the spatial pattern and spatial development strategy of each province to find if there was some kind of correlation between them. According to the percentage of cities in each province which had at least one airport ranking the top 200 civil airports (measured by throughputs) and Gini coefficient of per capita GDP, the paper validated the important role played by airport—typical of regional infrastructure—in correcting the imbalance of regional development. Based on the above study, five criteria were listed in order to identify priority regions for constructing and sharing regional infrastructure: the amount of airports, geo-relations, regional development gap, constructing capacity and the cost of a new regional infrastructure. Given the fact that the existed administrative divisions were not easily to be changed, the paper tried to find how to maximize the efficiency of regional infrastructure by locating reasonably and cross-border sharing.

Keywords: Spatial pattern of administrative division; administrative regional economy; cross-border sharing; regional integration.

1. Introduction

Administrative Division is a kind of regional division for the purpose of hierarchical management. Most countries in the world had their own rules to build these divisions according to their institutional characteristics. In china, these principles can be described as beneficial rules. That means the way in which administrative units were divided should be beneficial to socialist modernization construction, management, national unity and national defense. At the same time, natural conditions and historical status should be taken into consideration. Many had studied the difference in administrative division between China and the United States. The former was mostly bounded by natural mountain and river, so that the administrative divisions were less structured. However, the latter was artificially divided except the 13 states; as a consequence, the administrative divisions had more structured form and similar sizes. Liu Jianwen had carried out a comparative study on the division hierarchy, margins, borders and zoning principles of administrative divisions, revealing the underlying causes which made such different divisions between China and the United States. Chinese administrative division boundaries were always natural, historical, cultural or ethnic elements, while the administrative units of United States were usually shaped in accordance with the regulation of land measurement(Liu Jianwen, Cui Hongyu, 2009).

However, both in China and US, administrative divisions defined “local government” to some extent. In the United States, all the states were relatively independent and tended to have a spontaneous competition with each other for political or some other reasons. In China, this kind of competition is even more obvious. For a long time, basic units in both statistics and assessment are defined by administrative division. "Province" is land within the common unit of comparison. Taking GDP as the most important criteria for a local

government has been criticized and was gradually abolished. However, it is still an important criterion in public judgment and easily to be understood. Administrative divisions were not only boundaries of management but also boundaries of more investment and return, which made construction of local political interests on the local economic development become easier to understand and explained why some investment in regional infrastructure would exist in the face of fierce competition and a certain degree of exclusivity.

In 1990s, Liu Junde, proposed the concept "District economic" which described a unusual type of regional economy appeared during the period when China were having a transition from a regional economic system under the planned vertically running economic system to a socialist horizontally running market economy since the Opening up reform. It is a split of Chinese regional economy-feature, which was incompatible with international regional economic integration in regional economic (Liu Junde, Shu Qing, 1996). One of its outstanding features is that the District Government tended to build protectionism by administrative means, directly or indirectly, to interfere with fair competition in the enterprise, disrupting the economies of scale of market competition. These informal disrupting obstructed the flow of factors of production across the district result in some extent of economic failure around district boundaries. Liu Li had verify that the intersection of the regional development strategy areas will overlap with space to form policy synergies, and administrative area economy will to some extent offset the economic effects of integration of part of the regional cooperation taking China's Pan-Pearl River Delta region for example.

With the deepening of globalization, regional integration has become a broad consensus and metropolitan area together with urban agglomerations had become new and important roles to promote regional economic development, coordination of regional construction and management. According to the National urbanization planning (2011-2020), China will form t 23 cities urban agglomerations within the scope of the whole territory. "Urban agglomeration" was a concept breaking through the regional community structure formed by the administrative borders. Luo Xiaolong has proposed that, since its mid-1990, with the deepening of decentralization, liberalization and the globalization process, deterritorialization and reterritorialization appeared in regions and cities in China. "Flowing space" striped the social relations with local and local area producing the deterritorialization. After that, various economic, social and political forces began new construction to get new area on this "unbounded" space in order to achieve control over the new social space. This process could be defined as reterritorialization.

Such a redistribution of resources and elements was as well as the process of regional reconstruction. Xu Xianxiang had studied the causes that urged the local government to choose a segmented market or cooperation during the process of regional integration based on the perspective of political promotion. Actually, the spatial pattern of a province may have some subtle effect on the development strategy for that boundaries decided the complexity of geo-relations of a province. Choosing cooperation or segmented market means tending to expand its hinterland or to strengthen the controlled place. No matter which kind of strategy the local government chose, constructing a regional infrastructure was an effective way. As rational local government, if its main purpose is to upgrade its controlled field, some important infrastructures would tend to be allocated in those secondary node cities. Instead, if its main purpose is to get new development hinterland, like those can make contribution to its local economy (especially labor resources), its critical infrastructures will tend to be closer to the ideal hinterland's provincial borders. Those locations can combine two purposes or due to special topographical conditions was another matter.

Major regional infrastructures had significant effect on economic development and remodeling regional spatial pattern. If we only concerned efficiency and ignored fairness, it may exacerbate the imbalance within a province. On the contrary, a rationally located infrastructure may play an important role in promoting regional collaboration and building new regional growth. A sharing infrastructure always contributed to effective regional collaboration and was always regarded as signal and premise of regional integration. This

paper took civil airports as typical of regional infrastructure. Not only because the airport can be considered as a point when we studied the whole territory which simplified the process of analysis, but also for its great demand. According to China Statistical Yearbook in 2013, there were 2,853 County-level administrative units (including the municipal districts and county-level cities), while the amount of airports was only 399 in the same year, among which were 78 really decent General airports. As a kind of relatively scarce regional resources, airport would much easier to show the value of "hinterland".

2. Methods

This paper focused on two issues. The first one is whether the spatial pattern of the administrative division affecting the spatial strategy of a province which contributed to the allocation of airports. The other key issue is how this mechanism can be used to stimulate the local government achieving a mutual sharing when constructing regional infrastructures.

To answer the first question, we must find a role of media between spatial pattern and regional infrastructure—regional development strategy. As imagine, one of the reflection of regional development strategies in the physical space, should be the scarcity of regional infrastructure sites. Therefore, we compared the provincial urban system planning in the urban hierarchy structure and consistency between capacities of airports. After verifying this hypothesis, we focused on one core issues: whether spatial pattern of administrative division had a certain degree of influence on the regional development strategy?

Based on some basic principles and methods in spatial classification and spatial topological relation, the paper classified the spatial pattern of administrative division of the 31 provinces in the Chinese mainland. Then we tried to induce different morphological types of development strategy embodied in the delineation and spatial structure of regularity. Here, we use the simplified "roundness" α to describe a provincial administrative divisions-form intuitive "full extent" and classification.

$$\alpha_i = \frac{4 \pi S_i}{C_i^2}$$

α_i is roundness of the spatial pattern of a province; S_i is for the area of this province; C_i is for the boundary length of the province. It is to be noted that, the calculation here is used to rationally classify, not very accurate geometry algorithms based on geographical coordinates. Therefore, the calculation here is based on Google map and AutoCAD vector drawn boundaries. All the area and border length is calculated using rough drawing computer software.

Then, we classified the development strategies of each province. Despite the different description of each province, those were all about "center", "development axis", "circle" and "group". Based on the combination way of these elements, the space development strategy of all the 31 provinces were roughly classified as network structure, linear structure and circle structure according to the province's latest of "planning of town system".

For the second question, if we recognize that the promotion of balanced and healthy development of local economy is still the primary driving force of the local government policy in a very long time (which actually did), we can assign the local government as rational operators who wanted to get profit from allocating regional resource. To promote the initiative to build a shared regional infrastructure, we expected benefits need to be demonstrated. Airport due to its relatively quick and easy flow of people, logistics and high expectations were often placed to create new growth poles, especially for the Midwest areas where high-speed rail network was still underdeveloped. Airport could often reshape the regional pattern of an important impetus and enhance the competitiveness of a region.

Development gap between different cities is one of the most important measure indexes to see whether local economy had a balanced and healthy development. There were many elements that caused (or made up) this gap of reasons, this paper just wants to confirm whether airports had caused (or made up) this area development gap. We had two index to validate this point: one is the amount of cities which rank above the province average level (measured by GDP) and at the same time had at least one airport of which the throughput ranking the top 100 of Chinese mainland. The second one is airport coverage and relationship of economic development in the province. Airport coverage here was used to validate the capacity of airport in balancing the development gap of different cities. Therefore, the city which had only one airport contributed 1 point to the balance of regional development. On the contrary, the city which had two or more airports contributed -1point to the balance of regional development.

$$C_p = \frac{A_{1a} - A_{2a}}{A}$$

Where C_p represented airport coverage of p province; A_{1a} is the amount of cities which had only one airport; A_{2a} is the amount of cities which had two or more airports; A is the amount of all the cities in p province.

Development gap within the province referred to Gini coefficient of per-capita GDP by Cai Anning and was simplified as:

$$G_i = \frac{1}{2n^2\mu} \sum_{j=1}^n |y_j - y_h|$$

where G_i is Gini coefficient of per-capita GDP of j province; n is the amount of all the cities in this province; μ is per-capita GDP of this province; $|y_j - y_h|$ is the absolute value of D-value of per-capita GDP between any two cities. y is the ratio of GDP and resident population of 2014.

Another key issue is which area need and was possible to achieve cross-border sharing of airport construction? Our filtering criteria consists of these follow conditions:

- 1) No airport within suitable (meant easily to access) radius;
- 2) Geographical complexity, namely the calculation value of administrative divisions roundness α is low.
- 3) Imbalance in regional development, that means is Gini coefficient of per-capita GDP is high;
- 4) had higher infrastructure investment in building capacity compared with the surrounding areas, that is, higher GDP than around areas;
- 5) Construction of airport as the best way to improve regional traffic patterns, that means the population density is relatively low. (The choice of optimal design of multiple elements, only from the perspective of cost considerations. In point to point rapid transit, building airports in less densely populated areas was more economical alternative than high-speed rail, especially in areas with complex geological conditions in Central and Western China)


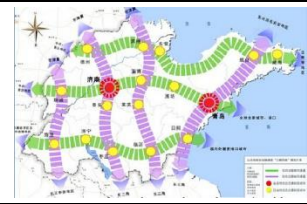

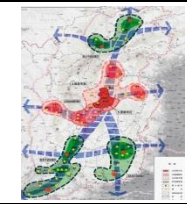
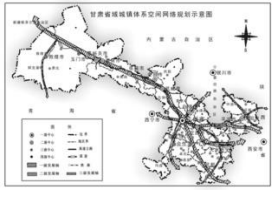



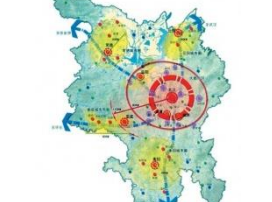


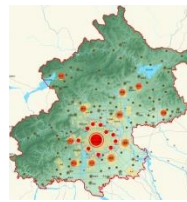
3. Results

By comparing urban system planning and airport capacity, we can see that high level airport planning for high grade of city development strategies. And regional factors in the allocation of resources tend to invest in key development areas have a close relationship.

We classified the 31 province by administrative divisions form and the roundness measurement according to the calculated value into *regular*, *belt* and *irregular-shaped*. Then

we classified the spatial development strategy as a flat network structure, polycentric structure and vertical-ring structure according to the spatial structure combining the "center", "axis", "circles" and "group".

Table 1 The roundness of spatial patterns and classification of spatial development strategy

Flat network structure				
	Afa:2.25	Afa:1.76	Afa:3.79	Afa:4.41
Polycentric structure				
	Afa:1.23	Afa:2.18	Afa:2.22	Afa:1.65
Vertical-ring structure				
	Afa:3.24	Afa:2.63	Afa:2.01	Afa:4.79

These three spatial structure type the correlating capacity of a province: flat network structure could be considered as a highly outgoing space development strategy with around areas; group shaped structure was relatively outgoing space development strategy which both stressed province domain of internal land but also around areas in some directions; vertical-ring structure is is a relative inner strategy valuing province domain within grade system construction development strategy. The correlation between spatial pattern and development strategy can be described as: structured shaped provinces tend to choose network development strategy; linear province in favor of polycentric structure; Irregular provinces according to their geographical characteristics would select multiple groups structure or the surrounding areas of network.

Another phenomenon we observed is that those who choose the export-oriented spatial development strategy always have high level airports near their province boundaries. Due to the energy level of the airport usually reflects the activity of an outgoing link, so this also from the other side in support of the regional spatial strategy for location of major infrastructure impacts and benefits of cross-border sharing of regional facilities.

Airport-level can be characterized by throughput. Passenger throughput and cargo throughput of 2014 were used as two indicators to measure the level.

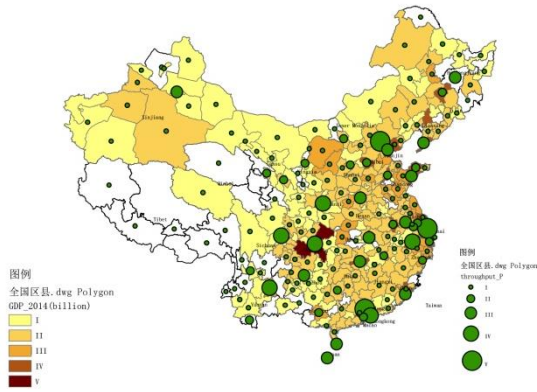


Figure 1 The correlation between GDP and the capacity of airport (measured by population)

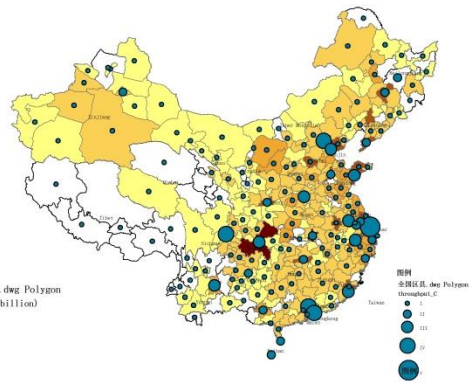


Figure 2 The correlation between GDP and the capacity of airport (measured by logistics)

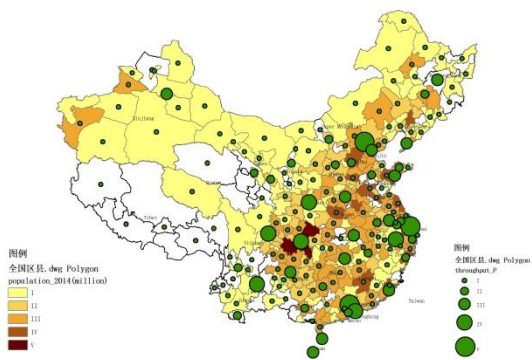


Figure 3 The correlation between population and the capacity of airport (measured by population)

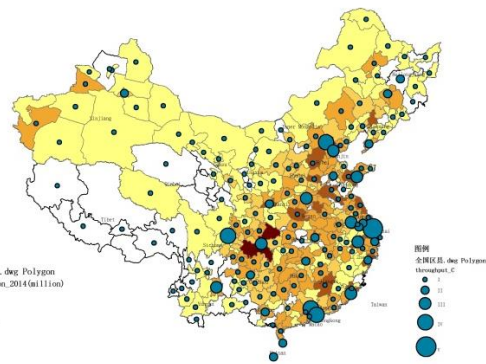


Figure 4 The correlation between population and the capacity of airport (measured by logistics)

As can be seen, a high positive correlation existed between energy levels of the airport and economic development, especially the first airports with the first economy of the city is always at a high degree of consensus. Although this relationship is the interaction between the two elements, there is no denying that the airport plays a leading role in local economic development.

It is regrettable that, as some of the city's population and economic data is temporarily missing, a comprehensive validation about airport coverage with Gini coefficient of per-capita GDP were failed to be conducted. Tian Weimin's measure were temporarily adopted here. Despite the small sample sizes, the airport coverage and Gini coefficient of per-capita GDP shows a negative correlation. Correlation is significant at the 0.05 level (2-tailed). This result indicated that, airport construction, to some extent, has positive effect to correct the problem of unbalanced regional development.

Table 2 The correlation between Gini coefficient of per-capita GDP and coverage of airports

		Gini	Cp
Gini	Pearson Correlation	1	-.459*
	Sig. (2-tailed)		.024
	N	24	24
Cp	Pearson Correlation	-.459*	1
	Sig. (2-tailed)	.024	
	N	24	31

*. Correlation is significant at the 0.05 level (2-tailed).

there are advantages and disadvantages when talking about cross-border sharing of regional infrastructure. And this is the reason why someone worried "across territories" will caused Matthew effect: strong of party due to siphoning quickly eroded around vulnerable area of development hinterland, attracting elements agglomerated to developed area. It is also the reason why we want to avoid administrative regional economy.

Li Guangbin, had studied why the same level of local government under view of the local government act, discussing how cooperation between the two sides can profit given the fact that local governments were reluctant to take initiative of cooperation in this dilemma. In response to this problem, He Renwei studied on the game model of administrative economy Proposing an introduction of rewards and punishments in the game the matrix approach. Liu junde did region spatial economic analysis of institutional contradictions presented from "administrative regional economy" to "geo-economic" was also based on the Yangtze River Delta. such as strengthening the Central Government's macro-economic control, deepen reform, transform government functions and many other scholar's result about the reform, planning, the establishment of mechanisms, such as various proposals put forward.

Regardless of what recommends, as the system economics advocates: benefit is the beginning of trade, achieved both-win is the key point. Both compensation and incentive mechanisms is a change of the performance evaluation method. The crucial point is how to make vulnerable party interests, changing from passive cooperation to active cooperation and maximizing the benefits of investment in regional infrastructure.

4. Limits

Taking civil airport as the object of analysis, this paper focused on the key point of the effect that provincial zoning patterns may have on regional infrastructure. and measured the regional infrastructure's positive role in correction of imbalance of regional development. Analysis used in this paper are based on quantitative analysis of the data, but inevitably there are a lot of assumptions based on general experience, which affected the rigor of certain conclusions. On the other hand, as some of the missing data and time limits, the results of this phase also failed to calculate the correlation between coverage of airports and the Gini coefficient of per-capita GDP as supposed, which would be useful to find the priority areas when achieving cross-border sharing. These will be further expanded in the next.

Endnotes

○₁ Source: <http://jiangsu.sina.com.cn/yangzhou/economy/2015-04-01/093225301.html> , referenced on 2015-07-25.

○₂ The population density refers to the resident population density, the ratio resident population of a province by the end of 2014 and area ratios.

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How to develop unprecedented port-city synergy?



Moving beyond the physical, the competitive capacity of Port Said city and port

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Abstract

Technological, geographical and socio-economic factors have dictated the relationship between city and port growth. In response to international markets and technological changes, new urban patterns have emerged, yet local conditions of accessibility, population distribution and knowledge transfer have a great influence on the expansion of port services and its integrative nature with the city. The matter of integration is rather problematic as the port-city interface is considered a zone in transition; conflict, cooperation and change. In the city of Port Said, the interface is marked by conflict of transportation and competition for space for residential versus port activities whilst the port is expanding to be more capacious as a national project to relief Egypt of its economic struggle. The relationship is affected and in part controlled by economic and political conditions at various scales. Port Said presents a mega logistics port, placing it second after Yanati port (China). It is one of the important harbours in Egypt for export, import and refueling ships passing the Suez canal water way. It has more than 650 thousand inhabitants, making it the third largest urban governorate in Egypt in terms of population size. Bordered by the Mediterranean in the north, Manzallah Lake in the south west and the Suez Canal in the East, the city has little in the way of expansion. Despite scoring in the top five governorates in the National Human Development Index and having some of the lowest negative indicators in terms of illiteracy and unemployment, Port Said is not realizing its potential in terms of physical and social attributes and in terms of its competitive advantage in world ports. It struggles between being a port city and it's potential to be a world port city, yet all state plans focus on physical attributes and projects for canal and port expansion, neglecting important economic networks and knowledge infrastructure. The paper analyses current plans for the city and the port which have received large funds from the public as a national mega-project and an investment that holds promising returns. The paper argues for a holistic approach taking into account current and future maritime business services' capacity, human resources' skills, knowledge management strategies and competition with regional and global ports.

1. Introduction

In an era of globalization, competition between cities for investments, technology, tourism and more, has extended beyond neighboring cities to cities all around the globe. This is more so of ports where performance is key to its competitive advantage in a globalized trade market, where ports are thriving to increase their market share, investment opportunity, performance indicators and positive environmental image. Performance incorporates improving the sustainability and competitiveness of port systems, hence spans socio-economic, environmental, operational and governance issues (Portopia, 2014) gearing the discussion of competitiveness to the extent to which the port has a positive impact on the city and its population besides the favorable differentiation from its competition. International markets and technological changes have dictated physical changes to ports in terms of terminals, platforms, berth capability, handling equipment, maritime services, transportation and information networks which has put a strain on compact cities and the integrative nature

of the city with the port. It has also called for a skilled employee able to contribute to higher efficiency and smart operating systems. This raises questions on emerging urban patterns, local conditions of accessibility, population quality of life and the ability to adapt to advances in information technology. Reflecting on the interface between the city and the port and the ability of a city to accommodate change in order to position itself favourably in terms of its competitiveness and livability are discussed in this paper. A framework is developed which explores the interface between the city and the port building on factors and processes of sustainability in order to consider areas of conflict, cooperation and change. The paper hereafter is divided into two parts, first a presentation of the case study area and secondly, an analysis of the Port Said sustainability and competitive capacity according to the developed framework.

2. Port Said city

Port Said is a city that lies in the North-East of Egypt extending about 35 km along the coast of the Mediterranean Sea, north of the Suez Canal and is considered one of the main Egyptian ports due to its distinguished location at the crossroad of the most important world sea trade route between the East and Europe via Suez Canal and being the most extensive transshipment port in the world. Generally the city consists of three general areas West Port Said, Port Fouad and East Port Said, whereas the governorate is officially divided into seven administrative districts; Port-Fouad, East, Arab, El-Manakh, South, El Zohour and Dhawahi districts (fig 1).



Figure 1: The seven districts of Port Said Governorate

As a Mediterranean city, it is a main summer resort and tourist attraction due to its public and private beaches, Manzalah lake special islands, protected areas, cosmopolitan heritage, museums, duty free zone and landmarks such as the light house, Martyr's memorial and Suez Canal Authority Headquarter.

The port itself is developed as a hub port by the government. It includes three ports and platforms namely the West Port, Port Fouad and the recently added East Port (fig 2). Port Said ports were ranked 3rd for three consecutive years till 2007 because of its cargo systems and its mega logistics platform (Negm, 1987).



Figure 2 the three Ports of Port Said

Port Said port (989544m²) has two container terminal operators; Port Said Container and Cargo Handling Company (public sector at the west port) and the Suez Canal Container Terminal (private sector at the east port). Where AP Muller agreed with the government to build and operate the Suez Canal Container Terminal (Younis et al., 2010). The port and the city suffer many problems. In terms of the city; due to geographical constraints of being surrounded by water bodies, the port services are concentrated in the city center and the shores of the Suez Canal. Pressure on land has increased due to increase in population which has meant expansion of city to Port's hinterland. The network of paths, crossroads, squares and rail is irregular and inefficiently planned causing congestion of the road connection between the port and the highway towards the city centre. Unplanned residential areas have developed towards the south and west encroaching on the backfill of Manzalah Lake and producing informal settlements (Farg 2012; Salem, 2014).

As for the port, the area of yards is not sufficient for the existing volume of containers, the layout is not properly planned or organized, there are no identified routes for traffic inside the yard, there are no specified yards to check import containers where the custom can inspect the cargo in between container stacks and administrative offices are dispersed and in the city centre wasting a huge amount of time, causing congestion and particularly as the handling company (of the west port) does not have a computerized network. There are also problems with the cranes insufficient to deal with post-panamax ships, cranes in bad technical and operational conditions, short quays increasing waiting times of ships all affecting terminal productivity. In terms of operation, high-quality services are expected in a competitive market, accomplished through efficient equipment, skilled employees and advanced automated systems. Activities are run manually significantly impeding performance and counter solving yard shortage (Younis et al., 2010). Finally in terms of service level agreements dealing with rate of handling, expected volume and scheduling of ships all relate to the storage cost of containers in the terminal yard. The high volume of empty containers

requires non-productive re-handling as the yard is not properly planned and quite congested resulting in shipping lines exceeding their free of charge 3 or 4 day allowance to move empty containers. This has all resulted in an estimated loss of productivity of about 80% (Younis et al, 2010).

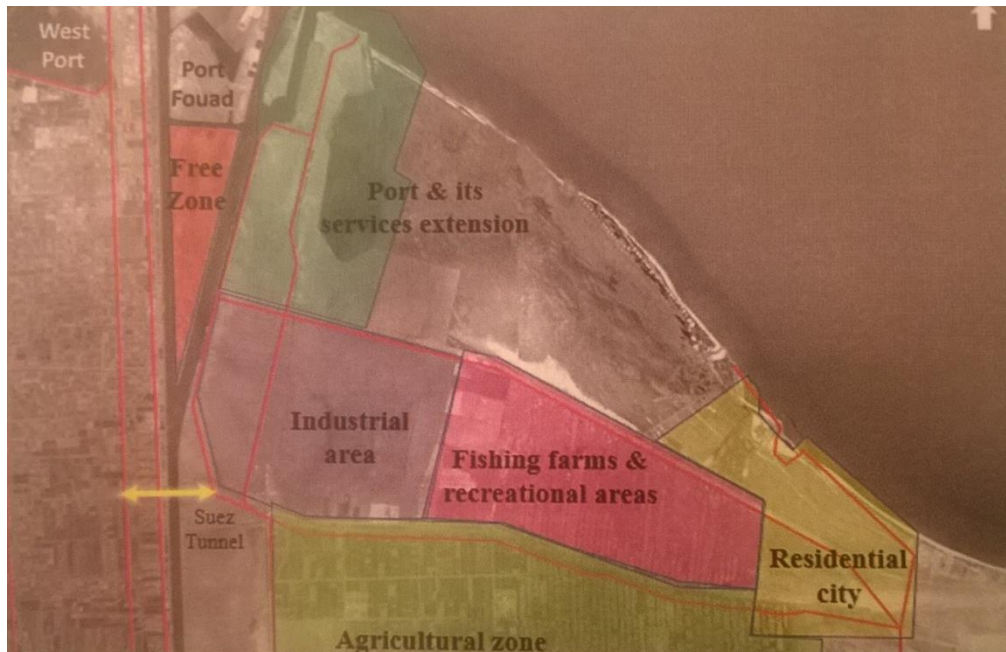


Figure 3: the East Port

As for the East Port (Fig 3), it is 35 km², and as mentioned its terminal is operated by the Suez Canal Container Terminal (private sector) (Younis et al., 2010). Currently many plans are being proposed by the government, planners, Egyptian and foreign companies in order to fulfil the needs of expansion of the port and the city. Plans include accommodating all commodities in first basin for south and north bound traffic, wide basins for larger ships, integration with industrial zone, clustering of container terminals with ample space for logistics port industry and container services (Dutch and Nile consultancies Ecorys, 2008). The proposals cover schedules and costs for different phases of transforming the port into a world class international hub port with information on dredging, quays, dikes, roads, utilities, facilities and even zoning of the rest of the hinterland, labelling the port a green and smart port, however, the approach towards the East port very much follows the approach towards the west with a focus on performance purely in the sense of maritime business services. Not much is being thought of in terms of social aspects, environmental aspects, integration with the city and the whole issue of dependency.

3. Sustainability and competitiveness

The city-port relationship is mostly that of dependency where functional, social and economic factors define the relationship (Ducruet, 2007). Societal integration has increasingly surfaced as an important factor enhancing the relationship between the city and the port. Societal integration as explained by ESPO (2014) refers to environmental measures aiming to reduce the environmental impact of port operations and improving the local environmental conditions for the people working and living around the port, yet it is pointed out that ports grant and maintain their license to operate and to grow from their local communities. Hence societal integration can be wider interpreted as to all things that pertain to regarding the port as a

positive entity of a city; an environmental steward, an urban hub, an architectural landmark, a catalyst for urban infrastructure and a generator of jobs and economic prosperity.

Sustainability in ports has often been reduced to the environmental dimension (Denktas-Sakar & Karatas-Cetin, 2012), this is also the case in the European Sea Ports Organization (ESPO, 2014) where sustainability is a reflection of environmental schemes and projects attempted by ports to reduce levels of pollution or waste. On the other hand, most competitiveness literature emerges from the logistics chain field with a focus on port activities and organizational structures (De Martino & Morvillo, 2008). These are important aspects but are discussed in a limited business scope, looking inwardly at the port operations, ignoring the factor of coexistence with the city.

The literature addresses the question of integration championing sustainability as a vehicle to deliver economic, social and environmental coexistence of the city and the port. AIVP, the worldwide Network of Port Cities (2014) addresses sustainability under the heading of 'smart' ports in its 14th world conference on city and ports. AIVP (2014) maintains that smartness is a spatial planning challenge requiring the intelligent organization of urban areas with the industrial areas of the port with an aim to drive social wellbeing without focusing solely on profit. Carlos Moreno, the scientific consultant for Cofely Ineo - Gdf Suez, one of France's largest energy companies explains that a smart port city must first create a liveable city before one that is economically wealthy (AIVP, 2014). However, smartness is also about digitalization and Big Data (large data sets and computer infrastructure connecting various city services including ports), expanding the internet of 'things' to the internet of 'everything' where port activities and digitalization are essential infrastructures for society (quoting Markus Wissmann, Manager at Cisco Systems, AIVP, 2014). Examples of smart initiatives range from virtual port logistics in Hamburg, residential expansion onto derelict container terminal in Helsinki, building apps to engage citizens with activities carried out in its 13,000 hectare port in Antwerp, 4FOLD a foldable container to reduce the transportation of empty containers accounting for 60% of containers travelling around the world by Rotterdam, recycle all port waste in Ghent-Brussels, plans for the provision of energy to a residential district by reusing emissions from heavy industry in Rotterdam, renew a 600km road link between Durban and Johannesburg to separate city traffic from heavy goods and relief congestion (Bosso, 2014). Hence it can be said that social, environmental, economic and spatial aspects are all part of the smart port city whilst recognizing the influence of digitalization and the changes in how things are carried out both for businesses and people.

Pettit & Beresford (2009) explain that the evolution of ports and their relationship with the city is affected and in part controlled by over-riding factors at various scales such as technological change (influence on port functions and expansion), environmental conditions (integrity, carrying capacity), economic conditions (growth, development, productivity), political conditions and social conditions (participation, cultural identity, institutional stability). Sustainability as an overarching concept which can provide a clear structure following its three dimensions. Nonetheless, this research is concerned with the integrative nature of the port and the city adding a spatial dimension to the discussion which emphasizes the issue of land development and competition for land as well as transportation within the port, through the city and further to various destinations. Hence four dimensions are iterated which incorporate aspects of competitive advantage from a planning view rather than a logistics view.

The following framework provides a holistic view of the city port interface where several systems come together affecting and partly controlling the development process and defining the dependency relationship of the city and the port. It derives its elements from the previous discussions on sustainability, smart ports and competition and a reflection on the case study of Port Said.

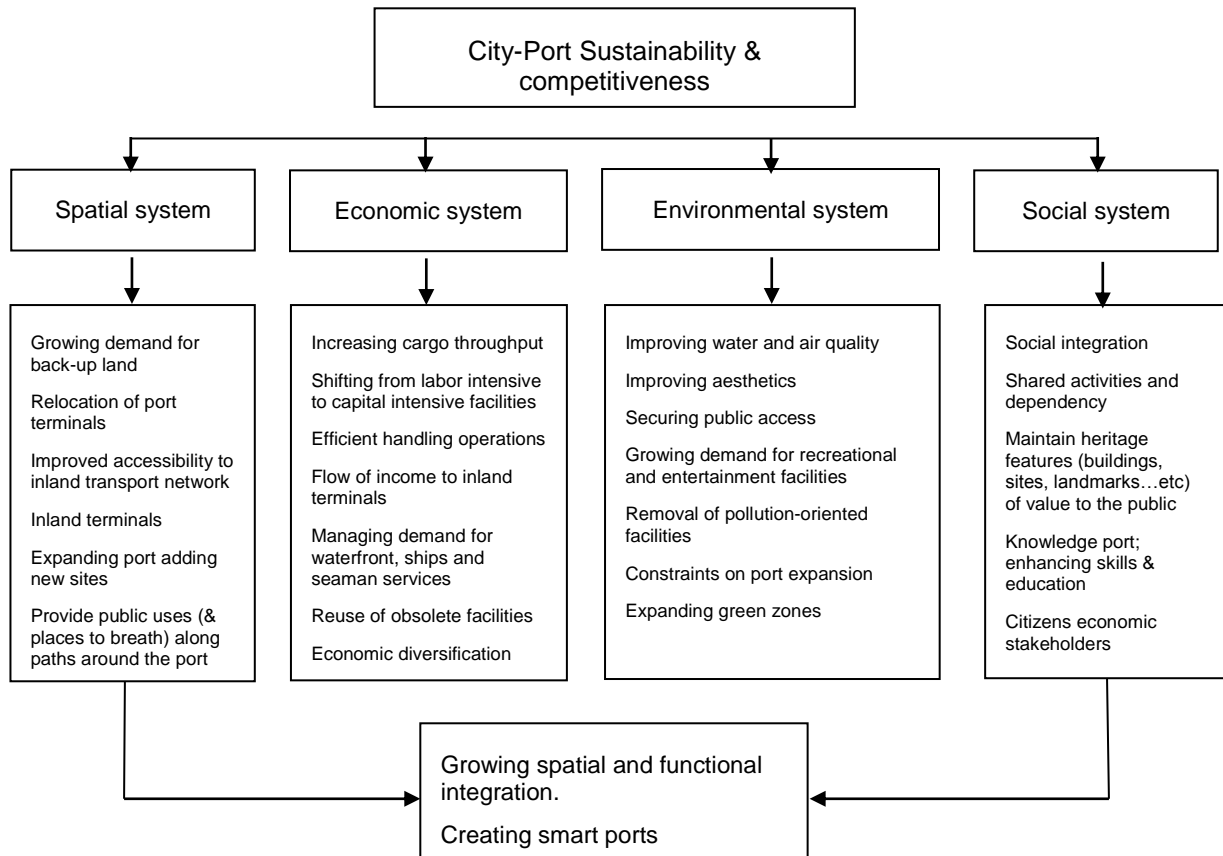


Figure 4: Holistic framework for sustainability, smart and competitive city -port

Sources: Basiago, 1999; Hoyle, 1989; Ecorys, 2008; Younis et al, 2010; ESPO, 2014

4. Discussion and Conclusions

Several points have been raised through the presented framework which reflects on experiences of port development, processes and functions which affect the relationship of the port with city whether it is of an integrative nature or separated. The latter is characterized by an industrial approach with the dominance of interests of port operators and shipping lines, assuming that economic stability is in maintaining the interests of business and the citizens should accept that decisions regarding the city will emerge from the maritime business interests. The former however, starts with the needs of the citizens and the city aiming for a liveable city supporting a competitive port industry, hence satisfying social needs and the logistics requirements of the port. Also, to truly integrate the port with the city, citizens need to be aware of the activities in the port, engage in strategies of development and grab the opportunities of advancement related to the ports.

Spatial systems are at the forefront of the interface between the port and the city. Land development and accessibility that meet both needs of the people and the industry would create a sustainable development avoiding conflict and competition between both. In the case of Port Said, there is clear competition on land as the port needs to expand in order to have more yard space and plan its gateways into the city and to the region. On the other hand, citizens require housing and have appropriated public land backfilling a natural common resource. The port is separated from the city and is only felt in terms of negative aspects of congestion and competition on road networks. Better transportation routes, planning of expansion of the city and the port are in dire need and the new plans for the East

port are not promising where future expansion is not fully considered and no integration is attempted through the pragmatic practices of zoning.

Ports should be considered as strategic assets in regional economic development whereby port activities should be seen as a base for economic diversification and a means to create partnerships with other economic sectors of the city for example energy and agriculture. Information is needed to be able to increase efficiency and performance, hence more strategic use of information on ports and logistics available in research institutes should be harnessed and long term partnerships with universities and institutes established. Knowledge workers are sorely needed in Port Said and establishing digitalized services can relieve the business, create competitive performance and create a new economic sector where institutes can prepare and train candidates and the infrastructure laid for the port will benefit the city and the community, establishing the internet of everything. Increase efforts to improve the ports" external communications with firms and the public at large mainly by publicising strategic indicators, presenting key programmes and organising forums on subjects of common interest. The public operated port needs much attention not just in terms of spatial systems but also in terms of equipment, management and operation issues as well as the skill sets of employees. Plans for the east port are also disappointing in terms of economic plans and management, for despite using terms such as integrated management and public-private partnerships, these terms are meant for the port itself and not the port city relationship. Smartness is not a reference to gadgets but rather how to improve the economic impact on people whilst maintaining port industry competitiveness.

While ports of the world are competing on increasing their efficiency and improving their image through energy conservation strategies and renewable energy plans (Eg Rotterdam), Port Said is far from realizing the significance of the environmental dimension both in increasing performance measures, contribution to society and competitive advantage. A port of the future will have high performance only in terms of whether it can arrange for the best possible management of resources creating win-win situations for the port and the city. Environmental aspects have not appeared in any plan for the port or the city just showing how far the agenda is from being introduced, let alone be realized. Smart initiatives are gaining momentum and more and more world ports are conscious of the competitive advantage and are taking clear steps in terms of strategies and research to ensure environmental stewardship. Returning to the issue of spatial expansion, green and natural elements and spaces are often first to be sacrificed, however they are the breathing spaces and should be part of the port city.

Social systems are often neglected in favor of economic gain. However, the promotion of more efficient integration and governance systems for the ports and for the port-city relationship is of extreme importance. First social dialogues need to be modernized and favored in order to stimulate discussions on the facilities and levels of dependency on the port activities. Discovering the identity of a place and maintaining its heritage promotes a sense of pride and allows for the diversification of economy where ports can welcome cruise ships and create different dynamics in the city. Shortcomings in training and education have been pointed out in the west port which calls for remedial action and can present an opportunity where education can be reviewed and strengthened in specialized institutes in the vicinity. Finally, citizens should be allowed to be economic stakeholders in their city to promote collaborative decision making and ensure that developments are made for both the people and the maritime industry.

Final words, social integration, is vital to develop the belonging spirit of the citizens to avoid the feeling of being separated from the port. Besides, the urban quality, is a value to the areas, and their architectural appeal must be preserved for the quality of life of the community.

Documenting and communicating performance data can provide value across the complete cycle of port and city connectivity, from planning, through design and construction, into operation. Furthermore, the awareness of port municipalities to the “knowledge port”; port educational institutions, develop campuses for interested students in the technical field, and work with companies to train the youth, followed by job offers or internships working on future developments with participation of different planners, universities, schools of the ports planning field.

Public access is a prerequisite; it is so important for the future developments to avoid the previous mistakes that were caused in the more recent neighbourhoods, as slum areas, that lead to losing the public access between the city and its port. In addition, the influence of city structure (port to city centre), and the inland movement considering traffic, land use, accessibility and impact on environment, should not to be separated from the citizen’s needs of functions and spatial requirements.

To adopt a planning strategy that takes account of the varying scale of the individual projects and the organized forms of participation of stakeholders and the community. The mix use of functions, the revitalization and regeneration of the city (centre) and its port, help create a better environment, bearing in mind that port areas used to be the liveliest areas on waterfronts of coastal cities. Furthermore, Port Said lacks the amount of green spaces inside the city. Re-vitalization is an ongoing process; therefore plans should be flexible to change, to encourage the sustainable and smart growth of the port and the city.

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The Sharing Port Project in Rotterdam: Exploring the Potential of the Sharing Economy in the Context of a Port-City Interface Regeneration.

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Introduction

In a global context of unprecedented urbanization and consumption-oriented lifestyles, our current models of urban development are facing various types of environmental problems in various contexts, industrial or post-industrial. However, cities are also a place to reinvent the way we live together and how we shape our environment collectively.

Developed as a global port-city, Rotterdam is both a major transport hub for goods from around the world and a creative city searching for innovative urban solutions, but facing new challenges of social and economic integration. The city and its port interface offer an ideal context to combine the benefits of the emerging Sharing Economy and innovative solutions for urban resiliency, green mobility and healthy community development.

As the port-city interface has recently suffered of a lack of mutual benefits at the level of local communities, the article explores the potential of incremental and community oriented projects in the Port area comprised between Waalhaven district, Pernis and Oostwijk. The “Sharing Port” project aims to identify several locations to develop a dynamic of “community sharing ports”, defined as social and economic clusters oriented to collaborative and circular economy, knowledge and education sharing, green and shared mobility and resilient waterfront planning. The objective of the project is to redefine the notion of “Port” in the city by participatory and incremental planning of new forms of urban communities. Connecting the “global port economy” to the “local communities economy” through innovation and collaborative economy can be a lever of port-city synergy. The Sharing Port project helps to identify the potential of Rotterdam to become a “Sharing City” in the context of its port-city interface and how this approach can link the local urban economy and the port activities.

The “Sharing City” approach introduces a number of concepts applicable to the urban environment, such as low carbon and shared transport supply, shared parking, co-working spaces, co-farming lands and greenhouses, collaborative incubators and circular communities.

The “Sharing Port” project is basically an initiative to materialize the sharing economy and the circular economy into a healthy urban environment through community development in a port-city interface. The initiative has been launched by a group of urban planners from Citilinks and the Metropolitan Collective with four case studies: Rotterdam in the Netherlands, Qingdao in China, Vancouver in Canada and Mombasa in Kenya.

1. The global port-city of Rotterdam: Challenges, opportunities and threats of a complex relationship

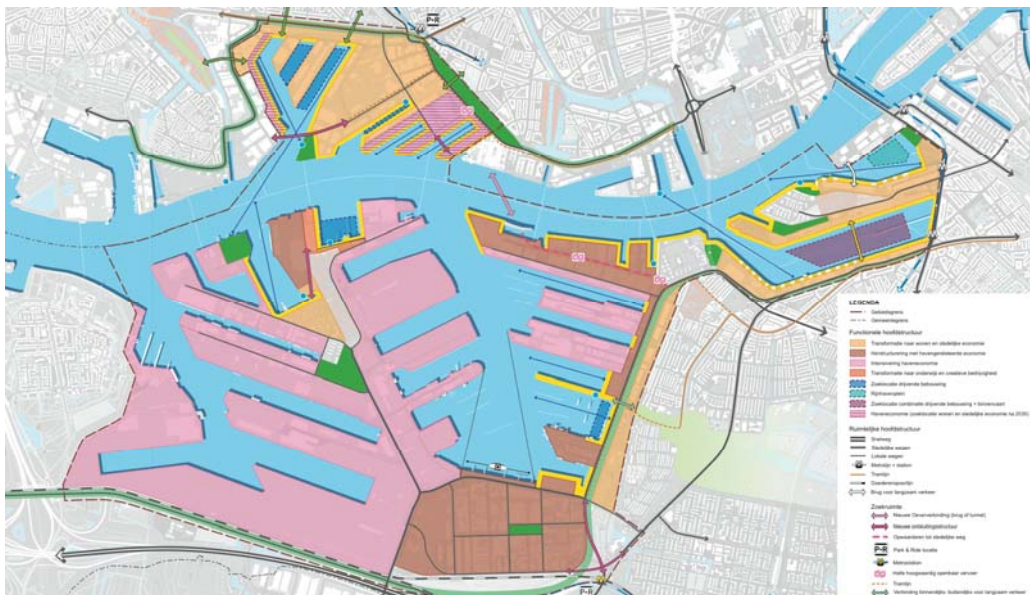
For centuries, Rotterdam has been known to be a major port-city, where the port and the city shared mutual benefits. During the 20th century, Rotterdam became the largest port in the world, and its spatial expansion kept growing on the sea until today, with the Maasvlakte 2 project achievement. The distance between the city and its port increased significantly and a vast port-city interface appeared, full of challenges and opportunities.

The plans for expansion of the Port on the North Sea provided to the City new opportunities of urban development in the old port area. The project, called CityPorts, covered 1600

hectares of land and water to be transformed into new neighbourhoods. The project struggled and went through the financial crisis of 2008. In 2012, the unachieved transformation plan for CityPorts was questioned and development perspectives were identified for CityPorts. A port-city interface, made of organic development plans, is about to inspire new development paths.

In essence, Rotterdam has produced new ways of thinking and acting with regard to the areas 'between city and port'. Inside the so-called port city interface, the port authority and the municipality are at the forefront of reinventing the relationships between port and city for the twenty-first century.

Emerging new economic logics are challenging both the port and are reshaping the relationship between them by creating new opportunities of synergies. The economic diversification of the Port and of the city, the integration of housing and non-port functions in the old port area, combined with new trends of greener urban development are giving better perspectives in the old port redevelopment process.



Structuurvisie Stadshavens 2025 (+doorkijk 2040), City of Rotterdam

The energy transition and the new opportunities in the sector of transport are the main sources of innovation in a Port infrastructure. But a greener economy, built on a smart waste management and more complementarity (and synergies) between industries in the logistic sector and their combined use of infrastructure will potentially revolutionize the port activities. The 21st century sees many Asian ports becoming major actors in the global port network. The greening and the innovation of port activities become a competitive advantage to attract investors and trading partners. In a coming era of Industry 4.0 and connected production, ports need more diversification and initiatives that will support local communities and improve the quality of environment. And that is the current challenge of Rotterdam. The railways are going to play a growing active role in freight transport, and more multimodal platforms will be needed.

The classical separation between port infrastructure and urban infrastructure can also be reconsidered and be questioned through programs like the Rotterdam Climate Initiative that brings together organizations, local governments, private sector, institutes and citizens to achieve a 50% reduction of CO₂ emissions. Universities and schools are major potential actors that can join this kind of initiative to achieve the development of a “knowledge port.”

2. Industry 4.0 and the City

The fourth industrial revolution is based on the technological concepts of the Internet of Things, the communication and cooperation of cyber-physical systems and the Internet of Services. The terms of Industry 4.0 and Smart Factories have been introduced in the high-tech strategy of the German government, which promoted the computerization of manufacturing. Industry 4.0 brings new challenges and spatial consequences for urban development and should be integrated incrementally in cities transformation. A planned coordination between the implementation of smart factories and the transformation of urban and industrial environments need a holistic and spatial approach integrating new types of jobs and behaviors related to digital connectivity. Port-city interfaces are the main areas subject to such transformation effects and will become the laboratories of the fourth industrial age, although there is no vision yet for urban development related to the Industry 4.0.

3. A Sharing Port for Rotterdam

The “**Rotterdam Sharing Port**” project aims to create a network of “**community sharing ports**” along the Maas in Rotterdam port area connected to the city and the port activities and people and dedicated to incremental development, healthy communities and circular and collaborative economy.

The project aims to connect and integrate the principles of the sharing economy, the circular economy, the fourth industrial revolution and healthy urban development.

Connected and shareable waterfronts

The incremental development of “sharing hubs” works as an acupuncture treatment on Rotterdam port-city interface. These sharing hubs are called “**community sharing ports**” because they are dedicated to the sharing economy at the scale of the community and the city, but are defined as hubs of talented people and innovation that are connected to the global world.

A “Sharing Port” is a **shareable infrastructure** where offices, cultural centres, sport facilities, (post-)industrial warehouses, schools, kitchen gardens, bicycles, cars, car parks are shareable in diverse and flexible ways and becomes a “Port of Ideas, Innovation and Industry 4.0” connected to other urban sharing ports by water, rail, bicycle and foot.

The connectivity of the network of urban sharing ports is made of sharing transport modes (bicycles, cars, boats, buses, tramways.)

The shareable infrastructure progressively becomes a community of people characterized by its own specificities of urban lifestyle and entrepreneurship.

In the context of Rotterdam port-city interface, the “**community sharing port**” is a waterfront creative cluster and community physically connected by water, rail and road, green ways to the rest of the city, but also by dedicated Internet tools to the rest of the world. There is no specific master plan for such sharing city initiative but several identified potential projects of urban clusters located in the Port area that will be developed through the cooperation of several stakeholders such as universities, local communities, private sector and of course the Port Authority and the City government.

The notion of “Port” is redefined here from a transport hub for goods (and passengers) to an integrated hub of ideas, skills, talented people and companies that redistribute their results and impacts to the city and to the world.

The project at the Rotterdam port-city interface aims to identify 13 potential “hubs” from Katendrecht and Vijfhuizen, where the presence of rail, water, roads and industrial infrastructure and with limited pollution impacts from the surroundings industries and empty lands is identified as potential base of development.

The research of appropriated sites is shared on the web with the local communities in order to improve the choice of location and already promote the shared development model of the project.

The location of the sharing ports on waterfronts is of course improving the potential attractiveness of the future community but is also related to initiatives for more resiliency of our waterfront in the context of global urbanization and climate change.



The 7 pillars of the Community Sharing Port

A “Community Sharing Port” is built on 7 pillars that define the soul of a sharing community oriented to urban and environmental innovation:

1. A Platform for Education and Knowledge

The community sharing port can play the role of socio-economic integration incubator in the city, where universities, companies and consultants share their knowledge and initiatives with local communities through professional trainings, community workshops and research programs. These platforms become bridges linking the people and the new economy.

Most of people have general or specific knowledge about something, as well as professional experience of expertise. Sharing knowledge through interactive activities in dedicated places (e.g. shareable buildings, conference rooms, etc.) can be a lever of creativity and opportunities for the community and the city.

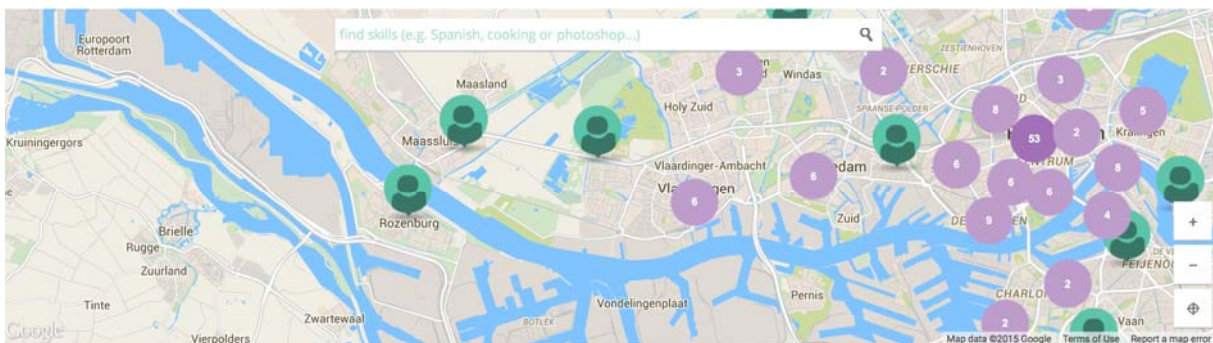
The principles of O2O (Online to Offline) in e-commerce can be applied to education online, which means that the digital access to education can be also materialized somewhere in the city for more interaction, more practical exercises and group trainings. People connect online to share knowledge, and meet offline to go beyond together (on-site workshops and experimental exercises.)

Trainings on demand, organised in a shareable infrastructure can be applied to science, business, sport and culture, and can be the ingredients of the city of tomorrow as social places.

The project can already use existing platforms and websites such as Konnektid.com that helps to find skills in your neighbourhood.



FIND SKILLS TO LEARN IN YOUR NEIGHBOURHOOD



Screenshot of the website www.konnektid.com

2. A Cluster for Sharing Economy

The synergy between urban lifestyle and sharing economy, through peer economy, crowdfunding, collaborative consumption, shared mobility and collective urban agriculture is full of potential solutions for better living and consuming that inspire innovation.

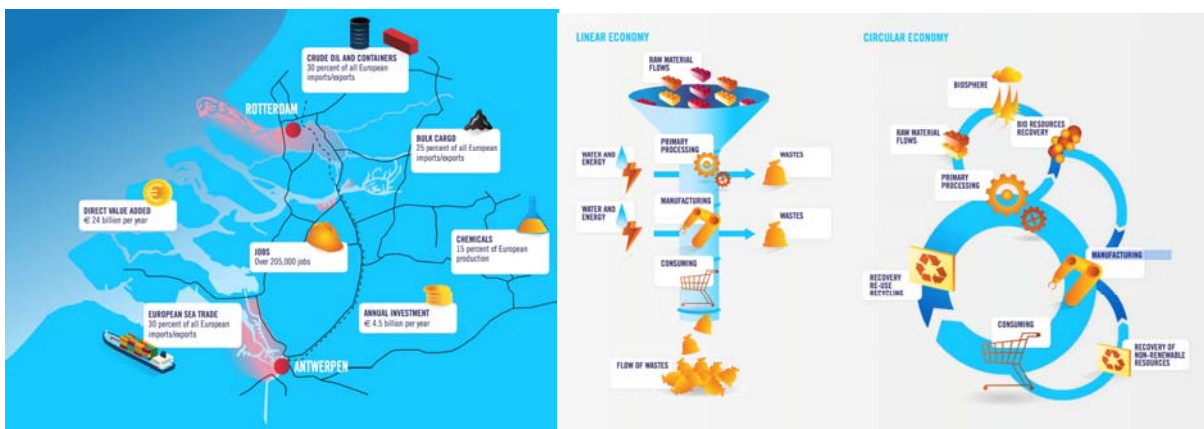
Finding skills in a neighbourhood through the Internet is also a starting point for new forms of connected entrepreneurship in a community.

Beyond the consumer sharing, *the open sharing of resources among businesses is a tangible support for a hub of sharing economy and can be called peer-to-peer enterprise exchange. In the last few years, it has become clear that the unfettered exchange of otherwise unused major assets, including physical space and industrial equipment, and allows a sharing company to operate more efficiently than its non-sharing rivals.* Companies that go further still, wholeheartedly embracing the sharing of less tangible assets, may benefit from a different sort of change, one involving their culture, that builds new types of connections with sensitivity to the world outside.

3. A Community oriented to Circular Economy

A circular community uses, reuses, restores, recycles and upcycles goods and products. A port is an ideal environment to develop circular economy hubs, where “upcycled” products can be redistributed regionally or globally. The Port of Rotterdam is characterized by an immense flow of materials and goods from around the world. Recycling and upcycling waste is a vast source of value and the new products can be immediately redistributed through the regional and global network of ports.

Recently, the Port of Rotterdam and Rabobank defined the main guidelines to build a circular economy in the Rotterdam/Delta region. Agriculture, land-based aquaculture, logistics, knowledge, infrastructure and finance are major features for the circular economy in the Delta Region and can have a significant impact on the port-city interface.



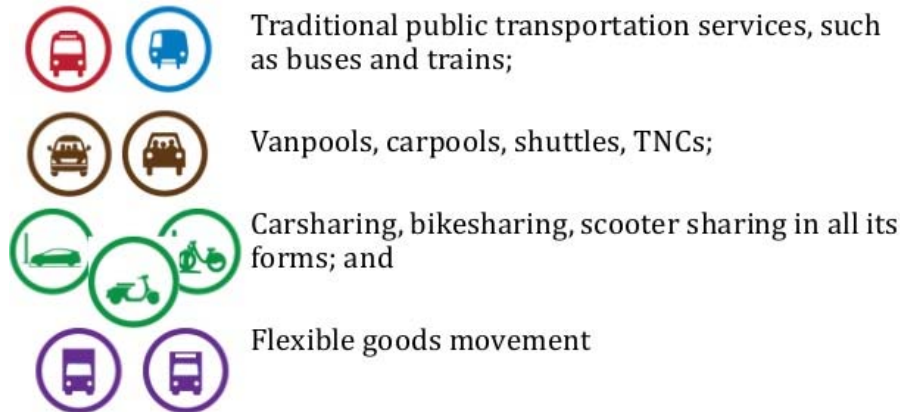
Circular Economy in the DeltaRegion, Port of Rotterdam/Rabobank

4. A Green and Shared Mobility

Waterways, green paths for pedestrians and bicycles, a safer and slower traffic combined with a smart and integrated parking management can help to improve communities' health and urban liveability. In community sharing ports, green and multimodal mobility is combined with bicycle and car sharing, as well as shared parking for a more intensive use of public spaces.

Ride-sharing covers bicycles, cars, boats and trucks, for individuals, groups and enterprises and can be called “shared-use mobility.” They need specific infrastructures for parking and can be prioritized in certain contexts with dedicated lanes and paths.

Shared-use mobility is defined as mobility services that are shared among users including:



Elements of the Shared-Use Mobility

Combining smart mobility and ride-sharing for people, companies and industries has the potential of redraw the city environment, because people start to manage time and space in a smarter way. Time management is a fundamental tool of space management, especially with a shareable infrastructure, and helps to limit the consumption of space in buildings and streets. For example, the necessity of having shared car parks is emerging in every city and can flourish where mixed-used neighbourhoods exist. Offices, cultural centres, cinemas, sport facilities, housing, recreational places can be connected with shareable infrastructure for parking and mobility.

5. A Multimodal Hub for Everyone

Port infrastructures of Rotterdam along the Maas have often represented barriers of accessibility for local people that can't enjoy the benefits of the Port and the water. Multimodal hubs such as floating marinas can be created along community sharing ports in order to connect the city and its river, the port and the city and give life to waterfronts. A Shareable Building on the water can be a hub for ideas, entrepreneurship, education, leisure and of course transport.



The Marina building of Seoul and extension projects



6. A Resilient Waterfront and Built Environment

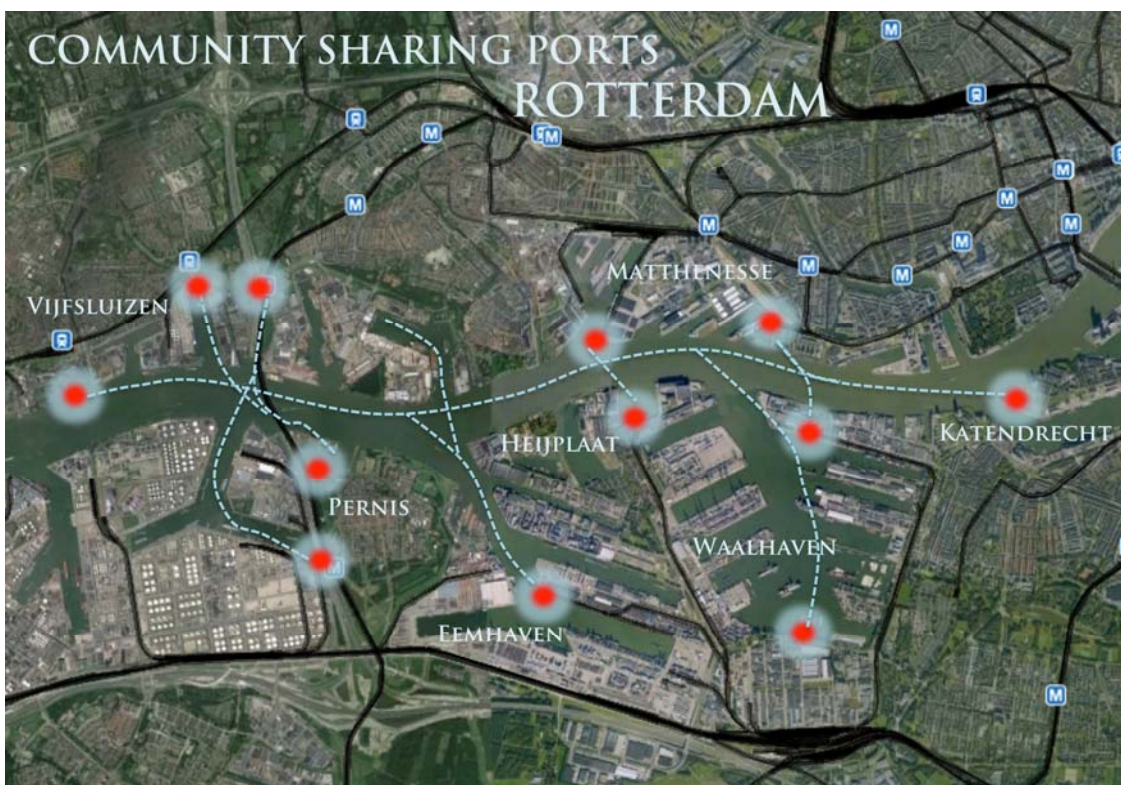
Restoring the industrial waterfronts of the Port areas is an opportunity of creating more resiliency along the river, docks and canals. An integrated water management, from the building design to the streets and the waterfront can be a starting lever of resiliency. Such sharing port project can be a lever for regeneration of post-industrial waterfronts and the reinsertion of natural ecosystems along the water combined with innovative urban design.

7. A Healthy and Smart Community

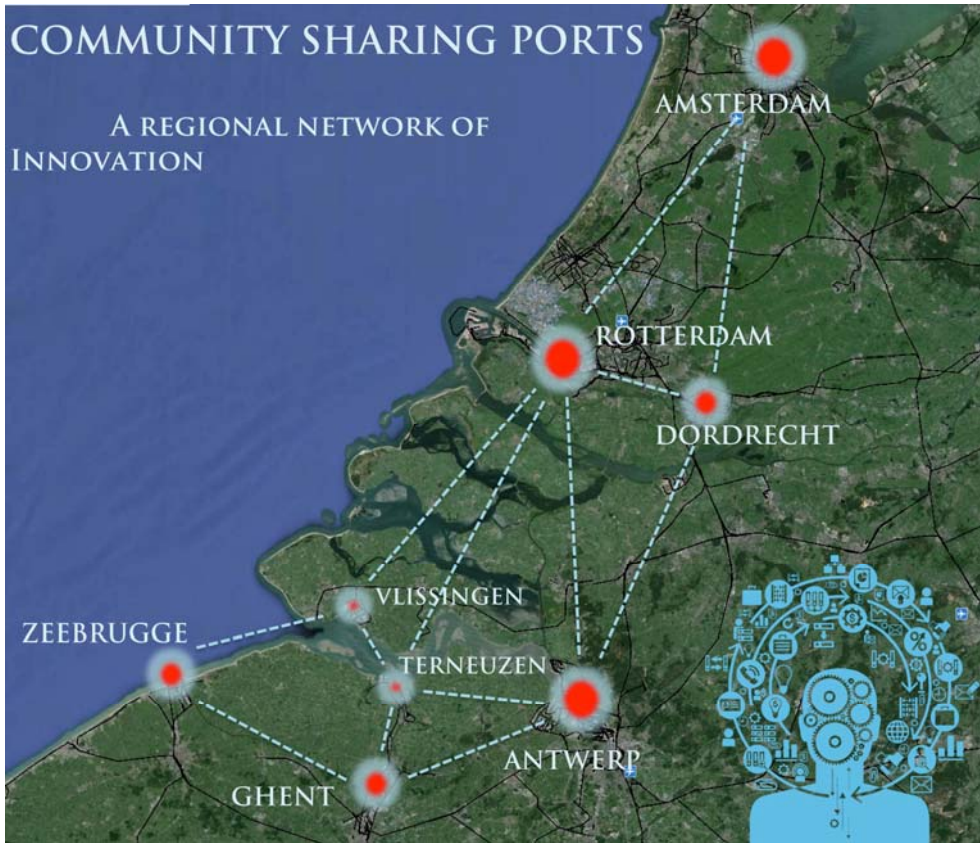
Building step-by-step healthy and smart urban communities is a main goal of such network of sharing community ports. They can inspire the city of tomorrow, reconnect the port and the city in a smart and human way, and attract smart people with healthy lifestyles.

“Smart” community means *connected* people, companies, buildings, transport through real-time information. A smart and connected community is a perfect asset to develop the sharing economy at the level of a neighbourhood with collective and intelligent time and space management.

“Healthy” community means healthy people in a healthy urban environment. It is related to healthy food consumption, healthy mobility, better quality of air and social cohesion in adapted public spaces that can avoid the appearance of segregation.



Identified nodes for community sharing ports in the port-city interface of Rotterdam



Connecting Sharing Port Cities in the DeltaRegion and beyond

As a growing network of connected hubs, community sharing ports can be created in other port cities and connect people and cities at the regional scale, bringing the sharing economy to a wider context.

The DeltaRegion in the Netherlands and Belgium is an ideal context to develop new forms of urban development, including environmental resiliency, social cohesion and connected economy. These new urban forms, made of smart and healthy communities, are shaped by connected and shared public spaces, buildings, companies, industries and transport modes. Ports are ideal laboratories for such urban innovation and “sharing port communities” can be a lever of connectivity at the global level.

In China, the initiative of “Qingdao Sharing Port” is included in the “New Silk Road” project, linking China and Europe by rail connecting cities and industrial clusters. Rotterdam and Lianyungang/Qingdao are the two extremities of this global project of cities connectivity.



The New Silk Road project, from Lianyungang and Qingdao to Rotterdam.

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Working Waterfront Newtown Creek

Case study on a community-based organisation dedicated to restoring, revealing and revitalizing Newtown Creek, NYC, USA
Larissa GUSCHL, Germany

Abstract

Within New York City the case study area is located on the industrial waterfront of Newtown Creek, North Brooklyn. Newtown Creek is one of the most polluted waterways in the USA with a direct location in the City of New York. The paper addresses the current community-based approach how to re-activate the working waterfront at Newtown Creek while simultaneously restoring, revealing and revitalizing the ecology of the creek.

The local community-based organisation Newtown Creek Alliance (NCA), established in 2002, became a response to the Exxon mobile oil spill discovered in 1978. After a successful lawsuit, Exxon mobile is responsible to mitigate the site and the Greenpoint Community Environmental Fund (GCEF) was established which is funding projects that have significant environmental benefits for the community. The GCEF is organised as a bottom up process and projects derive from the community itself. The ideas behind is that residents, rather than governmental institutions, know better what the community needs.

The case study represents a perspective on a community-based approach in complex urban planning issues focussing on environmental problems and economic prospects of a hardly accessible and almost uninhabited area. Nevertheless, NCA became a well-known community-based organisation and has a high level of success by involving residents, local businesses and elected officials. NCA focus not only on clean-up efforts but on the importance of the creek as an asset for the local community. Since the establishment of NCA the access to Newtown Creek was increased, e.g. there is a nature walk route and green infrastructure is established with local businesses. Another project increases the use of ship traffic instead of trucking for goods transportation within the creek.

For the case study the formal and informal side of the community-based approach was explored through research and interviews of a chair member of the NCA (informal) and a policy advisor (Environmental Protection Bureau) of the GCEF (formal).

The case study shows how complex and primarily negative issues - in this case environmental pollution and economic decline - can be addressed through a community-based approach. The set of goals deriving from the case study indicate that a community-based approach creates integrated goals leading to a greater success and wide spread solutions that aim for ecological restoration and socio-economic vitality rather than pure technical flood protection measurements. The success of the community based approach in complex and at first glance negative issues, can be reproduced in other projects.

1. Background

Newtown Creek used to be one of the most vital industrial centres of the metropolitan region. As industry expanded in the nineteenth and twentieth century, the area became heavily urbanized and the physical and ecological characteristics were permanently altered by dredging, straightening, bulk-heading and landfills. Wetlands and open space in the area were replaced with urban developments. Widespread paving, building development and city-wide

sewers came to replace the freshwater. Oil distilleries, shipyards, foundries, industrial food processors, fabric and paper mills settled along the river's edge.

However, a lot of those factories are now abandoned, leaving behind one of the nation's most polluted canal which is suffering from raw sewage and oil spill. Newtown Creek experiences almost no water movement next to given tidal action. Low flow and 150 years of heavy industrial use has resulted in a contaminated layer of sediments up to 4.6 meter thick lying on the Creek's bed. CSOs and other contamination combined with stagnant waters create large areas of the Creek with low to no dissolved oxygen (Newtown Creek BOA 2012) (see figure 1).

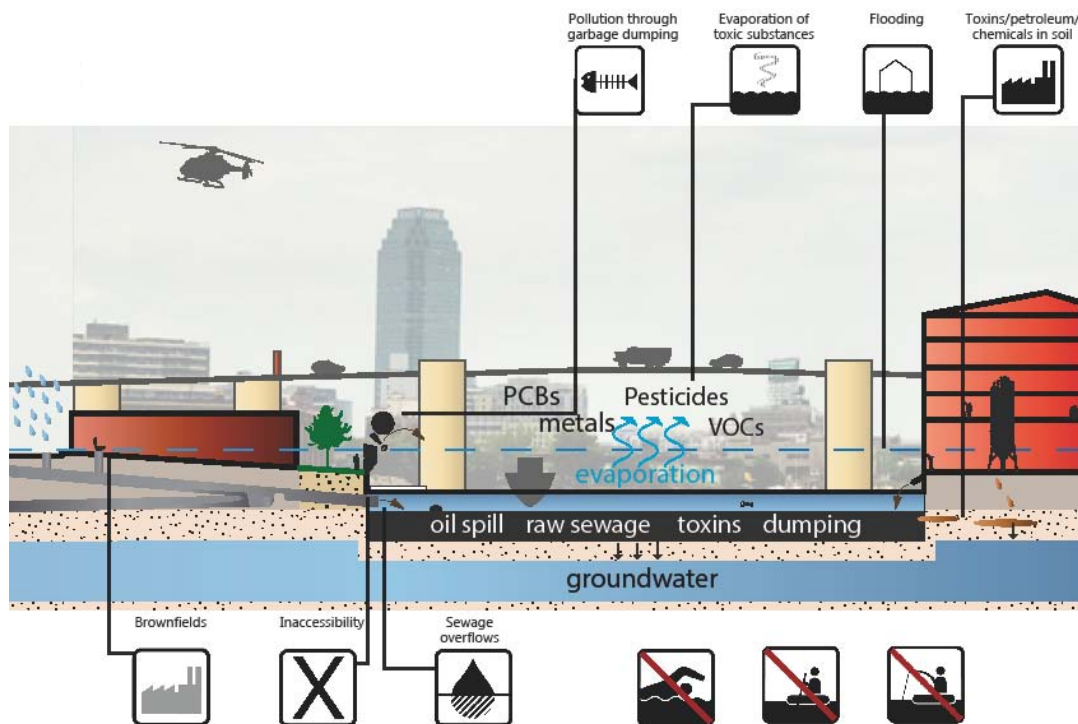


Figure 1: Section of Newtown Creek indicating problems

By the new millennium, industry along Newtown Creek had dwindled to a shadow of its former activity, though the area remains active. The creek has completely lost its aptitude as a functioning water system. Additionally, there is no natural inflow provided due to the impermeability of the surrounding surface. Today the creek is almost invisible since the urban grid structure has not found a way yet how to respond to the natural dynamics of the waterfront. Residents of the adjacent neighbourhoods are aiming for environmental justice, parkland and access to the water.

1.1 Impact of hurricane Sandy

During hurricane Sandy in 2012 the low-lying neighbourhoods adjacent to Newtown Creek were very vulnerable towards the storm surge and its ecological consequences. Inundation resulted from astronomically high tides and transient increases in sea levels due to Hurricane Sandy. The inundations concentrated a high percentage of 'black water' and exhibited high salt contents, as well as pollutants such as fuel oils and sewage. The damage comprised an oil film on adjacent streets, the aggradation of industrial garbage and pollutants in the surrounding neighbourhoods and the combined sewage system reached its capacity.

Furthermore, the Newtown Creek Water Control Plant was endangered to shut down, basements and first floors were flooded, the electrical systems collapsed and buildings were damaged. In addition, the heavily used metro line G was inundated which means that power cables, exposed to salt water, are corroding from the inside while exterior corrosion of rails and fasteners has increased the likelihood of short circuits. The damage is insidious and reparation works will cost billions of dollars and make the line temporarily inoperative for its users (Fleggenheimer 2013).

The analysis in the aftermath of Hurricane Sandy (see figure 2) depicts the inundation and the ecological stress for the surrounding densely populated area and the vulnerable infrastructure along the creek. The analysis also illustrates clearly that the inundation is corresponding to the topography. In the shallow former marshlands and the coastline which were filled with land during the industrialisation, flooding was especially severe and the storm surge was pressed until the end of the creek.



Figure 2: Analysis Newtown Creek in the aftermath of Sandy

2. Methodology

2.1 Stakeholder review

To understand the complexity and the scope of the case study area a vast stakeholder review was inevitable (see figure 3). From a European perspective it is rather new that the civic society is engaging so much into planning processes and political decisions. In order to understand the different interests and demands of alliances, a network analysis and interviews with the key interest groups were conducted in order to understand how different stakeholders work and cooperate.

2.2 Expert interviews

In addition, the author conducted semi-structured interviews with different stakeholders, experts and local community organisations. Key interview partners were: local environmental

activist, Michael Heimbinder who is Chair of Newtown Creek Alliance and Founder and Executive Director of Habitat; and Peter Washburn, policy advisor at Environmental Protection Bureau (New York State Attorney) for the Greenpoint Community Environmental Fund.

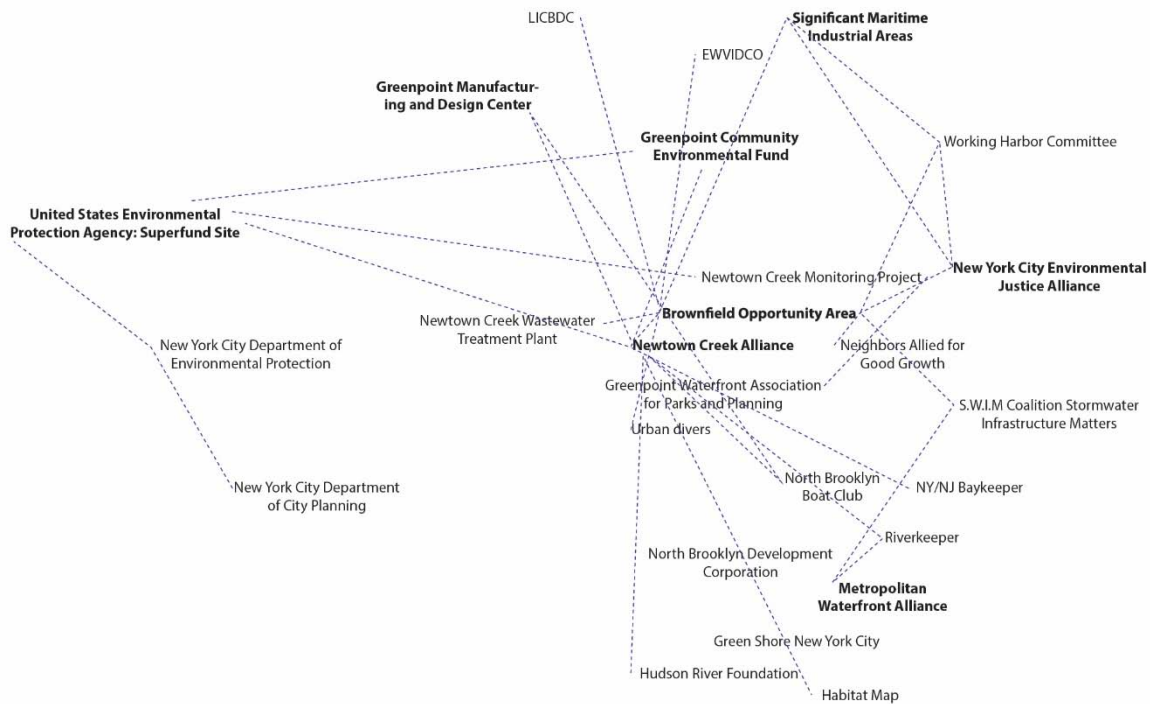


Figure 3: Stakeholder review: network analysis

3. Current strategy

3.1 Newtown Creek Alliance

The Newtown Creek Alliance (NCA), active since 2002, aims at restoring the natural, economic and social conditions of the Creek. It became a response to the Exxon mobile oil spill which came to light in 1978. Until now, soil and groundwater are polluted with 110,000 m³ of oil spill and raw sewage. Most local residents and businesses have known about the oil spill before, but it was a neglected matter. It took over 24 years until the NCA was established through the initiative of Riverkeeper.

Newtown Creek, depicting one of the nation's most polluted canals, became a superfund site in 2010. A superfund site is defined by the Environmental Protection Agency (EPA) as an uncontrolled or abandoned place where hazardous waste is located, possibly affecting local ecosystems or people (EPA 2014). Starting from day one, NCA's goal was to become a superfund site in order to clean the creek with the support of Exxon mobile, the enterprise responsible for the oil spill. The logic behind it is that although the oil spill happened long ago, it still has tremendous effects on the ecological system of the creek and therefore the responsible enterprises at that time need to take part in the recovery of the creek.

In addition, the Greenpoint community have lived for years the negatives effects of the oil spill. Therefore, it was appropriate that Exxon mobile provided financial compensation to the community for having lived in a degraded environment for so long. For that reason, the \$19.5 million Greenpoint Community Environmental Fund (GCEF) was established. It was an acknowledgment that the oil spill has adversely affected the community and a chance to improve the environment in the future through the fund.

Due to NCA's effort, Newtown Creek is now cleaned up through the Superfund programme and awareness was raised among government and civil society for the consequences of the oil spill. NCA now represents a community advisory group and EPA supports the Superfund programme by testing the water quality through sediment sampling, sampling of storm sewers and combined sewers, as well as, sampling and toxicity testing of ecological resources such as fish and crab (EPA 2015)

Since 2002 NCA is a well-known institution and has a high level of success by involving residents, local businesses and elected officials. The goal is not only to clean up the creek, but to stress it as an important asset for the local community.

Milestones since the establishment of the NCA were an increased access to Newtown Creek (e.g. the construction of a nature walk route) and the cooperation with the Brooklyn Boat Club to offer educational canoe tours which at the same time, take samples to measure the water quality. Also the Newtown Creek is involved in establishing green infrastructure with local businesses (e.g. green roofs).

3.2 Environmental benefits from and for the community

The New York State Attorney and the New York State Department of Environmental Conservation were responsible to receive the resolution and settlement against the Exxon Mobile oil spill in Greenpoint and to create a fund for the \$19.5 million. The GCEF is responsible for the appropriate use of the fund and for the quality of projects done with its money. Furthermore, GCEF ensures that the process is transparent, monitors the fund's administration, selects project proposals and make sure that they are financed. The Greenpoint community plays an active role in the entire process. GCEF ensures that people are not only informed but that they also participate.

NCA has some of their members in the Greenpoint advisory group. The Greenpoint advisory group is responsible to inform people and answer questions of neighbours and interested people. It was formed because it was impossible for the GCEF to be always present on site. All members of NCA work on a voluntarily basis.

The process to apply for funding is carried out as open as possible. The community tells what they need without preliminary decisions from a higher institutional level. The only requirement is that the project has a significant environmental benefit for the community. Any project which presents well arguably a value for the community can be funded. It is a bottom up rather than a top down process, the community determines the significant issues. GCEF created a very broad base to see which kind of ideas people bring up. However, the environmental benefit is its primary purpose.

3.2 Process design - Empowering people

The kick-off project started in early 2011. Since then there were three community meetings. The first meeting was to discuss about what the community would like to implement with the funded money. The ideas should evolve from community rather than from outside the community. The second one was to champion their projects and to speak about their project ideas. The third introduced the competitive process. GCEF talked to the community how they could work together to advance their proposals, what the proposals had to consist of and how they could apply for funding. GCEF provided technical assistance to support citizens to put together a competitive proposal and to complete their application. Additionally, there were two applicant meetings to answer questions, two webinars and meetings for networking opportunities. The aimed result is that in the near future, ideas are turned into solid implementation with the support of technical expertise.

3.3 Responsibility of citizens

There are two types of projects: smaller projects with a budget up to \$ 25,000 and projects over \$ 25,000. Smaller projects are assumed to be fairly straightforward projects which do not need much external expertise. Bigger projects have to demonstrate that they have an additional partnership and can state a solid implementation plan. Three proposals with a bigger budget than \$ 25,000 will be invited to submit a more detailed proposal. They have then to provide technical details how to implement the project. However, GCEF provides assistance including external technical advisors to support technical issues, for example, which institutions have to be involved, or how to receive the necessary permits. But ultimately it is the responsibility of the proposer to implement the projects.

From an empirical point of view, experience has shown that when you do not have to invest as a participant with time and/or funding possibilities in your own project you will be less committed. The assignment of responsibility ensures that the project is successfully implemented and sustained. The project ideas have to come up with complementary funds, it cannot be financed solely by GCEF. If all the money would come from the fund and people did not have to invest themselves, there could be the lack of commitment by the people. Experience shows, the greater extent of commitment, the greater chance projects are successfully implemented and sustained. With freely accessible money people usually do not take as much responsibility as when the money is earned by themselves. Hard earned money is more valued.

3.4 Environmental justice and the threat of gentrification

The NCA is enhancing a future for the Creek with active working waterfront creating job opportunities in the maritime and manufacturing industries. But the threat of gentrification represents a big issue all over New York City. Long term residents in popular areas or areas with successful community engagement are slowly pushed out through increasing rent prices and thus forced to move to other cheaper areas of the city. Especially areas in Brooklyn that are close to Manhattan are under an increasing pressure of gentrification, since more and more people are forced to leave their former neighbourhoods in Manhattan. Districts as Bedford Avenue in Brooklyn experienced a lot of gentrification and ethnic minorities who used to previously live there, are compelled to move away.

However, this is not the case at Newtown Creek. Firstly, almost no people live there and secondly, the zoning of the area allows only manufacturing purposes. Nevertheless, there are some long-term residents, pioneers and artists living at Newtown Creek.

On a longer perspective, the edges and especially the mouth of Newtown Creek which are very convenient due to its location close to Manhattan will probably be transformed into residential uses. But in the last year many companies and the New York City government have invested in new factories here, such as the Newtown Creek Wastewater Pollution Control Plant which brings a lot of new economic opportunities in the area. These new factories are very essential for whole New York City, since there is a tendency of keeping manufacturing and jobs in the city area, as well as significant infrastructure, such as water treatment plants, have to be located somewhere. Manufacturing will remain essential for the Newtown Creek.

3.5 Flood protection

Hurricane Sandy showed that Newtown Creek is very vulnerable concerning floods and that pollution and combined sewage outflow worsen the damage for the surrounding neighbourhoods. Therefore, flood protection is very essential for the future of existing and new companies along Newtown Creek. There are many different ideas, how to achieve flood-proof environments. One is to construct flood gates at the river mouth; another one is to have more 'green infrastructure' that can store water and additionally, local businesses are thinking to raise the bulkheads. However, the latter is not the most adequate idea, since the problems

during Sandy were not mostly caused by river overflow but by sewer discharge which had reached its capacity and flew into surrounding streets.

Many of these ideas are possible, but detailed research has to be done about what is physically possible, how much it will cost and which impacts they will have on local businesses, ship traffic and the aquatic ecosystem of the creek. Only after a careful assessment of the research a decision can be made.

4. Significant Maritime and Industrial Areas (SMIAs)

The New York City Environmental Justice Alliance is involved in a project called Significant Maritime Industrial Areas (SMIAs). SMIAs are zones designed to encourage the clustering/concentration of heavy industrial and polluting infrastructure uses. They are working on a reform agenda to increase climate adaptation and community resiliency strategies for SMIA community designations.

4.1 Why working waterfront remains important

1. The largest sources of greenhouse-gas emissions are the trucks that move cargo from marine terminals to distribution centres and regional markets. Currently, nearly 85 percent of all cargo leaving the Port of New York and New Jersey are moved via truck. Through a greater reliance on domestic ocean-borne commerce, known as short-sea shipping, and rail transport, these impacts could be dramatically reduced.

2. Recycling and waste water industries use increasingly shipping for transferring goods.

3. The Port of New York is the premier maritime complex on the East Coast - as well as the many tugboat and barge operators, marinas, and ship-repair outfits that provide maritime support services to the port.

4. The maritime industry is directly dependent on the availability of waterfront space and the use of the waterways to do business.

5. Maritime industries are typically well paid jobs and offer an important diversity for the city's economic base.

6. All of the city's 14 wastewater treatment plants are located along the waterfront at relatively low elevations. Waterfront locations significantly reduce the cost and environmental impact of treating wastewater in New York City, making it easier for flow to arrive by gravity and providing nearby waterways to discharge treated effluent. Secondly, but equally important, the waterfront location further allows sludge to be transported efficiently by boat to DEP facilities for additional treatment. As Sandy demonstrated, the city's water and wastewater system have vulnerabilities to extreme weather that must be addressed, particularly as climate change increases the likelihood of storm surges and heavy rains that can result in overflow of untreated sewage into the city's waterways.

Also the Newtown Creek control plant is located on a highly vulnerable site. The emergency closure during a flood would have regional impact and depicts a threat for the water quality and liveability of New York City. But also other essential and expensive infrastructure is located within the flood plains of Newtown Creek which causes uncertain economic conditions and can moreover, cause environmental problems if contaminated soil is washed into the water system while heavy rainfall or inundation.

4.2 Balance between working and residential waterfront

The SMIAs are the largest remaining concentrations of maritime commerce and waterfront industry in New York City. Newtown Creek's SMIA has a strategic location in the middle of the

City (PlaNYC 2007). Newtown Creek is mostly zoned as M3 – a zone reserved for the most intense and noxious industrial uses while still allowing for all light industrial uses, office uses and limited retail. The M3 zoning type is most incompatible with residential areas and community facilities since it allows manufacturing and commercial industries that generate noise, traffic, odor, vibration, or pollutants. Uses found in the Newtown Creek Brownfield Opportunity Area include power plants, solid waste transfer facilities, recycling plants, and fuel supply depots (Newtown Creek BOA 2012).

'New York's powerful zoning code provides a valuable tool to defend manufacturing zones against the risk of residential encroachment. The BOA's continues as an M3 zone with a surrounding M1 buffer which is necessary to preserve these lands for industrial use' (Newtown Creek BOA 2012). However, there is a local employment shift away from manufacturing and wholesale trades to office-based and professional services sectors. The remaining manufacturing in the area depicts mostly artisanal and specialty manufacturing, warehousing, delivery and wholesale, as well as recycling/waste related uses. Since professional services and information-based businesses typically do not require large parcels of land in order to operate, they settle themselves in more dense urban environments. Buffer zones should react to these new trends and give new opportunities for service oriented and high-tech industries in order that Newtown Creek SMIA remains competitive. As well, the boom in green economy represents a chance for Newtown Creek. However, to be credible, also the companies should act as role models and promote green infrastructure which can additionally help to revitalise the ecology of the creek system. Special incentive policies could promote green infrastructure and public accessibility in industrial zones along the creek (see figure 4).

5. Conclusion

Through the community-based approach a much more omniscient set of goals can be presented. With an only spatial analysis such diversity of goals could not have been reached. The following goals derived:

5.1 Flood protection

In order to improve the resilience of the waterway vulnerabilities concerning storm surge, sewer backups into streets, lack of sewer connection and storm water drainage have to be reduced. In order to improve the long term living quality and economic viability of business in the project area, the environmental health of the waterway has to be addressed. Especially the water quality, natural inflow, rain water management and the reconstruction of marshland as a habitat for flora and fauna, where applicable, need to be thematised.

5.2 Economic vitality

Furthermore, the industrial business area is characterized by a shift away from manufacturing and wholesale trades. The shift represents a larger city-wide and regional trend. Nevertheless, the combination of relatively cheap land, reliable vehicular access to the regional highway system, and proximity to dense residential and commercial markets in Manhattan and high-growth areas of Brooklyn and Queens continues to support Newtown Creek as an industrial area. There is a need to influence urban policy to keep urban industry in the centre of the city. While industry will become cleaner and greener in the future, it will be important to maintain as much of the Business Context for industrial use to allow Newtown Creek to evolve into a model of a 21st Century Maritime Industrial Area (Newtown Creek BOA 2012).

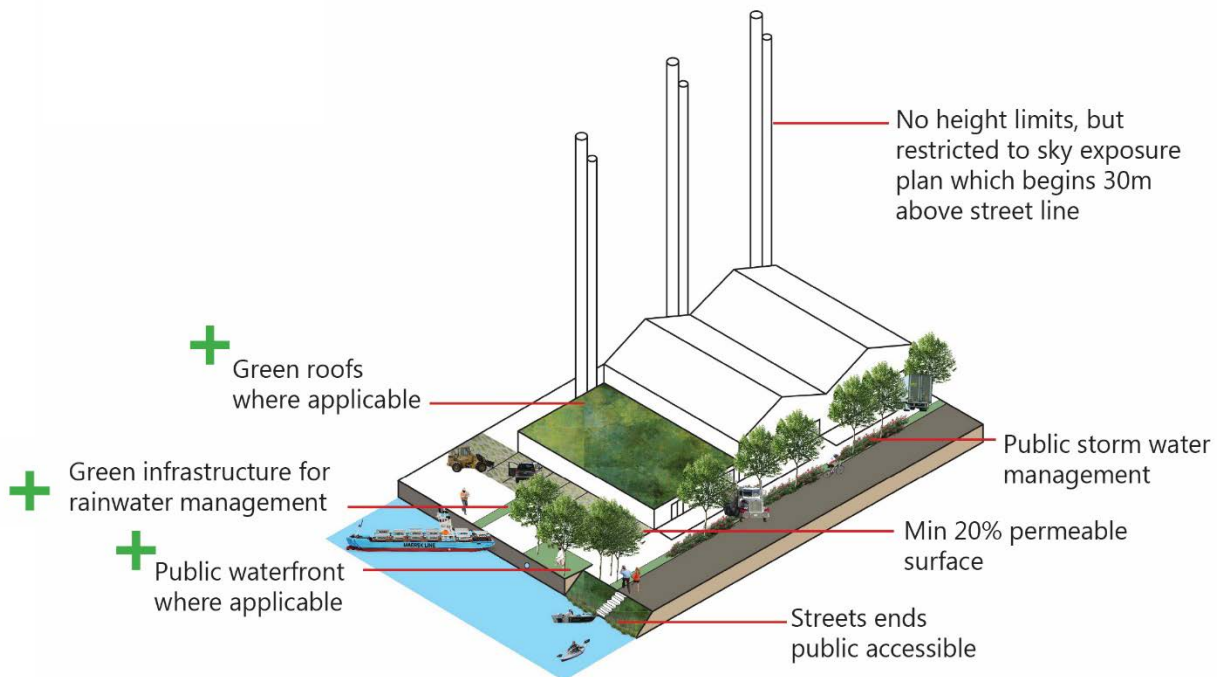


Figure 4: Proposed zoning incentives for industrial M3 zones

5.3 Public accessibility

The Creek performs primarily as a working waterfront. There is however, some interest in securing more public access to the creek edge and the water itself. Balancing the provision of open space and recreational Creek access for nearby neighbourhoods with the needs of expanding industry and commercial operations will be a key concern when planning the area's future (Newtown Creek BOA 2012).

5.4 Living quality

A further challenge is the contamination of adjacent plots due to the industrial heritage of Newtown Creek. However, it depicts also an opportunity since brownfield redevelopment was targeted as an important component to accommodate growth (Pearsall 2013). The PlaNYC 2030 progress report projected that the population will grow from 8.36 million to 9.1 million until 2030:

'As our need for space grows while our supply of land remains fixed, we must use our existing stock of land more efficiently. Brownfields represent one of our greatest opportunities.' (NYC 2007, p. 41)

The mouth of the river is especially interesting for new residential development on brownfield opportunity areas. But at the same time, the industrial heritage, the involvement of the adjacent neighbourhoods, a comprehensive flood protection and the public domain along the waterfront have to be considered.

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Development Strategic Choice on Constructing International Harbor Urban, Tianjin

(Development Strategic Choice on Constructing International Harbor Urban, Tianjin)

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Tianjin is a traditional industrial urban. The prosperity of Tianjin thanks to harbor. The harbor is one of the largest comparative advantage and strategic resources of Tianjin. Tianjin harbor and Tianjin urban is co-prosperity. In order to become an international harbor urban, Tianjin has made three levels measures.

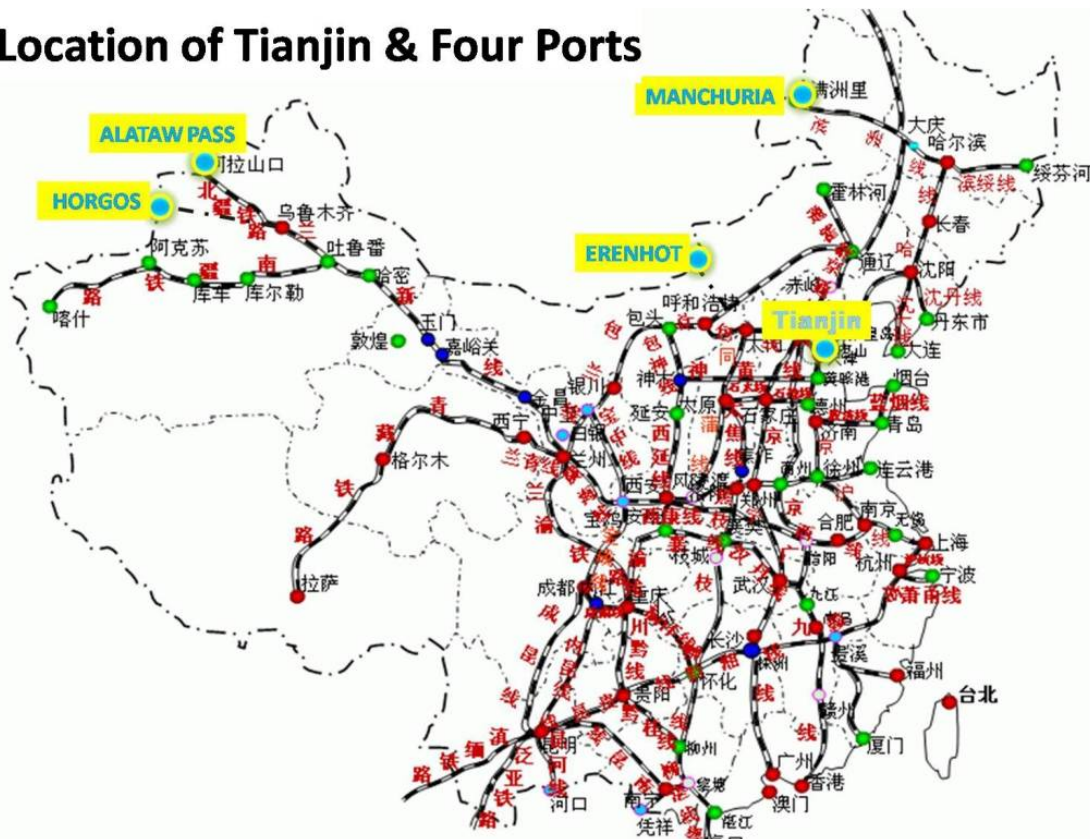
1. The first is the strategic choice to participate in the world economic cooperation.

1.1 Giving full play to location advantage

It is planning Tianjin Free Trade Area, into the “One Belt and One Road” as the national development strategy. One Belt and One Road is the Silk Road Economic Belt and the 21st Century Maritime Silk Road. The aim is that the three world economic center includes North America, Western Europe, East Asia to connect into the integration and shape the new pattern of the world geo-economy. It is creating the mutually beneficial and win-win benefit community for relevant countries. Tianjin is one of the important node on the “One Belt and One Road”, in the strategy, Tianjin as the east starting point of Asia-Europe continental bridge, the main node of the China-Mongolian -Russian economy corridor, and the strategic fulcrum of maritime cooperation, is playing an increasingly important bridgehead role. At present, China is gradually build the high standard of the free trade zones network with radiating “One Belt and One Road”. Tianjin Free Trade Area as the golden intersection of land and sea on the One Belt and One Road will be relying on the Asia-Europe continental bridge connection, improving the multimodal transport system, enhancing the entrepot trade services along the countries and regions. Tianjin free trade zone is in Tianjin Binhai New Area, belongs to the category of Chinese free trade area, established by the state council on December 28, 2014, with a total area of 119.9 square kilometers, it has four railway port to Europe land bridge with the only domestic ownership. The four ports are MANCHURIA, ERENHOT, ALATAW PASS, and HORGOS. The four distances are 2165 kilometers, 976 kilometers, 3966 kilometers, and 3912 kilometers. The four distances are the shortest to four ports in the domestic large port city.



Location of Tianjin & Four Ports



1.2 Promoting the construction of the three functional areas

Tianjin Free Trade Area is mainly covering the three functional areas, Tianjin port area of 30 square kilometers, Tianjin airport area of 43.1 square kilometers and CBD of Binhai New Area of 46.8 square kilometers. Under the common goals framework of the free trade zone three areas have different division of labor. Tianjin port area focus on



developing shipping logistics, international trade, financing lease and other modern service industries; Tianjin airport area focus on developing aerospace, equipment manufacturing, a new generation of information technology and other advanced manufacturing and other producer services with research and development design, aviation logistics; CBD will focus on developing innovative financial industry, science and technology and information technology industry, professional services, business services and social services.

1.3 Improving the multimodal transport system

The international multimodal Transport is a kind of transport organization form as the goal of achieving the optimization efficiency with the overall Transport goods. It usually come in the transport unit of a container, the different means of transport organically combined together, constitute a continuous, comprehensive integration of the transport of goods. In order to actively promote and perfect the construction of multimodal transport system, as far as possible make the coordinated development of comprehensive transportation infrastructure supporting. The first is to improve port transportation system, the second is perfect external traffic network system of Tianjin port, the third is a comprehensive experimental zone for planning and construction of Tianjin port transportation, the fourth is enhancing the entrepot trade services along the countries and regions.

1.4 Actively expanding overseas hinterland

In order to adapt to and meet the needs of the hinterland development of export-oriented economy, continue to open and close some container routes for emerging market countries, expanding and through direct flights, support the container multimodal

transport business of hinterland and emerging markets. Such as Asean, Australia, South America and Africa and other emerging markets.

2. The second is the strategic choice of driving regional economic development.

2.1 To strengthen the service of the interior

Tianjin harbor construct the inland anhydrous port areas to built anhydrous ports network cover the entire North China, Northwest and Northeast, It is getting through the green channel to sea for the surrounding areas, and strengthen the cooperation with surrounding areas and the interior. Deepening anhydrous harbor construction, extending port function of inland hinterland, will become a collection of port services, anhydrous harbor construction shipping services, storage and transportation, and other functions as one of the regional logistics service center. And the anhydrous port as the radiation center, and gradually expand the coverage of logistics network, building regional logistics base, open source markets, shorten the logistics process, improve the efficiency of operations.

2.2 Actively promoting collaborative linkage development of Beijing-Tianjin-Hebei port group.

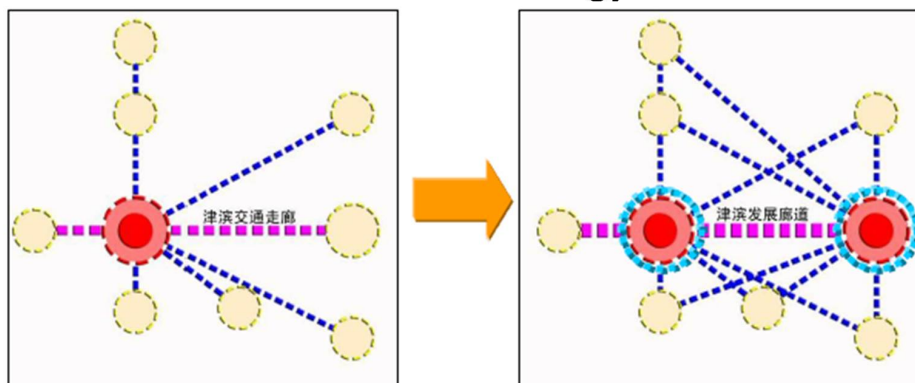
Under the background of promoting the coordinated development of Beijing-Tianjin-Hebei, Tianjin port based on their own advantages and conditions, from the strategic height of regional integration, strengthening cooperation on the construction of port between the pier, warehousing logistics, routes opened, port information, personnel training.

3. The third is the strategy choice on promoting the coordinate development of the harbor-city.

3.1 The twins strategy

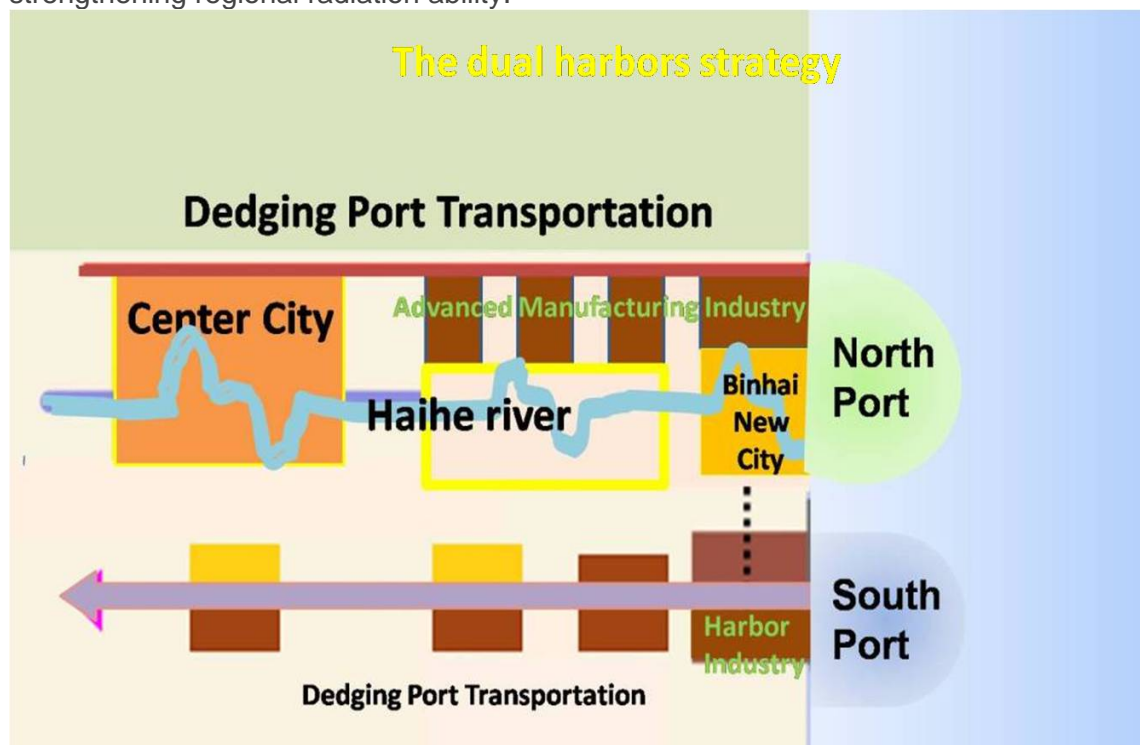
In order to reduce the pressure on the development of the center city, to speed up the construction of Binhai New Area Core and promote the Binhai New Area as a new economic growth pole of service and stimulate the development of regional. Strengthening the expansion of the Binhai function development. Urban spatial is from the "main center-vice center" structure to the structure of the "two cities" transformation. Focus on raising the level of public services in Binhai New Area and regional service ability.

The twins strategy



3.2 The dual harbors strategy.

In order to expand the scale of Tianjin Harbor and alleviate the pressure of the original harbor, to construct the new harbor area and enhance radiation driving functions of the Tianjin Harbor for the cities and the region. Adjust the transportation system, to solve the contradictory between binhai new area of the country, pull open city framework, strengthening regional radiation ability.



Revitalizing Dunkerque; an effective Environmental Project

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1. The Concept of Sustainable Spatial Development

The degradation of the natural environment in the last decades of the 20th century, a consequence of production mode, consumer perception and irrational use of natural resources, led the international community for the first time in 1972 to the acceptance of the need for urgent action in this matter (1). The rapid deterioration of this degradation, risking the collapse of ecosystems and unforeseen consequences in the life of the planet, in conjunction with the acceptance of the causes and the transition to postindustrial era, force humanity to a radical revision of the development process.

The orientation towards a new type of development for the entire population of the earth, which gradually reduces the negative impact on the natural and built environment, is usually expressed by the term of sustainable development (2). The institutional recognition is achieved with the relevant declaration, during the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil from 3 to 14 June 1992 (3).

In the Declaration (officially known as AGENDA 21 (4) is expressed the belief that the alliance of environmental and development issues and the focus of all the efforts of the global community to these, is possible to achieve: a) the satisfaction of basic needs of the people of the land, b) the life quality improvement for all, c) better protection of ecosystems and d) the reservation of a future more secure and efficient. It is categorically stated that no country can realize these goals alone unless everyone federate within a global cooperation for sustainable development.

The Agenda consists of four sectors respectively concerning: a) the social and economic parameters, b) the conservation and management of natural resources with development objectives, c) the reinforcement of the role of key social groups and finally d) the means of implementation.

Lastly, it is important to refer to a scientific problem concerning the methodological tools of convolution and evaluation of heterogeneous data. The inconsistency that already is included in the term "sustainable development" hinders the objective scientific evaluation, of course not of the individual areas covered by the Agenda, but overall.

2. European Union Policies for Sustainable Spatial Development

The consultation on the institutions of the European Community on the issue of spatial organization begins in the late 80s (5) and essentially continues until today. The European Commission in its report "Europe 2000" published in 1991, has identified the need for joint action by members of the Community in relation to spatial planning, to multiply the benefits of the single market and to benefit simultaneously the less favored areas.

The first Community Support Framework (1989-1993) is applied with, at the same, a series of programs and initiatives with spatial dimensions, beyond the purely economic such as INTERREG, ENVIREG, LEADER and RECITE (6). In 1994 the publication by the European Commission report "Europe 2000 +" follows, where the fostering debate on planning for

policy decisions is highlighted as an objective. The belief that “only the cooperation and joint action by all stakeholders at all levels, which will be supported by a common framework for spatial planning, will allow to materialize the ultimate objective of the Union: the sustainable and balanced economic growth” (7) is formulated alongside.

The report (Europe 2000 and Europe 2000+, fig. 1) can be considered as the first territorial approach of European spatial problems. The value consists in highlighting the need for coordinated action on issues such as unequal North-South development, social exclusion and poverty phenomena in the metropolis, the deterioration of the urban environment by traffic, the importance of small and large cities in rural development, the improvement of accessibility in border areas, the comprehensive and integrated vision of wetlands and coastlines (8).

The pilot community initiative URBAN (Urban I 1994-1999 and Urban II 2000-2006) for sustainable urban development, is perhaps the first practical manifestation of interest in the problems of European cities and the life conditions of their residents, who make up 80% of citizens in Europe (9). It is apparent both in the URBAN and in European applications HABITAT AGENDA of United Nations Organization the effort to integrate actions inside the principles of AGENDA 21 for sustainable development.

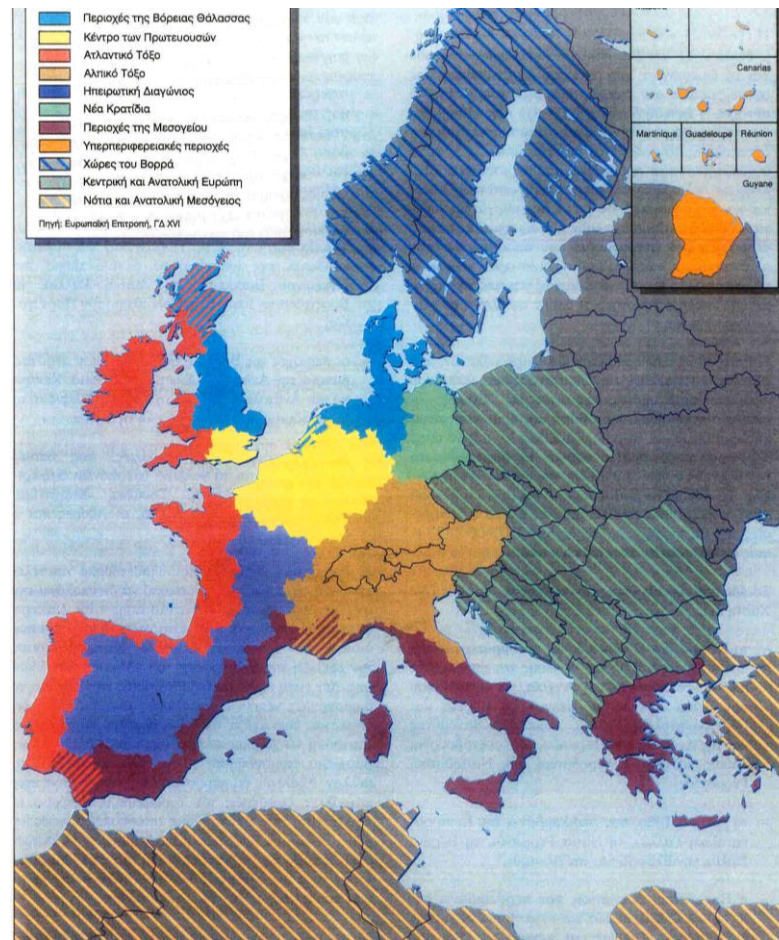


Figure 1: Europe 2000 +, Regions of inter-regional and external impact studies

3. The Industrial Environmental Project of Dunkerque

3.1 Development Data and Infrastructure

Situated in the center of Northern Europe, in the triangle of capitals, where about 50% of European Union citizens are installed, Dunkerque (fig. 2 & 3) benefits from an excellent position and a plurality of infrastructure. With 5 capitals in less than 300 km (London, Paris, Amsterdam, Brussels, Luxembourg), Dunkerque is in the heart of a market of 100 million consumers. The high-speed train (TGV, fig. 4), links Dunkerque to Lille (30 mn), Brussels (1h15) and Paris (1h30). A network of highways (fig. 5) also allows the connection Dunkerque – Lille (45 mn), Brussels (1h30) and Paris (2h30). Finally, the underwater Eurostar tunnel (English Channel, Strait of Dover, fig. 6) of is located 30 mn from the city.



Figure 2 & 3: Panoramic view of Dunkerque and its map.

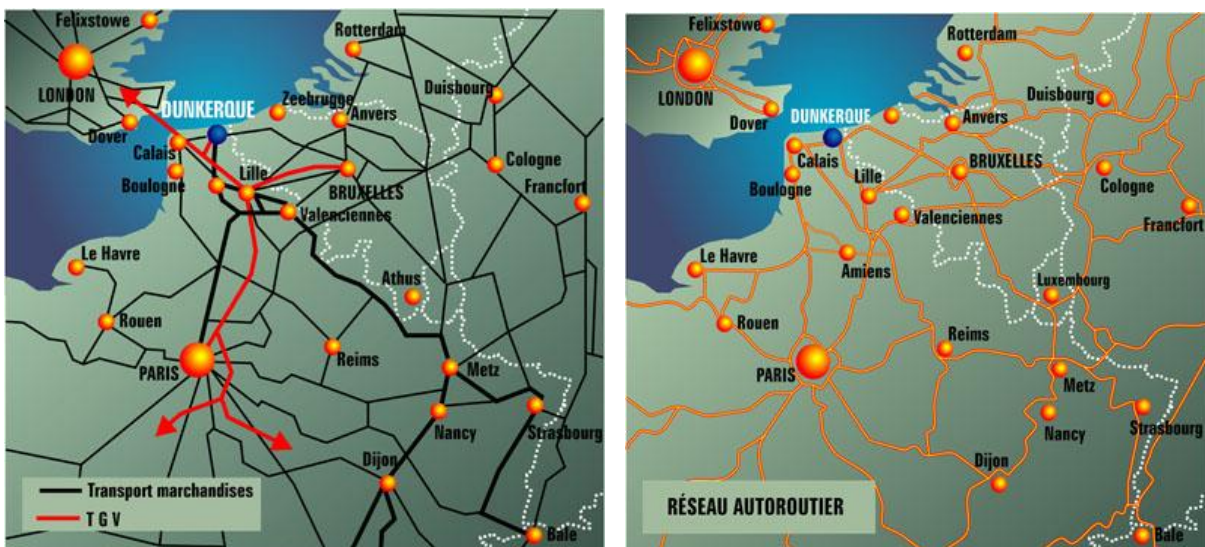


Figure 4: Map of the high-speed train connections (TGV) Figure 5: Map with the network of highways



Figure 6: Map of rural connections (Strait of Dover)

The port (fig. 7 & 8) after a successful modernization of management (1992) constitutes an important economic parameter. First port for the import of fossil fuel and carbon, second for grain exports, ranks third among the French ports with annual transfers around 50 million tones. In a few minutes cruising from the world's first naval route “English Channel - North Sea”, it can accommodate all types of vessels. It has 3,500 hectares for expansion slot or industries reception, a fact that makes it the largest port industrial port zone of northwest Europe (10).



Figure 7 & 8: Map and panoramic view of Dunkerque's Port.

The concentration of energy sources is very important and in particular, the nuclear power station (Gravelines), the Wind Park and sub sea gas pipeline. These data allow the continuation of business attraction. Since 1987 more than 190 industrial – business plans have been realized, a total investment of approximately 2 billion € that created 6,300 new jobs.

3.2 The Urban Community of Dunkerque

The Urban Community institutionally is a volunteer-community structure of France. The municipality of Dunkerque is developing a strong partnership with the municipalities in the greater region, through the Urban Community of Dunkerque (UCD), created in 1968 (11) and includes 18 municipalities.

3.3 The Autonomous Port

The Autonomous Port (12), where there are 510 employers, is managed by the Direction Board that determines its policy. Regarding its members, 5 of them are representing the Chamber of Commerce and Industry and the port users (entrepreneurs), 5 the Local Authorities, 5 the employers at the port, 3 the state, 1 the dockers and 7 members are specialists. Its project consists of: a) plans for extension, improvement, renovation and reconstruction of port projects, b) the operation and maintenance of infrastructure, c) the port policy and its supporting facilities (canals, tanks, reservoirs and waterways), d) the management of the real estate sector, e) the management of activities inside the Port – Industrial Zone.

3.4 The Office of Planning and Development for Flandre – Dunkerque Region

The Office of Planning and Development (13), in the context of integration of spatial regulation studies, aims to provide expertise, to power the development planning of the area with analysis, innovative ideas and settings, to monitor international processes and finally to control the consistency of all the plans and arrangements. Its area of responsibility covers 74 settlements with a population of about 272,000 inhabitants (fig. 9).

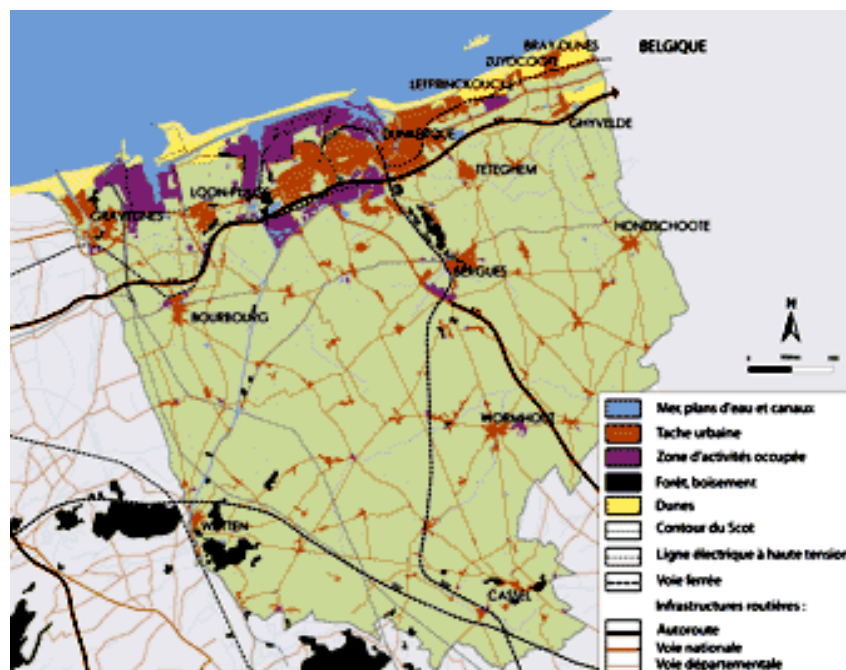


Figure 9: The area of responsibility of the Office of Planning and Development for Flandre – Dunkerque Region.

3.5 The Permanent Secretariat for Prevention of Industrial Pollution

The Permanent Secretariat (PSPIP) is a voluntary institution that reflects the intent of all local entities to apply the principles of Sustainable Development with respect to decisions, plans, studies and generally the integration of environmental parameters into all local cases. There are about 15 PSPIP in France.

The Permanent Secretariat for Prevention of Industrial Pollution of Dunkerque (14) gathers all local actors. Between its members and associates are local authorities, the Environmental Protection Organizations, Institutes, Universities, local media, etc. It is essentially a forum for the exchange of views, experiences and concerns with complete transparency on all matters relating to the environment and quality of life compared with the industry.

4. Presentation of the Project

4.1 Targets

The “Autonomous Port of Dunkerque” (APD) holds as a Port Industrial Zone (15) where many polluting production activities are established. It is about agro-industries, food industries, iron processing, petrochemical and nuclear (fig. 10 & 11). In 1992, the factors involved in this area (Administration, industry owners and environmental organizations) decided to develop a voluntary association text (16), the “Industrial Environment Project” (IEP), approved in 1993, remaining still in force and pending its revision (17), aiming at: a) the design of economic development of the Port Zone, with respect to a number of environmental criteria and b) the function of an instrument for consultation on the implementation of the Project.



Figure 10 & 11: East harbor, fluvial port and the image of the petrochemical zone.

The establishment of this institution of consultation (Committee of IEP, 18) allows local authorities of the “Greater Region” (19) to start a dialogue mainly with industry owners and environmental organizations on requests for installation of industrial activities and the exact location in the area minimizing conflicts.

The targets therefore consist of: a) informal urbanization (location choices for new installation units) and development of the Industrial Area respecting the environmental criteria, b) improvement of the local environment despite the strong presence of industries, c) upgrade of the image of Dunkerque and its industrial area, d) attraction of new business and e) installation of consultation and compromise tools between all the partners.

4.2 Data

The Port Zone of Dunkerque, of 6,000 hectares surface (fig. 12), gathers secondary sector activities that maintain constant its dynamism until now, but which also carry high risk (15 industrial installations rank among those with the highest risk – vulnerability, fig. 13) and significant pollution.

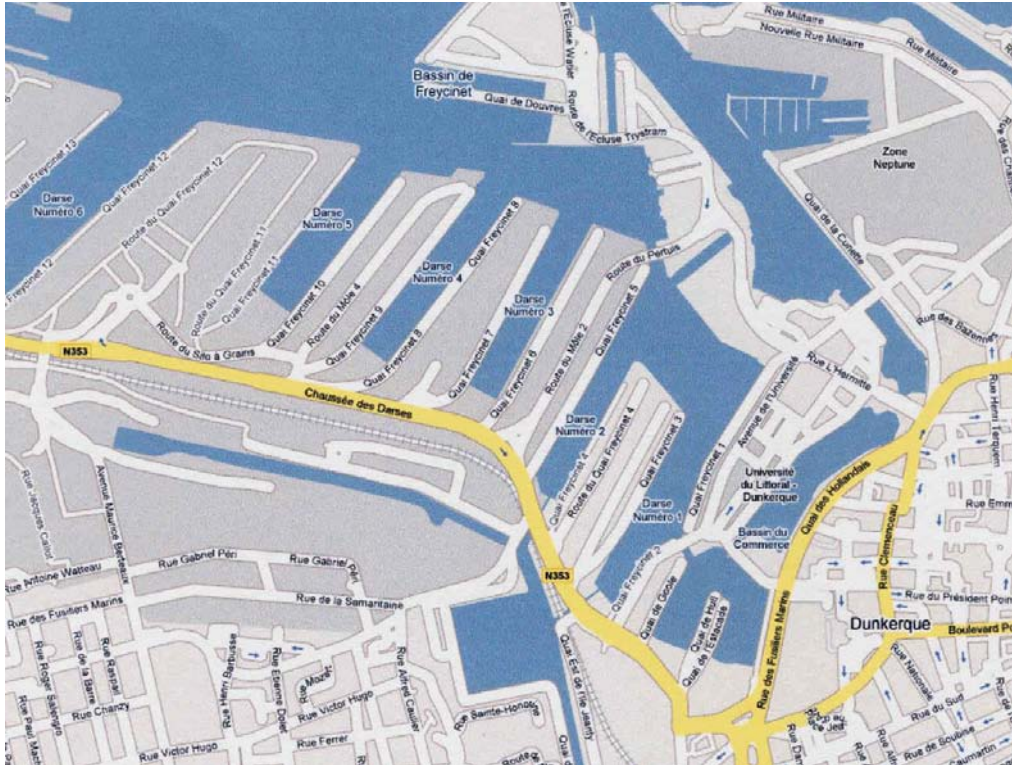


Figure 12: The Port Zone of Dunkerque



Figure 13: Part of the East port, iron products

During the 80s, industries in Dunkerque were hit hard by the economic contraction which resulted in massive job losses. As a way out of the crisis, the elected officials chose to continue to focus on industrial development, taking measures to improve the local environment, to guarantee the quality of life of residents.

Thus the “Greater Region” of Dunkerque in 1990 has created the “Permanent Secretariat for Prevention of Industrial Pollution” (PSPPI, 20) so that all partners of the Industrial Zone manage in the best way the economic, social and environmental consequences of the activities carried. The confrontation caused on the request for installation of the chemical industry “Du Pont de Demours” pushed the electives to proceed further their actions by creating the “Environmental Industrial project” that allows to organize overall the installations inside the industrial – port area.

4.3 Activities

The “Industrial Environmental Project” (IEP) contains regulations for the establishment of industries, the waste disposal design, the authorities that manage the landscape and the means for its implementation. This is a framework of objectives that allows transparency in decision making, minimizing conflicts and organizing a development with perspectives.

Each new industrial plan, each new installation or extension of an existing one, is shown in a Committee of the “Permanent Secretariat for Prevention of Industrial Pollution” before even requesting for authorization of the installation (fig. 14). This procedure allows portraying the characteristics of the project and the planned actions to reduce pollutants – risks.

The Papers of General Charges (21) – responsibilities (clean technologies, best available techniques) and the specific (atmosphere, water, hazards, natural environment) are applied for protection of the environment. For example the “Alert Zones – Risk Zones” (22) have been designated for industries carrying risk, in order to transfer guarantees to the population and to local authorities and to assist industries in choosing their location (fig. 15). The Papers of Charges – responsibilities are supplemented with location and management strategies concerning industrial waste and hazardous materials transportation.

Examen concerté des projets industriels en amont de la procédure

PHASE CONFIDENTIELLE			PHASE PUBLIQUE		
					Dépôt du dossier de demande d'autorisation d'exploiter
Investisseur DRIRE Dunkerque-Promotion Aménageur	Investisseur DRIRE Dunkerque-Promotion Aménageur Maire(s) concerné(s)				
Négociation avec l'investisseur Premier examen du projet Evaluation de la conformité avec le SEI	Poursuite de la négociation et de l'examen du projet				Saisine de la commission "nouveaux projets" du SPPPI
					Procédure d'autorisation
1er contact avec l'investisseur	Présélection d'une localisation	Décision d'implantation par l'investisseur			
					Décalage dépendant de l'investisseur (constitution des dossiers de demande d'autorisation d'exploiter et de permis de construire, en relation avec la DRIRE)
					Dépôt du dossier de demande du permis de construire

Figure 14: Organizational structure of IEP's decision making.

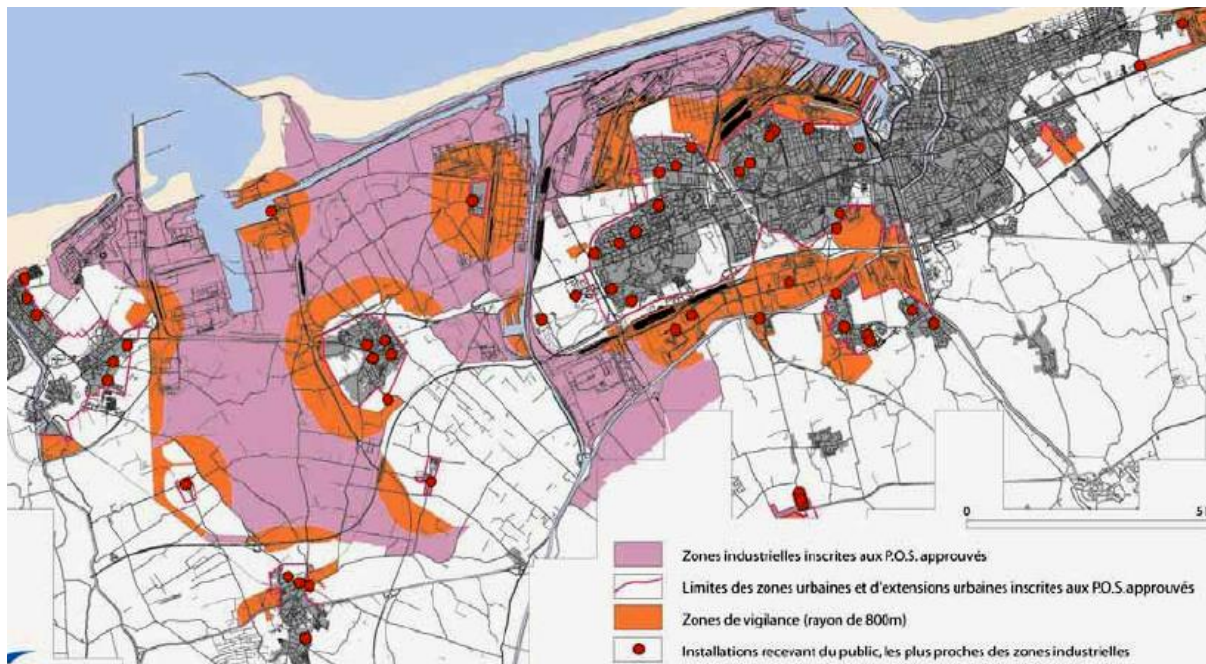


Figure 15: Map of Alert Zones – Risk Zones (1993)

Pink: Industrial Zones imbedded in the approved Land Use Plan (Plans d'Occupations des Sols). Red Line: Boundaries of Urban Zones and extensions to the approved Land Use Plan. Orange: Alert Zones – Risk Zones (radius 800 m.). Red Circle: Facilities of people concentration in proximity with the Industrial Zones.

4.4 Collaborators

The “Industrial Environment Project” (IEP) provides regular meetings of the “Guidance Council”, in which the elected of the Port – Industrial Zone, Services, Environmental Organizations, and industry owners are gathered together. This Council has the duty to certify the application of IEP’s regulations and adapt them in a suitable way for every occasion. Furthermore it is supported by the “The Office of Planning and Development for Flandre – Dunkerque Region” and the “Office Dunkerque Promotion”. Especially the latter shall convene the “Guidance Council” for each peculiar case of a new industry installation. The “Technical Working Group” that has completed the processing of the IEP continues a permanent mission of rapprochement and proposals.

4.5 Results and Problems

No project is produced anymore with a one-dimensional way. All problems are approached from the side of industrial development. Nevertheless the institutions of consultation are not quite adapted to small – business industrial projects. It is sometimes difficult to work with Local Authorities that have not been directly affected by the dynamics of the IEP. Many industry owners believe that the “Papers of Charges – responsibilities” that they should apply, not as compelling, but as criteria, allow them to improve their competitiveness. Their involvement in the IEP also allows improving their public image towards the citizens and the ecologists.

The Industrial Zone of Dunkerque is still facing numerous pollution problems due more to old businesses rather than new ones. It would be necessary for the old industries to adopt new technologies more environmentally friendly, but the industry owners are not always willing or do not have the financial means to be adapted. Major problems are still waiting to be solved, such as suspending particles and radioactivity.

4.6 Achievements

The IEP has authorized to implement an approach between industry owners, local authorities and environmental organizations, which before 1990 were in a state of rupture. The State is required, however, to play an important role, especially concerning the control, because local authorities can not fill in this field.

Moreover, the IEP colleagues have realized that such a framework is an advantage for the greater region both from the side of Industrialists (competitiveness, image enhancement) and the electives (attracting businesses, more jobs, growth). Adopting a preventive approach for the industrial environment, allows saving time, money and decrease of potential environmental degradation.

5. Conclusions

The IEP is, in whole, part of local policy and actions framework for overcoming the economic crisis in Northern Europe and especially the areas where heavy iron industry has been concentrated in the late 80s, with terrible social consequences. Concerning Dunkerque, beyond the crisis of steel, the closure of "Normed" shipyards has tragically worsened the situation. The crucial policy choice for industrial development, instead of reorienting to the tertiary sector of the economy, is based on solid basis, such as its excellent geographic location, accessibility to raw materials and markets, availability of infrastructure – technology – knowledge, tradition in participation and finally the management instruments. The full exploitation of all of the above led to the gradual recovery of industrial investment in similar sectors.

The most interesting thing about the IEP, which gives it a uniqueness, is not only its individual characteristics, which are normally found in all modern strategic development projects, nor the integration of general principles of sustainable development, but the creation of new structures and institutions of participation that work essentially orientated in consultation and compromise. In other words, it concerns an unprecedented – for its economic stakes – attempt to apply the principles of Sustainable Local Development.

In the end, it is very interesting the fact that the above participation model is applied in Dunkerque until today and not only for the Industrial Environmental Project, but also for the effort to re-use its coastline (23). Therefore we might justifiably assert that the IEP was educative, beyond organizations and active citizens, in the wider public.

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Ningbo Master Plan: a world connected metropolitan achieving port-city symbiosis

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1. Ningbo City and its Seaport

Ningbo is a famous seaport city in the northeast of Zhejiang province, People's Republic of China. Ningbo lies south of the Hangzhou Bay, facing the East China Sea, it's one of the departure ports of China's earliest Maritime Silk Road. From the Song Dynasty (one thousand years ago), as one of China's five foreign trade ports, Ningbo's prosperity related much on the international port and the sea-trade (maritime silk way). In the year 1685, the Qing government sat up four national customs; the one in Zhejiang province was in Ningbo. Soon, the Ningbo Bund was opened. And now, Ningbo has a port second only to Shanghai around the world in terms of annual cargo throughput.

Ningbo, as a modern international port city, is born with the ocean, and prosperous for the harbors which is very fit to establish the "port economic circle"(港口经济圈).

1.1 The advantages of the port location

Ningbo is located in the Yangtze River golden waterway and the "T - type" interchange of the South and North China sea transport, facing directly to the East Asia, ASEAN and the entire Pacific rim. The city can easily access the Yangtze River and the "Beijing-Hangzhou" Grand Canal, with in the radiation of " One Belt And One Road"(OBAOR)¹, the Yangtze River Economic Belt along the city's strategic location. Ningbo port cargo throughput is ranked fourth in the world. At the same time, the highway, railway, aviation, inland river, pipeline and other transport modes afford strong supports to build a port economic circle.

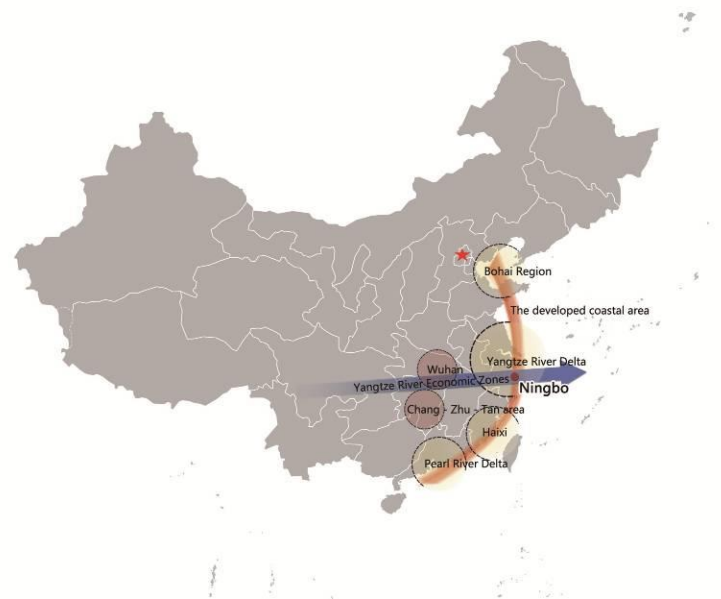


Figure 1: The location of Ningbo in China

1.2 The strong driving force of port industry

After the reform and opening up of China, Ningbo's port Industry had formed a coastal industrial belt over 20 kilometers, accounted for 65% of the city's industry with the transformation from the traditional labor-intensive to the capital-technology intensive. Logistics and trade port service industry has also been rapidly developed, in 2014, the city's import and export volume reached US \$120 billion, the number of the logistics and related businesses enterprises was over 4000, and the commodity trading volume broke through \$500 billion.

1.3 Open cooperation

In the year 2014, Ningbo invested \$1.04 billion on the key countries (regions) along the OBAOR. Ningbo also has all kinds of special customs supervision zones and accumulated more pilot experience in investment and trade facilitation, clearance and construction area.

In addition, Ningbo has a long history of cultural exchanges, the new central collective leadership of China proposed several national regional strategies including the OBAOR, the Yangtze River Economic Zone, Free Trade Zone, the overall orientation is favorable and helpful for the city to build port economic circle and to play a leading role.

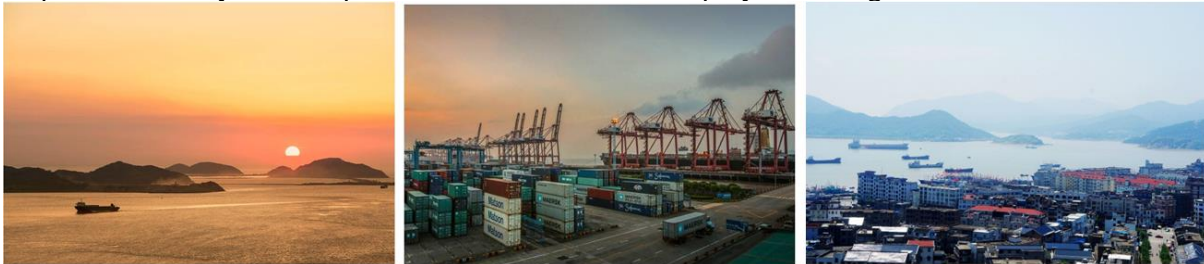


Figure 2: Ningbo port is closely related to the development and utilization of urban development.

2. The connotation and significance of the port-city symbiosis for Ningbo

Port-city symbiosis is the main strategy for a port city's development, especially in Ningbo. Entering the new stage in the 21st century, the relationship of Ningbo and its port has new characteristics and trends in the promotion of the internal and external factors. Therefore, we planners need to recognize these new characteristics and trends for a better understanding on the modern international port city development.

2.1 The content of port-city symbiosis

In the last three decades, the inner city's functions relayed much more on the seaport, but the area related is still limited. But in the new century, with the changes of the port function and the improvement of the technology, the content of the port-city symbiosis also changed, so the expanded meaning of the relationship is the "interaction between the port and multi-city or whole region ". And these interactions in Ningbo could be explained as below:

- Firstly, the interaction between the port and the inner city, which is the core of the symbiosis. With the influence of the port relocation and the city's urbanization, the interaction is divided into two aspects: one is the downtown, the trade related modern service industry developed rapidly in the downtown; the other is the metropolitan area beside the port, with the development of port function, the Beilun district of Ningbo have to enhance the port functions as an example.

- Secondly, the interaction between the port and surrounding cities which is the closed relationship of the symbiosis. Urban agglomeration or urban economic zone is the common form of organization. Urban agglomeration is the highest form of the spatial organization of the mature stage, and is geographically concentrated distribution of a number of cities and large urban agglomeration and huge, multi-core, multi levels of urban group, is a metropolitan area of the commonwealth. In recent years, the Eastern Zhejiang Economic Zone, contained Ningbo, Taizhou, Shaoxing Zhoushan, is an example to expand the hinterland and supply of the port.

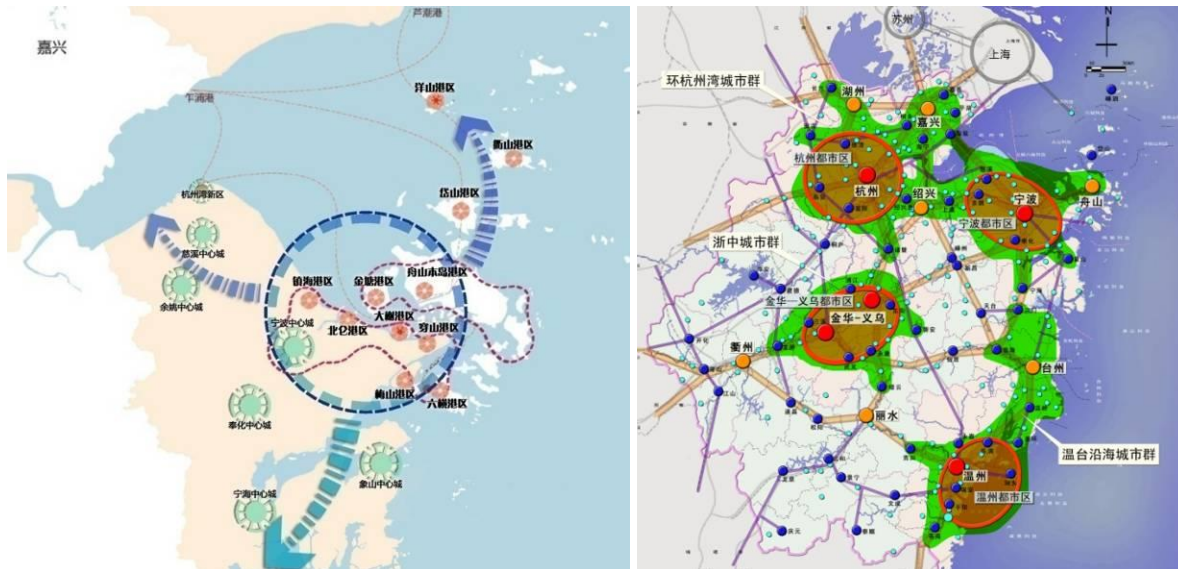


Figure 3: Ningbo port has close ties to the surrounding and inland cities.

- Thirdly, the interaction between the port and other inland cities that is the loose relationship of the symbiosis. The river-sea transport and sea-railway transport, and other forms of cooperation established by the coastal and inland cities, is a link to the port to close the economic relationship. After the financial crisis in 2007, Ningbo has generally strengthened the economic ties with the inland cities.

2.2 The forms of port-city symbiosis

In the past, the interaction form is mainly confined to the port and the industry, the port and the city. A relation between the port and the industry is relying on the relationship between port and city. The relationship between the port and the city, such as the space layout and function, is the center of the symbiosis. And entering the new century, the new stage is influenced by many kinds of factors, and it is a new form of interaction, which is based on the original form and way.

- The first is the interaction between the seaports. Under the new background, the establishment of the port alliance is a common way to interact with the ports. With a series of contractual relations to establish long-term and stable partnership, the so-called Port Alliance, is refers to the port enterprises based on its own independence to realize the port unified management or port enterprise unified management. Established Zhejiang port Union that takes Ningbo Port as a leader, formed by Zhoushan, Jiaxing, Taizhou and other ports, is a good example. The port alliance has important significance for the further integration of port resources and improving the competitiveness of the port.
- The second is the port and industrial interaction. Under the new background, the industrial chain of port-city interaction is enriched and extended. Ningbo, for example,

takes the high-tech and equipment manufacturing industry as the leading industry. The current proportion of heavy industry in Ningbo reached 67.82%. In addition, the city also pays attention to the development and application of the environment friendly technology.

- The third is the port and city interaction. In the new context, the urban functions have been improved. The port, as an important part of the coastal cities, bears the function of urban traffic. In order to meet the needs of the development of international shipping industry in recent years, Ningbo focused on building the Meishan bonded port area, so that objectively expanded the framework of urban construction. In addition, polycentric trend is obvious. After the reform and opening up, many coastal cities have adopted the group development model, and promote the development of single center city to the multi-center city. In this process, port played an important role. Ningbo takes the administrative center migration as an opportunity in recent years, vigorously in Eastern New Town construction, focus on the development of exhibition business, administrative office, finance, insurance, and other modern service industry, to further improve the port city of international trade in services functions, to narrow the distance between the city center and port.

3. The New Ningbo Master Plan and the International Port Enhancement

The 2006 version of the Ningbo Master Plan played important role in terms of guiding the urban construction and social economic development, but also showed the partly unmatched content needs to be revised. The old spatial structure didn't take into account the Ningbo - Zhoushan port integration and Ningbo Meishan bonded port construction and other factors, and didn't consider the factors of Ningbo Port intension constantly changing, so the new plan must enhance the adjustment and enrichment according to the new situation.

In 2015, the China's State Council approved the new "Master Plan of Ningbo" that once again stressed the city's function as: the important port city in the southeast coast of China, the economic center on the south of the Yangtze River Delta, the national historical and cultural city. In the new plan, we also figured out a metropolitan frame facing the ocean as "One Core, Two Coast Wings, and Three Bays ". The new plan takes efforts to create the port economic circle, to achieve the efficient integration of Ningbo as well as a greater area.

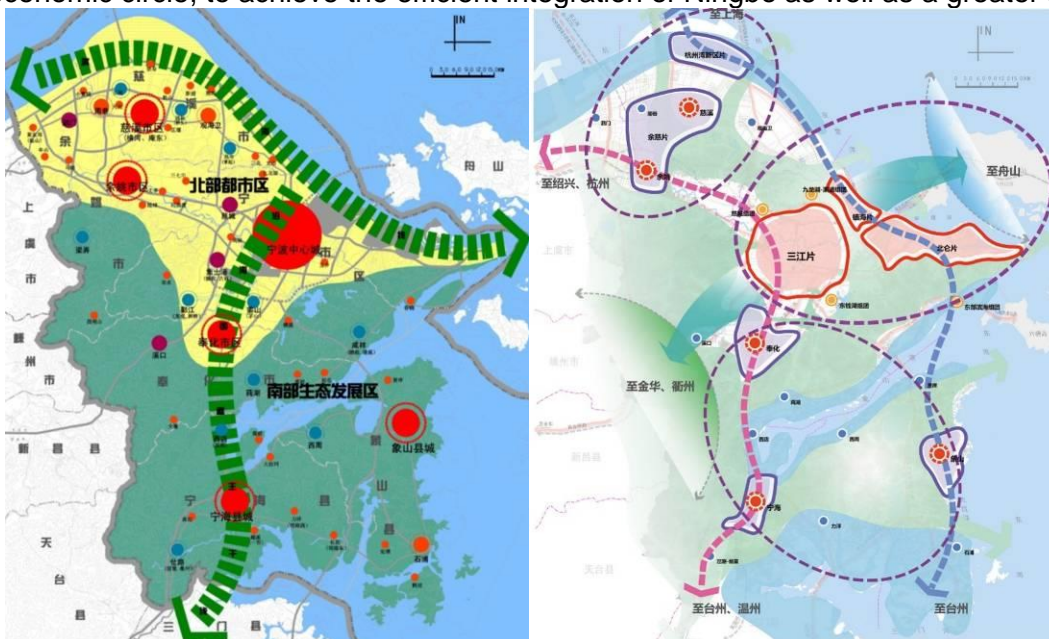


Figure 4: compared to the old one (left), the frame of the new Ningbo Master Plan (right) emphasized the coastal efficiency .

Under the current background, Ningbo is now in a new round of interaction between port and city development stage, there are not only accelerate the development of interactive opportunities and severe challenges. The new master plan must adhere to the scientific development view as a guide, in accordance with the city's new strategic deployment, and to take effective measures, promote a new round of the interactive development between port and city.

A clear idea of development is the premise of promoting the construction of the port economic circle. Port economic circle construction in Ningbo should be based on local conditions, combined with the OBAOR and the Yangtze River Economic Belt strategy, combined with regional integration in Yangtze River Delta and the surrounding city development, combined with the Ningbo social and economic development plan, the concept of the port economic circle has become an important fulcrum of Ningbo to enter the national strategy, strategy take the road of common development, the road of reform and innovation, to enhance the radiation force, the construction of river-sea transport service center, to promote industrial cooperation, expand the field of communion and the level of openness and cooperation system and mechanism innovation, through the a decade of efforts, the basic construction of Ningbo port economic center of Yangtze River Delta, international trade logistics center, the service center of river-sea transport to become the strategic pivot city the Asia Pacific region.

Our goal is divided into two terms. By 2020, the Cities of the maritime Silk Road Port Alliance would reach 30, the friendly cities reaches 100, and the import and export volume reaches more than \$100 billion, the Ningbo port would also establishes 5 Overseas Industrial Parks, 30 hinterland dry port and 25 international ocean trunks for the OBAOR, build an international multimodal transport hub port. By 2030, the port would help the city to achieve the construction of Ningbo into the Yangtze River Delta port economic center and the port economic circle.

3.1 Overall positioning: to create a port economic circle and achieve regional linkage

" Create the Port Economic Circle which impact the Yangtze River Delta and the East China " is the long-term strategy made by the President Xi Jinping for Ningbo's economic and social development. In recent years, on this strategic proposition, Ningbo vigorously promotes the international port construction, and the port-city radiation is improved. At present, the state proposed the implementation of the " OBAOR ", the Yangtze River economic belt and other strategies, and clearly figures out the Ningbo - Zhoushan as the strategic pivot of the maritime cooperation. In order to adapt to the new requirements of the national strategy, the new master plan of Ningbo promotes the transition of the economic development mode, the formation of a new growth advantage, and enhance the port service radiation.

There is no unified definition for the port economic circle which is similar to the port economy and economic circle, it should be a production distribution, resource allocation of regional combination form, its connotation exceeds the range of the concept of traditional single port and port city, emphasizing the relationship between port and hinterland, is a economic circle relying on the port economy. The port economic circle and the metropolitan economic circle belong to the same category of the economic, so they have many common features, but there are some differences in the function, power source and space structure.

According to the concept of port economic circle, port economic circle always has a typical "circle drive, traction linear radiation, network, industry support" feature. Ningbo port economic circle takes the Ningbo-Zhoushan port as the center, takes the Ningbo City and hinterland urban agglomeration as the carrier, and takes the integrated transport system and the hinterland as the basis and the port industry chain as the main support, coordination, combination, common development of regional economic communities in terms of economic, social, cultural, ecological closely linkage. There are five main aspects as below:

- Promote Ningbo - Zhoushan port integration, improve the port economic circle radiation, perfect the system of port cargo, organized an international Port Alliance, promote the modernization of port management;
- Build the interoperability of river-sea-land transport service center, to strengthen the port infrastructure, optimize the river-sea intermodal rail traffic system, establish a shared docking logistics information network, build a smooth and efficient cooperation mechanism of logistics;
- Strengthen the middle and high-end cooperation of industry, promote the portside industries devolvement and enhance the port service traction, build the industrial cooperation platform.
- Expand the economic, trade and cultural exchanges and cooperation, and form the high level international influence of opening up to create the "Sea Silk Road" tourism brand.
- Strengthen the reform and innovation, and activate the new power of the coordinated development of the port economic circle. Then strive for a comprehensive reform of the international shipping service, and deepen the cross-border electronic commerce reform.

Through the implementation of these five key work, Ningbo port economic circle will form the spatial structure as **"three zones to drive, four corridors to expand"**.

"Three zones" refers to the core area, the radiation area and the influence area. The core area is of the Zhoushan-Ningbo port and the port supporting cities, which is the main power source of the port economic circle. Radiation area is a close economic area formed by the core area through transportation, trade, investment, industry, culture and other cooperation, mainly refers to the Yangtze River Delta region. And the influence area is the peripheral area of the port economic circle, which mainly refers to the East China region.

"Four corridors" refers to the four economic cooperation corridors in space as Yangtze River Economic Cooperation Corridor, the Shanghai Kunming line corridor for economic cooperation, the coastal economic cooperation corridor, and the maritime Silk Road Economic Cooperation Corridor. The corridors relying on the Ningbo - Zhoushan port as the center, form the four radial distributions by the comprehensive transportation, investment and trade, industrial cooperation, cultural exchanges and other support.

3.2 The new master plan strategy: to enhance the port-city symbiosis

For the objective of enhancing the Ningbo's international port, the new master plan proposed the follow strategies:

- To promote the development of the integration of Ningbo-Zhoushan port, as the international shipping center of the Yangtze River Delta, Shanghai international hub center, and the important channel of Yangtze River to the sea;
- The new master plan adhere to the principle of " unified planning " in terms of joint development, and integrate the resources of the Zhoushan port and Ningbo port, accelerate the integration of the construction of the port. In the premise of effective protection and rational development of the coastal resources, the plan promote the joint development of the Jintang Island, Liuheng Island and the Xiangshan Harbor, in order to establish the important material transfer hub of the Yangtze River Delta and the Yangtze River region; and

- The plan also Strengthen the container port's status, give full play to complementary advantages of the port, promote the joint development of the port industry, the development of port industry and modern logistics industry, and promote the development of related industries in the hinterland. By 2020, the cargo throughput reaches 650 million tons and the container throughput reaches 24 million TEUs.

The city center is the political, financial and cultural center, and the Beilun District is the shipping center of Northeast Asia deep-water hub port. To achieve the harmonious relationship between the Ningbo city and the international port, the New Master Plan also emphases on the functional integration in the Ningbo Metropolitan area.

- Based on the grand Hangzhou-Ningbo canal, develop the "river-sea combined transportation" to maintain stable growth and inland shipping;
- Rationally use the external traffic and give full play to the role of the port in order to achieve a reasonable spatial layout;
- The main logistics center is located in the Beilun port, and the secondary logistics center would be sat up in the Hangzhou Bay.

3.3 Sea-Rail transport combined into the city development strategy

Ningbo port actively replied the "OBAOR" strategy, the first quarter of year 2015, with the "mass transit" mode, the port started the "one vote" system service for the northwest inland, so the container transit time was shortened from 15 days to 1 day on average. The Zhenhai port district also opened "last mile" of the sea rail intermodal through the port specialized railway transformation, and annual sea and railway transport capacity of receiving and dispatching increased from 3 million TEUs to 10 million TEUs.

"Sea-rail transportation", sounds like far away from the public, in fact is already combined into the development strategy of Ningbo city. It refers the directly loading and unloading by ship and railway in the port area, and eventually transported to the destination without a highway transit transport mode in the middle way. The mode is popular around the world for its large capacity, low cost, less pollution and so on.

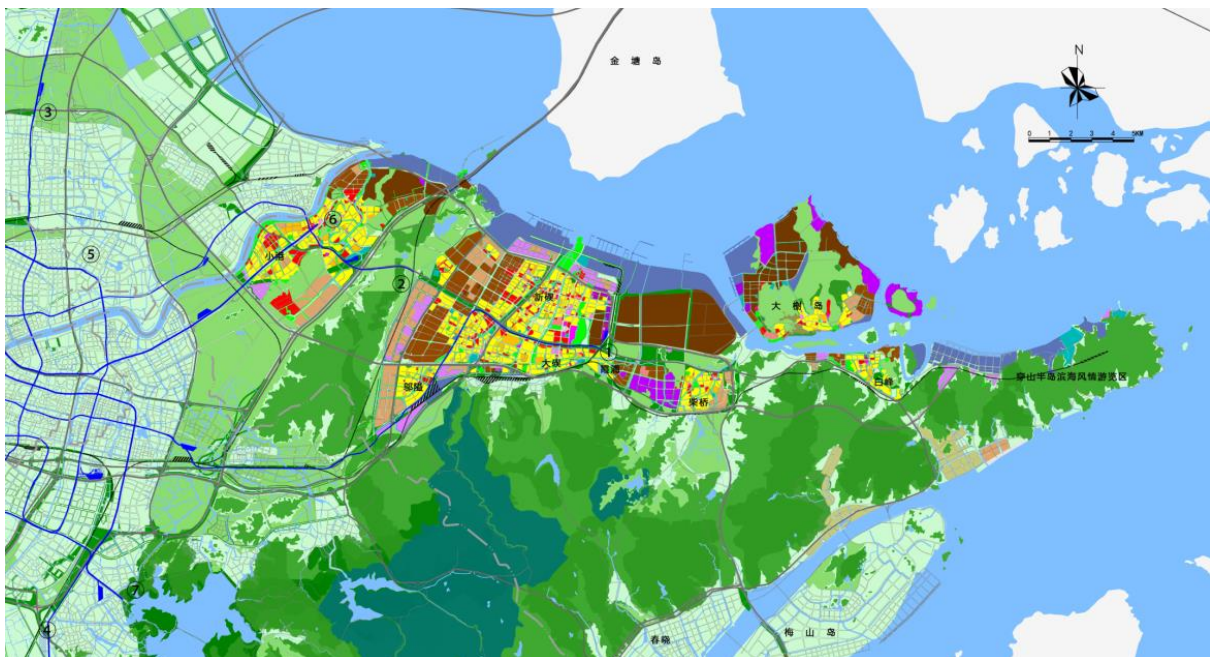


Figure 5: the Beilun Port area, the core area of the Ningbo Port, started and succeeded the Sea-Rail transport .

As a world-class port, Ningbo port is one of the few railway dedicated line direct operation inside the port area. In addition to the Zhenhai port area, Beilun port has also carried out this business. Since the the implementation of rail-sea intermodal transport development strategy in 2009, through policy support, hinterland development, improving the customs environment, infrastructure perfect measures, the sea-rail intermodal container volume increased from 1690 TEUs in 2009 to last year's 135.1 thousand TEUs, increased 80 times in 5 years. With the construction of the next step, through the railway extension and Yong-Jin railway project, Ningbo rail transport capacity will be further released.

Sea-rail transport has a special significance to the construction of the Ningbo port economic circle. But the radiation the "circle" depends on the supporting role of the combined sea-rail transport. Because from point of the economic, for the long-distance transport above 500 kilometers, the railway has the cost advantage that cannot match by the highway and air transport mode. At the same time, it is much more time saving than water transport mode. With these advantages, Ningbo has opened sea-rail transports for Quzhou, Nanchang, Yingtan, Xi'an, Xiangyang and other 17 cities. In the year 2014, with the opening of the rail-sea intermodal transport called "Ten Thousand Miles of Ningbo-Xinjiang-European", opened the modern version of the silk road which could send the goods to Central Asia, Russia and Europe through Xinjiang Province.



Figure 6: the rail-sea intermodal transport are now conneting the Ningbo and European

In terms of security and resource conservation, statistics show that the railway and highway freight accidents ratio is 1:246, and the accident loss ratio is 1:44.48; to complete the transportation capacity units occupied land area, the railway only account one tenth of the highway. So the development of sea-rail transport is the reality of the inevitable choice in Ningbo.

After the last round of large-scale railway construction, Ningbo has laid a basic "North-passenger and South-cargo" railway transport pattern. On the one hand, the government would make good use of the "visible hand", with the strengthen of the communication with the national ministries and the related cities, to create conditions and give support in the railway tariff concessions, rail link opening, dry port construction, information sharing, port

services optimizing and other aspects; the new master plan accelerate the project construction of Yong-jin railway and Chuanshan extension expressway to create more convenient channels. On the other hand, give full play to the role of the market as the "invisible hands", the new master plan try to enhance the implementation of the "Going Out" strategy, by cultivating the market main body, to further develop the business entities develop and occupy market hinterland.

3.4 Adjust industrial policies, improve the industrial linkage

Relying on the harbor advantages, the new master plan vigorously develops the port manufacturing industry and port service industry that is with high output and efficiency. Take the key sets of equipment, CNC equipment, shipbuilding, automobile and spare parts and logistics equipment as the key, the plan tries to promote the equipment manufacturing industry to technology independent, manufacturing intensive, complete equipment, product brand, industry clustering, market internationalization, to promote the construction of advanced manufacturing base. Relying on Beilun port, Free Trade Zone and Development Zone, the plan develops and expands the international freight transport hub of Beilun Logistics Park, with the third party logistics as the main body, to accelerate the cultivation of quality, efficient and convenient logistics and distribution, transportation system.

4. Conclusion : The International Port and its further comprehensive impacts

A strategic goal of China's maritime Silk Road of the twenty-first Century is to integrate the international and domestic market. Domestically, Ningbo is located in the golden waterway of the Yangtze River Estuary, adjacent to the main channel of the Asia Pacific international hub, backed by the western hinterland, the city with the port is easy to realize the completely connection of the "sea-rail combined transportation". In 2009, Ningbo port implemented the westward strategy to develop the Yangtze River hinterland, and successively constructed dozens Land Ports in 12 Chinese cities such as Nanchang and Xi'an, and opened a fast freight train that achieved 105,000 TEUs in 2014.

Internationally, Ningbo Port is determined to strengthen the further cooperation platform. The trade between Ningbo and the 16 central-Eastern European countries was \$2.3 billion in terms of imports and exports last year, accounting for nearly 5% of the country's total trade. In last June, Ningbo hosted the ministerial meeting of central and Eastern European countries to promote trade and economic development. Ningbo is willing to take up the new mission as the departure port of the Maritime Silk Road, to explore and create new advantages of open economy, and make new contributions to the overall situation of China's reform and development.

Endnotes:

" One Belt And One Road"(OBAOR): a development strategy started by the Chinese government in 2013. It refers to the New Silk Road Economic Belt, which will link China with Europe through Central and Western Asia, and the 21st Century Maritime Silk Road, which will connect China with Southeast Asian countries, Africa and Europe. Neither the belt nor the road follows any clear line geographically speaking; they serve more as a roadmap for how China wants to further integrate itself into the world economy and strengthen its influence in these regions. Many of the countries mentioned have traditionally had close trade and investment relations with China, which says they should deepen cooperation, especially in terms of building infrastructure and other development projects. The strategy underlines the government's push to have a bigger say in global economic and political affairs, and to export China's technologies and production capacity in oversupplied areas such as steel manufacturing.

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Sustainable Urban Waterfront Development in Port Cities

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Abstract

Since the 1960s the urban waterfront has been of special interest for urban planners and architects. Due to the structural change in economy and the emergence of container shipping, in many cities a relocation of ports took place, so that inner-city areas have become vacant for redevelopment and revitalization. The affected cities have developed very different strategies to deal with the new challenges at the waterfront. It is often the focus to find a balance between port- and city-development in order to preserve the economic importance of ports as well as to generate attractive quarters. This poses the question, which specific priorities such strategies may include and how they will be implemented. In addition, uses must be found, that can be located on the waterfront or close to the harbor. At the same time it is necessary to show ways in which the requirements and objectives of sustainable development can be combined successfully. To find answers to these questions, two different case studies will be analyzed and scrutinized critically. From the existing conglomerate of waterfront projects, the cities of Rostock and Auckland are in the focus of interest for this examination. Despite their differences, it is possible to derive criteria and principles, which are relevant for the future development of port cities with an international reputation.

1. Introduction

The urban waterfront is a place of extremes: On the hand, there is the great wide open sea with all its natural biodiversity, on the other hand, the manmade city full of large scale infrastructures, noise and pollution. Because of these characteristics, the urban waterfront has developed in the course of its evolution specific mechanisms and responses to deal with the contemporary challenges.

Nowadays, urban waterfronts are often popular landmarks, representing a city or even a whole region with its design and architecture. At the same time, planners have to deal with the consequences of global warming and pursue the goals of energetic, ecological, economic and social sustainability. In addition, cities on the waterfront often still have a functioning, international port, which has been the economic basis for growth and development for centuries. It is important to maintain and strengthen the port structures and their significance for the regional economy in the future. Thus, ports should not be isolated, but should rather be considered regarding their relevance within the spatial fabric of the city.

Within this framework – the urban waterfront as an icon of the city and the harbor as an economic backbone – cities have to remain competitive within the inter-urban competition. Furthermore, contemporary cities are characterized by the continuous transformation of their structures. Contrasts between growth and decline, urban sprawl and the model of the compact city as well as customization and individuality, give an idea of the tension, in which cities currently operate. To meet these challenges, the derivation of strategic development-approaches for cities on the waterfront appears inevitable. These approaches have to meet the requirements of diversity, flexibility and stability. Furthermore, the strategies need to be characterized by thoroughness: they should have long-term urban development visions and should be committed to the target, to initiate stable growth and to generate social and economic security. According to these requirements, it is necessary to examine the economic and urban relation between city, harbor and waterfront. On this basis such case studies will be elaborated, which fulfill the demands and at the same time demonstrate the possibilities of sustainable development. There are the middle pier in the Hanseatic city of Rostock and the waterfront of Auckland, whereby these projects have very different starting points and characteristics. Nevertheless, it is possible to identify similarities between both projects and to

derive principles for dealing with the urban waterfront – regardless of the size and the location of the planning area or the participating actors.

2. The interactions between city, port and waterfront

City, port and waterfront represent a complex structure in its entirety, which is characterized by interrelations and influences by numerous factors. For a sustainable and integrated urban development, it is therefore necessary to consider these phenomena not in isolation, but to carry out a comprehensive analysis. Hence, the historical development of these interactions will be focused on in order to understand the current process of revitalization of the harbor and waterfront in the urban space.

2.1 Port and urban development in the course of history

The foundation of settlements and cities was closely linked to the availability of water for centuries. In ancient times European cities were founded especially in places, where water was available. During this time, water served primarily for drinking water supplies, it received additional functions and values in the Middle Ages: protective moats served as boundaries for cities and in towns on the waterfront the waterways were used for traffic and the upcoming shipping of goods. The emergence of the Hanseatic League in the middle of the 12th century had the consequence that a network of waterways was built in Europe and used commercially (Haass 2010). In association with the expeditions of the explorers in the later centuries of the Middle Ages, shipping finally gained a global dimension. Thus, numerous new port cities were formed with shipyards and first military functions. Until the mid-19th century, especially the seaports were trading centers for high-quality goods of international trade. In the surroundings of ports, storage buildings with additional residential, business, warehouse and office uses were constructed. At the same time, the city and the port were both spatially and functionally closely linked (Schubert 2002).

In the wake of the Industrial Revolution and the invention of the steam engine, railroad and steamships, expanding city ports emerged. The increasing size of ships required the creation of larger docks. These docks were neither integrated into the spatial fabric, nor were port and city spatially linked. While particularly commercial and industrial uses were located by the water, the cities developed towards the inland and turned their backs to the waterfront (Haass 2010). Accordingly, the water had no meaning for the image or the representation of the cities. The formerly existing close relation between port, working and living dissipated gradually. The spatial dissolution was additionally reinforced by the construction of fences and walls to mark the customs boundaries. Further impulses for the expansions of ports came at the beginning of the 20th century by the electrification, new information and communication technologies as well as the increasing economic growth (Schubert 2002). The ever-larger ships required the deepening of waterways, the exploitation of new areas and the construction of modern transshipment facilities. After this development had emerged over several decades, the use of oil- and later nuclear-power caused the progressive withdrawal of ports from the inner city, because new areas and handling technologies were needed. Simultaneously, many ports lost their importance as a result of the deindustrialization. The increasing international division of labor and the emerging competition intensified this process.

Further decisive changes for the urban port facilities were carried out in the 1960s, as container shipping came up and its economic benefits were recognized (Korkot 2008). This development also marked the final change of paradigm in the relationship between city and port. The new container ships needed considerably larger disposition areas and new railway as well as road infrastructures, only accessible far from the inner city. As a result, traditional “finger-peers” (Schubert 2002), quay sheds and warehouses no longer met the requirements. Therefore the port moved away from the inner city and settled in distant areas outside the city.

From now on the relationship between city and harbor was characterized by the juxtaposition of wasteland areas, inner-city port areas and harbor areas outside the center of the city. This

opened up the opportunity for cities to convert and revitalize their inner-city port and shore areas. Since the 1960s, especially the North American cities of Baltimore, Boston and San Francisco drew attention. Similarly, urban planners in Melbourne and Sydney as well as Shanghai and other Asian cities discovered the quality of the waterfront in the 1970s and 1980s (Hoyle 2000). Finally, further revitalization processes followed in the European cities of Amsterdam, Rotterdam, Bilbao, Barcelona, Marseille, Liverpool and Hamburg.

2.2 The revitalization of port and waterfront

The term ‘revitalization’ includes planning and processes on two levels. On the one hand revitalization comprises efforts to develop the port and relocate harbor uses. In particular the large seaports include not only activities of cargo handling; they are also often important industrial centers with shipbuilding, fishing, ferry- and cruise-facilities as well as military and marine functions. Thus, the ports help to maintain international value-added chains between companies in different cities and metropolises, promote economic growth and play an important role as significant employers (OECD 2014). It is crucial that the port and the city are still mutual interrelated and can only work together – less spatially, but strategically (Ducruet 2007).

On the other hand, the concept of revitalization from an urban planning point of view refers to the settlement of new uses such as housing, services, leisure and tourism on former, abandoned port and shore zones (Harms 2007). Behind this lies a complex field of different tasks of changes in purpose, reactivation and regeneration as well as remodeling and redesigning of the areas at the waterfront. In general, the term waterfront refers to “the interface between land and water” (Giovinazzi, Moretti 2010; Hoyle 2000). Further descriptions depict “the interaction between two different systems – land and water” (Giovinazzi, Moretti 2010) and the “gap between the city and the sea” (ibid.). The waterfront and its continuous development resp. revitalization are regarded as the most comprehensive challenge of the contemporary urban design. In this field, architectural and urbanistic experiments are combined with ecological and social measures of neighborhood development. The urban waterfront is able to produce new forms of housing, living together, public space and mobility. Using revitalization measures, former port areas will be integrated into the inner cities. Doing so, the inner cities can be enlarged significantly; attractive shore areas are available and accessible to the residents. Especially in rapidly growing metropolises around the world, high quality perspectives of internal compression and recompression arise. The objectives of sustainable construction and the protection of the natural resources are of high priority.

Due to this diversity the waterfront is faced with a variety of different conflicts. The cycle decay, neglect, planning, implementation and revitalization of old harbor areas is part of a complex network of different stakeholders and interests (Schubert 2001), where port authorities, urban planners, land owners and real-estate companies want to enforce their objectives. Accordingly, the areas on the waterfront are “trouble spots” (Pavia 2011), in which a balance between the differentiated positions needs to be established. Hence the revitalization projects at the waterfront are mostly focused on a long-term period, which can claim up to ten to twenty years from the initial planning to the completion.

Cities and metropolises with land reserves on the waterfront have significant potentials, to obtain a positive change of their image. Former industrial centers have the opportunity to convert themselves into attractive service and touristic centers with high amenity values.

3. Exemplary case studies

To illustrate the presented characteristics, the revitalization of the waterfront in the cities of Rostock and Auckland will be clarified. It is necessary to emphasize that each project has individual characteristics and conditions. Consequently, the selected projects vary in their size, the planned development period as well as the scope and the design of the planned measures. Therefore, the selection provides helpful insights in different objectives, approaches and solutions.

3.1 The Middle pier Rostock: New urban spaces between old and new streams

The district Warnemünde of the Hanseatic city of Rostock is a popular excursion and holiday destination in the German Baltic Sea region. It is characterized by maritime functions as a cruise port with quays, ferry-terminal and marina. The district Warnemünde also serves as recreational, residential, training and work site with an attractive natural environment.

In the northeast of the district of Warnemünde the middle pier is located between the Old Stream and the New Stream at today's estuary of the Warnow (figure 1). In the past decades the middle pier represented a ferry-railway station with important industrial and infrastructural uses. In the meantime these areas serve only as parking lots or appear as vacant spaces. Moreover, the middle pier is a central transport hub in the region with its connections to the regional and long-distance transport-system and the cruise port. However, the area is characterized by deficits in function and design. For this reason the middle pier fails to fulfill its intended purpose as the entrance of the seaside resort of Warnemünde and the Hanseatic city of Rostock.

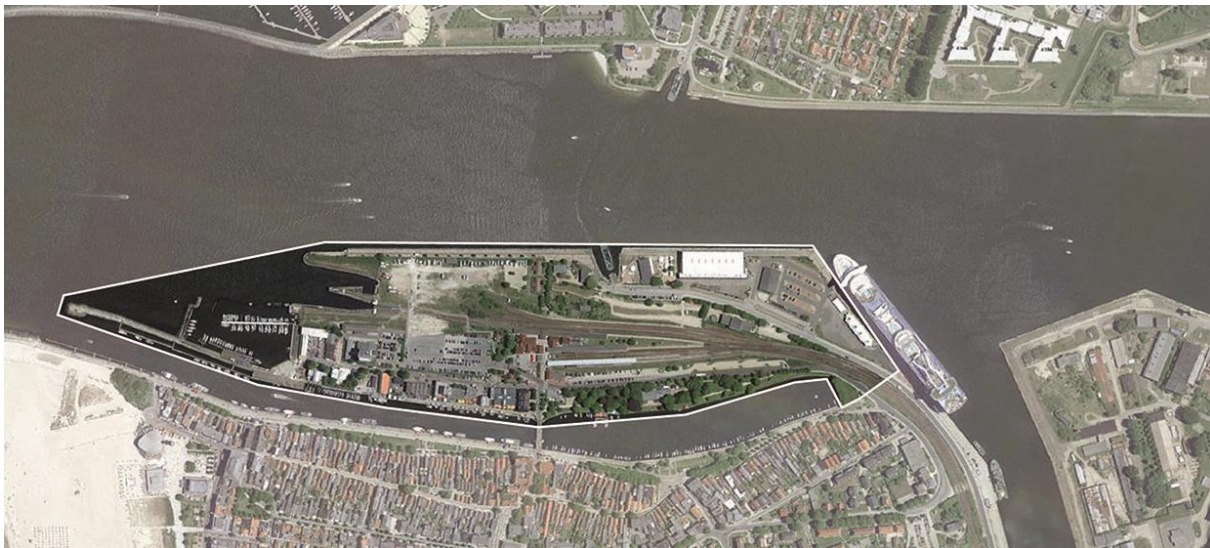


Figure 1: Aerial view Middle pier Rostock (google maps)

From an urbanistic point of view the current situation appears unattractive and shows no medium- or long-term development perspectives. Therefore the Hanseatic city of Rostock tries to restructure the middle pier comprehensively and to enhance the areas which formerly were used for the railway-ferry traffic (Hansestadt Rostock 2011).

Due to the functional interdependences of the middle pier, these objectives have to be considered in connection with the development of the entire district of Warnemünde. At the same time it is necessary to consider the existing various interests by different actors. For this reason a structural concept for Warnemünde was developed, which acts as a coordinated and politically legitimized management tool. This concept provides spatial ideas for essential areas of Warnemünde as well as development- and possible problem-solving approaches – while respecting the maritime character of Warnemünde. The different fields of action, like urban development, economy, transport, business, tourism, housing and infrastructure, are brought in line with each other. Furthermore, the 'forum middle pier' was established, which is involved in the planning process and consists of representatives of the local trade and industry association, the port development company of the Hanseatic City of Rostock, the chamber of trade and commerce, the tourist center, the local government and heads of the urban planning department. Moreover, with the municipal housing company WIRO Wohnungsgesellschaft mbH and the transport company Deutsche Bahn AG (DB), the two largest land owners of the middle pier are also involved in the planning process. In addition, the citizens of Rostock were also integrated in the planning process, e.g. by public events and discussion forums (Hansestadt Rostock 2014). Due to the intensive participation of the public

and the involvement of other actors from different areas of interest, a variety of different and partially conflicting interests could be taken into account and integrated in the planning. As a result of this complex development and planning process the strategy has emerged, to take advantage of the exposed location of the middle pier and to develop an attractive, representative and functional adequate starting point for the seaside resort of Warnemünde.

It is planned to enhance tourism and port-related uses such as sailing, excursion services, cruise services, lodging, retail and gastronomy for the 21-hectare-peninsula (Hansestadt Rostock 2011). In view of this specialization, the future uses of the middle pier will not be in competition with the maritime industry of the Hanseatic city of Rostock, but rather complement them. For a part of the planning area residential uses are conceived, whereas measures of flood and noise emission protection have to be considered (Hansestadt Rostock 2012). It is also necessary to integrate the existing infrastructural functions into the future urban structures and to develop the available space into water-related recreation and adventure areas, in order to receive an attractive and mixed use district (ibid.). In this way the importance of Warnemünde for the Hanseatic city of Rostock should be highlighted by its architecture and urban design.

The proposal for the urban development of the middle pier by Niemann + Steege focuses on keeping the character of the middle pier as a place of arrival and further develops its function (figure 2). Equally, an attractive quarter should be developed on the existing fallow sites that is supposed to appeal to tourists and also presents a lively residential area. To implement these objectives, the functional elements that constitute the identity of the middle pier, are conceived as reference points for a robust urban order, in which clearly profiled areas are connected with specific characteristics to a diverse and dense urban fabric.

Essentially, this design consists of a new harbor for boats and small yachts instead of the former dock for the railway-ferry, the preservation and enhancement of the existing cruise terminal as well as an urban, moderately dense residential area, which is suitable for cross-generational living. Moreover, it is intended to create a new market place, which has small shops for the local supply and represents the central point of the middle pier. Significant for this concept is also the promenade on the waterfront, which revolves the whole peninsula and lets the middle pier become accessible to the public. The aim is to develop the existing brownfield areas into highly attractive residential areas as well as to create new offers for residents and tourists. As a result, the middle pier will be totally enhanced, its maritime character will be maintained, an economic strengthening of the middle pier will be achieved and the structure of uses will be extended with the aid of the urban concept and the described long-term development strategy.



Figure 2: Site Plan "New urban spaces between old and new streams" (N+S with FSWLA and BPN)

3.2 The Auckland Waterfront Vision 2040

Auckland's port has based its existence around fishing-industry for many centuries. During the industrial revolution, like many other ports worldwide the port of Auckland underwent significant changes. After the first dwelling mound was built in the port area in 1852, further

dwelling mounds as well as tradesmen-industry, infrastructural facilities and maritime uses such as shipbuilding and warehousing followed in the years to come (Waterfront Auckland 2011).

As before, the port of Auckland is characterized by a high concentration of maritime industrial companies, numerous marinas and fisheries. The waterfront embodies the international gateway for trade and tourism in New Zealand. Hence the economic and strategic importance of the port of Auckland has still increased in the past (Auckland Regional Council, Auckland City 2005). Nevertheless, this area is partially marked by wastelands or underused spaces and urban deficits.

The responsibility for the planning process in Auckland lies with two municipal institutions: on one side the City Council as the responsible planning authority and on other side the Regional Council as the environmental protection authority and legal landowner of the site at the waterfront (Bogunovich, Wagner 2010). Together they have developed a variety of strategic development concepts for Auckland in the past. Noteworthy are the 'Auckland Waterfront Vision 2040' from the year 2005, the 'Auckland City Centre Waterfront Masterplan 2009', the 'Auckland Regional Plan', which was created in 2001 and finally the 'Waterfront Plan 2012'. In connection with this, 'Auckland Waterfront' was established in 2010, which operates on behalf of the local council as the development manager. Due to this allocation of responsibilities, the revitalization of the waterfront won't be detached from the complete city as a whole, but rather integrated into the urban fabric of Auckland. The revitalization process of the waterfront already started twenty years ago, but is still considered incomplete. The current and future revitalization measures extend from the Western Harbour Bridge with the Westhaven Marina to the Quay Park Quarter in the East of the harbor (figure 3), where the planning area covers an area of 168 hectares and 6.3 kilometer of waterfront.



Figure 3: Aerial view Waterfront Auckland (google maps)

In the course of the first urban development measures at the port, discussions for further development activities at the waterfront and an improved access to the coast came up within Auckland's population. In particular, residents demanded an appreciation of the waterfront with public facilities and cultural institutions (ibid.). In addition, forecasts predict that the population of the city will increase from currently 1.5 million residents to 2.2 - 2.5 million inhabitants by 2040 (ibid.). It was a concern of the city to comply with the suggestions presented by the residents and to respond to the growing population as early as possible.

The Waterfront Plan 2012 serves as the development basis for these goals. A particular focus is on the following vision: "A world-class destination that excites the senses and celebrates our sea-loving Pacific culture and maritime history. It supports commercially successful and innovative businesses and is a place for all people, an area rich in character and activities that link the people to the city and the sea." (ibid)

In order to realize this vision, strategic objectives are pursued, ranging from an appreciation of the ecosystems, on a publicly accessible waterfront with urban and architectural features, to the preservation and creation of maritime jobs. (Bogunovich, Wagner 2010; Waterfront Auckland 2011).

Based on these ambitious objectives, the Waterfront Plan provides a variety of projects along the waterfront. In this regard new promenades for walking and cycling with urban uses will be created, former shipyards will be enhanced and converted, green spaces will be set up and new buildings constructed (Waterfront Auckland 2011).

The Westhaven Area, the Wynyard Quarter as well as the Viaduct Marina represent previous key projects. The Westhaven Area takes up the typical maritime ambience and character arising from the Marina. Yacht clubs, boat rentals, sailing schools and charter services are located here, whereas the growth of the yacht port should be further promoted and its importance for the local shipping industry should be strengthened.

From an urban planning point of view, the Wynyard Quarter appears particularly interesting. Covering an area of 37 hectares with 3 kilometer of waterfront, brownfield sites will be revitalized and existing maritime uses will be integrated into a new concept (ibid.). The vision for the new quarter is a diverse mix of residential, retail, restaurants, cafés and successful establishments of the fishing industry.

For the future development, key concepts (figure 4) were derived, which will ensure that the Wynyard Quarter is integrated into the existing waterfront (Architectus 2007). These concepts include the Waterfront Axis, the Park Axis and the Wharf Axis. They take up the existing and future urban planning conditions and implement a new set of rules. In their entirety, the concepts are crucial for the architectural and urban design, the arrangement of public spaces and the development of the Wynyard Quarter into an urban environment with specific characteristics.



Figure 4: Urban Design Concept Diagrams Wynyard Quarter (Architectus 2007: 4)

Similar to the Westhaven area, new offerings for sailing will be created here, to strengthen the shipping industry as a crucial regional economic main focus (ibid.). Finally new office buildings for international companies with several thousand employees were built. The construction of hotels is currently in planning.

In the center of the Waterfront the Viaduct Harbour is located, which has already experienced revitalization measures several years ago. Thus, the Viaduct Harbour offers numerous jobs, residential areas and an additional marina. In the future, these uses will be complemented by further high-quality buildings. Also several facilities of the entertainment industry have settled here, so events will be held in the Viaduct Harbour on a regular basis (ibid.).

The development and construction of the Auckland waterfront are particularly long-term oriented. So the current long-term plans expect a completion of the project for approximately 2040.

4. Conclusions

The description of the revitalization processes in Rostock-Warnemünde and Auckland demonstrated the differences in the structure of decision-making processes, strategies and planned measures. Nevertheless and regardless of the size of the planning area, the geographical location, responsible actors and the development period, it is possible to derive

criteria that support the objectives of sustainable revitalization of the waterfront and capture the relationship between city, port and waterfront on its complexity.

Often long-term development strategies, which consider the interests of all actors, integrate the public in planning and decision-making processes and take into account not only the area on the waterfront, but also the complex relationship between city and waterfront, represent the starting point for the regeneration of former port and shore zones. Planning and decision making processes can lead to an agreed outcome if all actors are constantly informed and involved in the discussion process. A municipal company, which is also active in controlling the participation processes, usually operates the development management and marketing of the area. On this basis, the Waterfront is integrated into the urban fabric and interpreted as an elementary component of the existing city. For this purpose, maritime uses are located on the waterfront. This may consist of marinas, yachting ports and cruise terminals.

Another priority for the revitalization of former port areas is the placement of different uses. In this context, the precept of dense, small-scale mixed uses can relate to the level of the neighborhood as well as to the individual building. Often a combination of retail and services on the ground floor and residential spaces on the upper floor takes place inside the buildings. At the level of the quarter, residential and office uses, leisure, retail and services with differentiated priorities can be realized in a confined space. A separation of these sectors of life is deliberately avoided. Audience-related uses contribute to the diversity of offerings and an active life in the neighborhood.

The abundance of criteria listed, shows the demanding tasks of the revitalization of former port and shore areas. This can only be satisfied if the development projects are long-term focused and flexible. In the future it is necessary to keep an eye on the different cities worldwide and examine their ways to deal with the challenges of waterfront revitalization and what new experiences on this urban field of experimentation will be gained.

In terms of sustainability, urban and port development can't be considered separately. Especially the port authorities, political actors and planners are asked to promote networking of the ports themselves, to maintain their operability in the urban context and to establish synergies between them (ESPO 2015). The ultimate aim must be to strengthen the economic and industrial importance of the ports for the region in connection with the named recommendations and principles for the revitalization of former ports.

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WEALTH AND THE CITY: The Competitiveness of Port cities and Non-port cities

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1. Introduction

Port areas are the “interface” between the city and the sea shaping core-periphery relations by acting as spatial terrains for flows of people, goods and ideas. They are economic polities whose character is essentially maritime in nature (Girard L. 2013); (Ileri N. 2009); (Reeves, Broeze, & McPherson, 1989). Traditionally, city ports are linked to hinterlands by trade, and serve as the window or conduit through which the trade of the land is linked to the sea. The manner and content of influence which the hinterland exerts on the port city itself depend on the economic, political and social relationships that link them together. On the other hand, port cities are more than just passive economic funnels; they invariably exercise complex and profound influences on the hinterlands they serve. As spatial terrains for flows of people, goods, and ideas. Port cities are often vehicles through which political, cultural and ideological changes are transmitted to the hinterland (Tan T., 2007), (Ileri N., 2011)

According to the Economist Intelligence Unit, 2013, sixteen out of twenty of the top most competitive cities in the world are port cities. This is owed to the magnitude of expansion that the port has experienced since the introduction of the container in the late 1960s. Ports have however gone through a series of evolution as depicted by Notteboom and Rodrigues (2005). Shipping lines have now become the major actors in world trade in non-bulk commodities and because they operate on a global scale, they possess a more varied choice of port call than ever before. They have the choice of using more than just a single port for the facilitation of their door-to-door cargo movements making ports as pawns rather than dominant players in the worldwide transport system. The competitive position of a port is therefore not only determined by internal strengths (efficient cargo handling and hinterland connection) but is also affected by its links in a given supply chain. Ports therefore risk losing important customers. (Slack B., 1993); (Cullinane K. et.al. 2006); (Carbone and De Martino., 2003). This therefore leads to the question of whether port cities are still more competitive places, owing to the post Fordism view of Notteboom and Winkelmanns (2010) where economies of scale in ports are shifting towards economies of scope.

This paper therefore seeks to investigate the competitiveness of port cities based on the volume and value of FDI received in the cities. The map below shows the FDI inflows in port and non-port cities in 128 global cities with 71 port cities and 57 non-port cities.

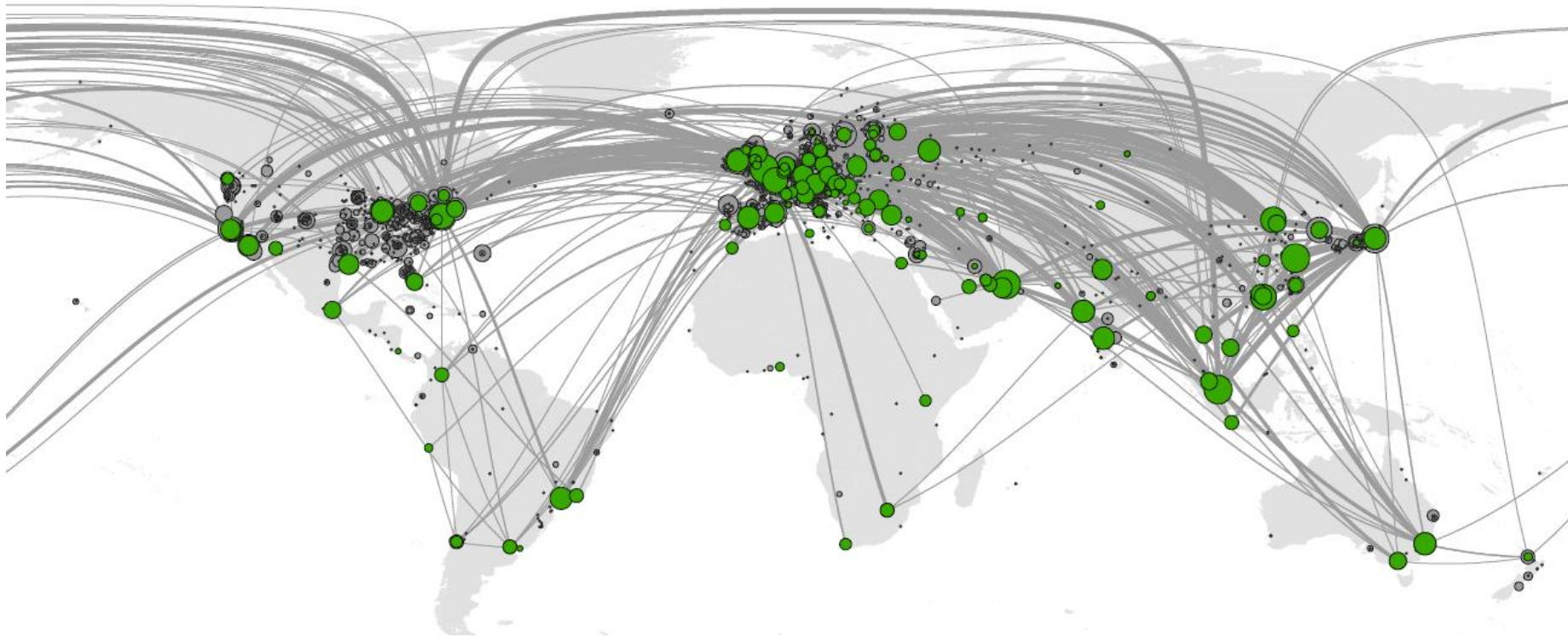


Figure 1: Inward Foreign Direct Investments in 128 global port and non-port cities
Source: Authors'

2. Competitiveness of Port Cities

Fagerberg (1988) defines the international competitiveness of a country as the ability to realize central economic policy goals, especially growth in income and employment (Arzu, 2003) without running into balance-of-payments difficulties. The World Economic Forum (WEC), (2010) defines competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country. The productivity level also determines the rates of return obtained by investments suggesting that more competitive economies tend to be able to produce higher levels of income for their citizens. Both definitions agree to the fact that competitiveness is based on growth of income.

Carbone and Martino, (2003) suggest that the competitive position of a port is not only determined by internal strengths (efficient cargo handling and hinterland connection) but also by its links in a given supply chain posing a risk of ports losing important customers. Cullinane and Wang et.al, (2006) add that shipping lines have the choice of using more than just a single port for the facilitation of their door-to-door cargo movements and ports therefore face the constant risk of losing its customer base.

The changes in production and distribution require ports to enhance the range of provision of logistics services capable of generating comparative advantages. Inland distribution is becoming a very important dimension of the globalization/maritime transportation/freight distribution paradigm. Customers are calculating the total logistic cost of transporting containerized goods, implying that current efficiency improvements in logistics for container transportation, are derived for a large part from inland distribution. (UNCTAD, 1996), (Notteboom and Rodrigue, 2005)

Notteboom and Winkelman (2001) describe the trends in port operation as post-Fordism where a shift has been experienced from the economies of scale in the Fordism theory to economies of scope whereby production companies adopt flexible multi-firm organization structures on a global scale. There is very little opportunity for ports to avoid the pattern of creation of logistic centres and new terminals and investing in more sophisticated infrastructure to meet the demands of the shipping lines if they wish to retain their competitiveness and to maintain their hub port status (Slack, 1993).

Investments in port Cities

As earlier stated, the definitions on competitiveness given by Fagerberg (1988) and WEC (2012), competitiveness are based on growth of income. This research considers Foreign Direct Investments (FDI) as the major determinant of growth of income in a city owing to research by Hosseini (2005) that the main concern of FDI is not necessarily the international mobility of capital, for it can in part be financed in the host country, as exemplified by the case of joint ventures but in addition to capital transfers, also includes a package that contains managerial skills and technical knowledge.

The research only focusses on Greenfield FDI which is perceived as a net increase in capital stock with corresponding stronger implications for employment and income growth (Mullen and Williams, 2005). A study conducted by Wang M. and Wong S. (2009) on the impact of Greenfield and Merger and Acquisition (M&A) in a city's economy shows that Greenfield investment is positively and significantly associated with economic growth regardless of the host country's level of human capital while M&As can positively affect economic growth only

when the host country reaches a sufficient level of human capital. The same study concludes that Greenfield investment can create additional employment and increases the level of competitiveness in the host country while M&A's may transfer ownership and control from domestic to foreign hands which add no production capacity. The World Economic Forum indicates that more competitive economies tend to be able to produce higher levels of income for their citizens. This study therefore only assessed the Greenfield investments received in the cities. The following chapter illustrates the method of research conducted.

3. Research Design

The research used secondary data from surveys conducted by FDI Markets, EuroMonitor Passport, World Bank, and the World Justice Project. The cities were selected based on availability of data. They included 128 global cities consisting of 73 port cities and 55 non-port cities whereby port cities are cities with a port function and non-port cities without a port.

Based on the pillars of competitiveness developed by the World Economic Forum (WEF) as well as previous literature on competitiveness and FDI (Anastassopoulos, 2007, Hosseini, 2005, Dunning, 2000, Jacobs, Ducruet, et al., 2010, Wall, Burger, et al., 2011, Merk, 2013, Agrawal and Khan, 2011, Arzu, 2003, Burger, van der Knaap, et al., 2013, Cheng, 2006, Cullinane, Teng, et al., 2005, Wang, Alba, et al., 2013, CHIANG and HWANG, 2013, Schwab, 2010) several control variables with indicators were identified as a measure of the volume and value of FDI.

Variable		Indicator	Source of Data
Dependent	FDI	No. of foreign investment inflows	FDI Markets
Independent	GDP	Real GDP Growth	Euro' Passport Data
	Human Capital	Percentage of Population with Higher Education	Euro' Passport Data
	Connectivity	International airport	Euro' Passport Data
	Demography	Population Density	Euro' Passport Data
	Governance	Corruption	World Justice Project
	Logistics	Logistics Index Rank	World Bank
	Shipping Connectivity	Liner shipping connectivity Index	World Bank

Table 1: Variables and Indicators

In this analysis, the volume and value of inward FDI into the cities was used as the measure of competitiveness of port and non-port cities. The independent variables used are similar to those used by Wong and Wang (2009) in their study on the determinants of economic growth. Their research concludes that Greenfield FDI leads to a percentage increase in per capita real GDP growth and can create additional employment as well as increase the level of competitiveness in the host country. A report by the WEC (2013) also outlines that more competitive economies tend to be able to produce higher levels of income for their citizens. In addition, the indicators used to develop the International ranking on competitiveness by the

Economist Intelligence Unit report (2012) place more weight on GDP size, pace of growth and income levels as a measure of economic strength of a city and as a key driver of attractiveness.

This study used Real GDP growth to measure the potential pool of investors and the abundance of capital present as also used by Wall (2011). In addition, the presence of an international airport in the city was used as a measure of connectivity. Governance was assessed based on the six dimensions of governance quality by Kaufmann (2004) which include voice and accountability, political stability, effectiveness of government, quality of regulation, rule of law and control of corruption.

The data, which was extracted from the World Justice project, provided information on rule of law, effectiveness of the government and control of corruption. Due to multicollinearity, control of corruption was selected as the indicator for governance. Finally, variables specific to ports were selected based on availability of data. The Logistics Performance Index was an overall score reflecting perceptions of a country's logistics based on efficiency of customs clearance process, quality of trade- and transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time. The index ranged from 1 to 5, with a higher score representing better performance. Data from Logistics Performance Index surveys was conducted by the World Bank in partnership with academic and international institutions and private companies and individuals engaged in international logistics.

The Liner Shipping Connectivity Index was used to capture how well countries are connected to global shipping networks. It was computed by the United Nations Conference on Trade and Development (UNCTAD) based on five components of the maritime transport sector: number of ships, their container-carrying capacity, maximum vessel size, number of services, and number of companies that deploy container ships in a country's ports. The index generated a value of 100 for the country with the highest average index.

The data was analyzed over a period of 9 years from 2005 to 2013.

Data Models

The number of FDI inflows into the cities were treated as count data- indicating the number of times a Greenfield Investment was established in the city within the nine years. A Negative Binomial Regression Model was applied for this study. The FDI was categorized into different sectors and activities.

A model used to represent the volume of FDI inflows into the port cities used the equations below

$$FDI_Count_{it} = \beta_1 RGDP_{it} + \beta_2 higher_educ_{it} + \beta_3 pop_density_{it} + \beta_4 employ_rate_{it} + \beta_5 int_airport_{it} + \beta_6 capital_{it} + \beta_7 corrupt_esitmate_{it}$$

Where FDI_{it} represented the number of FDI inflows into port city; $RGDP_{it}$ represented the Real GDP of port city; $higher_educ_{it}$, the population attained higher education; $pop_density_{it}$ represented the population density; $employ_rate_{it}$ the employment rate; $int_airports_{it}$ represented the presence or absence of international airport in the city as binary data; $capital_{it}$ also was analyzed as by binary data indicating whether or not the city was a capital

of the country; and $corrupt_estimate_{it}$ represented the corruption estimate at the country level; it represented the port city i at time t (2005-2009).

The same equation was applied for non-port cities as shown below with non-port cities denoted by j .

$$FDI_Count_{jt} = \beta_1 RGDP_{jt} + \beta_2 higher_educ_{jt} + \beta_3 pop_density_{jt} + \beta_4 employ_rate_{jt} + \beta_5 int_airport_{jt} + \beta_6 capital_{jt} + \beta_7 corrupt_esitmate_{jt}$$

The same model for port cities above was carried out but with port specific indicators to determine the exact variables, related to the port, that make a port city more attractive compared to other port cities. The equation used is as below where Z represented the port specific indicators which included Logistics Performance Index and Liner Shipping Connectivity Index.

$$FDI_Count_{it} = \beta_1 RGDP_{it} + \beta_2 higher_educ_{it} + \beta_3 pop_density_{it} + \beta_4 employ_rate_{it} + \beta_5 int_airport_{it} + \beta_6 capital_{it} + \beta_7 corrupt_esitmate_{it} + \beta_8 Z_{it}$$

A Hausmann Test was carried out on the model to check for the suitability of random effects or fixed effects. Fixed effects model was found to be most suitable to carry out the negative binomial regression analysis. The measure of value of investments in the cities was also carried out using a fixed effects regression model.

4. Results and Discussions

Arc GIS was used to develop a network of inward FDI in both ports and non-port cities as shown below



Figure 2: Inward Investments in Port Cities



Figure 3: Inward Investments in non-port cities

The table below shows the results of Negative Binomial regression carried out for the total number of inward investments received in port cities and non-port cities.

Total FDI			Total FDI	
	Port Cities	Non-Port Cities	Total FDI	Port Cities
Real GDP Growth	-0.72 (4.35)	3.60 (4.30)	Real GDP Growth	-0.45 (4.48)
Pop_density	-0.11* (0.04)	-0.03 (0.07)	Pop_density	-0.09 (0.05)
Employment_rate	-0.01 (0.01)	0.01* (0.01)	Employment_rate	-0.00 (0.01)
higher_educ	0.28*** (0.06)	0.15 (0.10)	higher_educ	0.27*** (0.06)
corruptionestimate	-0.17* (0.08)	-0.18* (0.09)	corruptionestimate	-0.21* (0.08)
Constant	2.41*** (0.35)	1.34*** (0.38)	Logt_index	-0.06 (0.09)
Observations	567	576		
R ²			liner_ship_conn	0.01* (0.00)
Adjusted R ²				
			Constant	2.29*** (0.45)
			Observations	559
			R ²	
			Adjusted R ²	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: Results with Negative Binomial Regression port and non-port cities and port cities with port-specific indicators

For the port cities, higher education was found to be positive and significant indicating that smart people are necessary to attract an increased number of FDI in the port cities. In non-port cities, higher education was insignificant but employment rate was positive and significant meaning that an increase in employment rate increases the number of FDI investments in non-port cities by 1%.

The same model was used only for port cities with port-specific indicators as shown in the table above. The results revealed that an increase in the number of people with higher education would increase the number of FDI in the cities. Liner shipping connectivity was also found to be positive and significant indicating that the more a city is connected to global shipping networks, the higher the chances of attracting increased FDI.

5. Conclusions

Port cities remain to be the most competitive places in the world compared to non-port cities due to their ability to attract increased inward FDI as a result of increased number of smart people. For the port cities to remain competitive, an increased connectivity to global shipping networks will make a port city more competitive than its peers.

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Port-City relation: integration - conflict - coexistence. Analysis of good practices.

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Synthesis

The relation between cities and port has evolved along history. Nowadays one of the main goals is to find a balance coexistence model. For that purpose several guides of good practice have been published. In this paper we analyze the main ones developed over the last 10 years in the European context. The strategies they proposed are studied in 6 different port cities, mainly the ones with a more intense relation, Genoa and Hamburg. These two cities share their urban space with an industrial port and could point out which ones of this actions could be more effective to reach the coexistence.

1. Introduction

The relation between cities and ports has been vastly studied in the last fifty years by experts from different fields, like urban planning, geography sociology and economics among others. Several evolution models have been developed focused on schematizing the relation in several stages. But which is the current state of the arts on this relation? What are the main strategies that we can use to improve it?

For the ongoing PhD investigation an analysis of several guides of good practice for the relation between cities and port, published in the last 10 years within the European contexts, was made. During this study we have noticed how the focus on the issue might be evolving. For the last three decades the main problem was the urban regeneration of urban waterfronts, nowadays we can see that the search for a balanced and sustainable relation has been increasingly raising more attention.

According to the model developed by Hoyle we are now in the 6th phase (Hoyle, 1989), when the relation between cities and ports has reached a certain maturity. In this model, and as we have seen in our coasts, many cities went through a process where they relocated the main port industrial areas outside the urban tissue. At the same time we also find cities that were not able to follow this process and the need for sustainable relation is even greater.

Port authorities (PA) have also changed in recent times significantly their approach to the relation with the city. In the last decades of the XXth century these powerful organizations took the first steps to relate with the city. They freed up obsolete central port areas, and began a

new stage in the relation (very often also benefitting from the real estate process, getting funding for the expansion of the port). Today they need to go further and develop new joint strategies that allow them to coexist with the city, particularly in the cases where the contact is more direct, and increase the social support and acceptance. This last issue is probably one of the main motivations for this change in the attitude of the PA.

We have assisted to the increase of conscious citizens protesting for their cities and how they can change, stop or difficult infrastructural projects. We live in a time where social pressure and mobilization is particularly active; we can see that this behavior can have particular importance in the port cities, where the port expansion project are very often controversial since they have an important impact in the territory and allocate a significant amount of resources. These projects can find strong social opposition although the ports still are economic motors for the regions that hosts them and create jobs, even if less than before.

The increasing need of getting the “Social License to Operate” (Dooms, 2014), has taken several PA to develop different programs to get closer to the city and its citizens. These initiatives mean leaving behind decades of enclosure, when the ports would act more freely without much concerns regarding the public image, the consequences and the negative externalities caused by its activities.

In today's world many ports still have a negative public image. The bad news related with the ports continue to have greater repercussion than the ones that are positive. Industrial accident or oils spills cause public impact and are associated with ports. On the other hand, according to OECD, the industries and activities there hosted have positive economic effects in the whole region, but most of the negative externalities, mainly related with pollution and traffic congestion, stay in the city where the port is placed.

2. Guides of good practice

In order to improve this situation and the synergy between cities and ports several guides of good practices have been released in the past 10 years. These publications are either focused in a particular issue, like the cruise tourism industry, or deal with the whole relationship problems. The guides are often the result of collaboration projects between different stakeholders related with the sector, very often under the coordination of an European program. The PA have been one of the most active members of these networks, and have collaborated with several municipalities, educational institutions or professional associations, like AIVP, ESPO, or RETE.

Since 2005 we have assisted to the publication of several guides, here we recapitulate some of them. The “SUDEST-Sustainable development of Sea Towns” project took place between

2005 and 2007, hosted in a URBACT working group. This program resulted in a publication with several key points regarding the relation between cities and ports. It was a joint project done mainly by several municipalities, but also one university and one PA participated. In the same period, and also in the frame of an European program (Hanse Passage-Interreg IIIC West Zone) the “PCP: Plan the city with the port, strategies for Redeveloping City-Port linking spaces” took place. In this case several PA participated, joining forces with a group of port cities and the AIVP. It also produced a guide of good practices, where we see a more balanced view of the relation and the need of compromise of both parts.

Later on, between 2007 and 2010, another project happened, also in a European program, the Interreg IIIB-North Sea. The name of the initiative was “Waterfront Communities Project”, and the result was “The Cool Sea Toolkit”. In this project several North European cities participated, and the focus was putted in the waterfront regeneration process. Almost at the same time, and based in the “People Around Ports” project, ESPO (European Sea Ports Organization) published the “Code of Practice on Societal Integration of Ports”. As the title says the main goal was to develop strategies that PA could follow in order to get a better social integration. For this publication was also very important the concept of Soft-Values, developed by Prof. Van Hooydonk (2007) early before.

In the year 2009 started the “CTUR-Cruise Traffic and Urban Regeneration”, a project also hosted in an European program, the URBACT II, that finished in 2011, with another publication indicating the possible actions that both ports and cities could take, in order to manage the effects of the growing industry of cruise tourism. In this project several municipalities from southern Europe participated, but also Helsinki and Dublin. The AIVP also joined this initiative, giving it expertise on the subject.

The most recent one is the one published by AIVP in 2015, in which the majority of the original strategies proposed in 2005 are resumed, although with new examples. Also there are new areas that are relevant, like the different possibilities for the energy produced in the port, that can be used for other purposes, or the renewable energy sources and how they can be implemented in port territories. Another important point is how they present the role of the PA from another perspective, as an organization in charge of managing the territory and also carrying the duty of taking care of the environment with active policies in favor of the ecosystem, not only developing a regulation for pollution. Finally other two subjects remain crucial for the relation, the improvement of the port-city interface and the communication issues, where greater improvements can be made.

After analyzing the different guides we could identify two main categories of intervention, soft and hard strategies. The soft strategies could be considered the ones that are more related

with management and communication decisions, without the need of a physical change. The hard strategies are the ones that imply projects with changes in the port infrastructure or territories, like the improvement in buffer areas, or the creation of facilities with mixed uses, urban and port. There are also some that integrate both, for example the port centers need a physical location in order to display their exhibition and activities, or the transition areas between port and city, that need management decision regarding the allocation of activities but imply at the same time changes in the physical structure.

3. Study cases

For the present investigation six European study cases were selected; they represent different realities of the European ports, and allow us to have a more complete image of the condition of the relation in the continent. These port-cities show us different perspectives, since their contexts are different, conditioned by diverse economic, political, and maritime conditions. They represent different models of territorial management, centralized or more autonomous and several geographical conditions, from flat territories to more complex topographies. The selected study cases are Oslo, Helsinki, Rotterdam, Hamburg, Genoa and Marseille.

	City size, inhabitants (metro)	Port traffic. Mill Ton (2014)	Passengers Mill. Including cruise and ferry	Direct and indirect value added to the GDP, in percentage	Number of Jobs (Percentage of the local jobs related to the port activities, direct and indirect)
Oslo	650 000 (0,95 mill)	5,7	0,48		
Helsinki	620 000 (1,4 mill)	10	10,9	5,3% (2007)	18 000 (4,3%) 2007
Rotterdam	610 000 (1,2 mill)	444	0,05 (cruise passengers)	13% (2011)	145 000
Hamburg	1,7 mill (5 mill)	146	0,6	14% (2010)	127 000 (10,8%)
Genoa	600 000 (1,5 mill)	52	2,75		60 000 (15%) province
Marseille	850 000 (1,7 mill)	78	2,5	3% (2012) PACA Region	38 000 (7%)

Table 1: Source: Port Authorities and OECD “The Competitiveness of Global Port-Cities” program. Missing information was not possible to be found before the submission of the paper.

In the chosen cases it can be observed that there are different “degrees of intensity” in the relation between city and port. There might be an initial temptation of cataloging these cities in real port-cities, the ones that still host the industrial port in the urban tissue, and other cities

that have evolved to shore or Waterfront-cities, since the industrial port was “expelled” from the city center. Considering the complexity of the port-city relation and the many different activities that can take place in a port, we believe is better to consider the relation in terms of degrees of intensity, and not in absolutes of whether a city is or is not a real port-city.

It is well known that all these cities have had waterfront regeneration projects, after the PA freed up the obsolete areas near the city center and in some cases the industrial port was relocated outside the urban core. Most of these operations also meant new source of financing for the PA in order to continue with the port expansion projects. When analyzing these Waterfront projects there is one possible criticism that could be made. Although in some cases the existing port industrial heritage was considered an important part of the projects, the result afterwards risk the disconnection from the port atmosphere that it could be founded before and from the one that is very often advertised in the real estate campaigns. What the citizens will eventually see is a *hyper designed* spaces with eventually a heritage element in a decontextualized area, with no relation with the local Genius Loci, giving very often the sense of *déjà-vu* and heading towards the monoculture of the city environment.

In the lowest degree of intensity of the selected port cities we could place the Nordic capitals that have relocated the main port activities to new terminals and territories outside the urban tissue. In Oslo this process is being developed since de 1990s, during this time the municipality decided to move the industrial port to *Sydhavna* at the same time that the *Fjordcity* project evolves (Gisle Rekdal, 2013). In Helsinki a similar process happened in 2008 when they relocated the main port to the *Vuosaari* terminal, 15 km from the city center (Oasmaa, 2013). Both cities have applied several recommendations explained in the guides, but mainly they have selected the port uses that are compatible with the urban routines and they have kept them in the city center. The activities are mainly the ones related with passenger transportation, like ferries and cruise ships, fishing and maritime sport and leisure activities. This same strategy has been used in several cases, allowing a transition from port uses to urban spaces. Particularly interesting in the case of Helsinki is the fact that although there is a new terminal for cargo, in 2013, as pointed by the OECD, 25% of it was still been transported through the terminals situated in the city center. This happened because very often the ferries coming from Stockholm or Tallinn carry both passengers and cargo.

In the other cases the relation is more intense and the issue of coexistence is more important. While in the first two mentioned ones the main concern is to keep the memory of the port and avoid the loss of identity, therefore the soft strategies might play an important role, in the other ones the hard or mixed strategies are also very relevant.

In the cases of Rotterdam and Marseille we can see that part of the port territories still keep some sort of contact with the city, although most of their hard port activities are far from the urban core. In the case of Marseille-Fos although the majority (95%) of the port territories are in the West Basin (outside the city of Marseille, in the neighbor municipalities of Fos, Martigues, Port de Bouc, Port Saint Louis du Rhône), the East Basin, near the city center, is a mixed cargo terminal that still works as industrial harbor. Nearby is where we can find the waterfront regeneration project, like the new cruise terminal, *Terrasse du Port*, very often used as example for the coexistence in the same building of port and urban fluxes.

Hamburg and Genoa represent the highest degree of intensity in the port-city relation among the selected study cases. Although both cities have already developed waterfront regeneration projects, the majority of the port territories are still placed next to the urban tissue. Another important issue is the fact that both, for geographical reasons, are unlikely to relocate or expand far from the urban core.

Since these two cities are the ones with a more direct impact in the daily life, the coexistence strategies that imply physical changes in the interface or the ones that look for an understanding with the neighbors are more important than in other cases. For this reason both cities will be more extensively studied in this paper, explaining what new strategies and projects have been developed in recent years and which are the threats for the aimed balanced coexistence with these operations.

Is important to consider the clear differences between both cases. In the first place the relation that citizens from both cities have with port is very different. If in Hamburg the pride of the people regarding this infrastructure is visible at first sight, in Genoa the situation is slightly different. When doing the investigation, members of the team that prepared the Genoa Port-Center and from the current Port Plan team were asked about this matter. Both answered that in their work they contacted locals, and the image was not totally negative but also not a matter of pride, although the port has been one of the strongest identity symbols and economic engines of the city.

Another important difference, apart from demographic, logistic and economic aspects, is the different national governing system that both countries have. In Germany, as also happens in other north European countries, there is a reasonable decentralized system, where the port is controlled by the city that hosts them, with a national coordination but keeping a considerable independence. On the other hand, in Italy, as in most Euro-Med countries, there is a centralized model regarding the national infrastructure network, including the ports. This issue implies that in these countries some of the main decisions concerning the organization of the port, and

particularly the ones regarding the allocation of economic resources, are taken in the capital city, far away from the port and in most cases even from the sea.

This problem affects negatively the relation between the city and the port, since is also perceived by the citizens as if part of the benefits that the port could produce will be handle by the central government. At the same time the fact that these decisions are being made without having a direct contact with the reality does not allow the necessary sensibility to the local issues in this decision making process.

4. Genoa

Genoa is one of the main ports of the Mediterranean Sea and the biggest in Italy regarding cargo tonnage. Last year it handled 52 million Tons and 2 75 million passengers. Is a crucial port for the economic development, not only for the city and region, but also the north Italian hinterland. Although there are intentions of unifying all the ports of Liguria under a single PA, for the moment they still operate autonomously from each other, depending on the central government. The city has 600 000 inhabitants and is the third vortex of the industrial triangle that forms with Milan and Turin. Is a historic port city that has played an important role in the history of the Mediterranean Sea.

As it is well known, one of the first waterfront regeneration projects in the Euro-Med took place in this city in the late 1980, early 1990. Just like it happen in many other cities, this operation consisted mainly in the regeneration of several port areas near the historic urban center. In this case the focus of the project was putted in public space, and leisure and cultural facilities.

In Genova we can find the “port center”, a very innovative project that is focus on explaining the reality of the port, in all its complexity and to change the ports cliché that very often stills remains in our society. This center uses infotainment, in order to reach the younger generations so they can start to see the port with different eyes and also to fight a secondary problem, that is the lack of specialized staff to work on the ports, since is no longer seen as an attractive place to have a professional career. This facility was created in 2009, with EU funding and several partners involved, among them, the PA, the province and the university. One of the main characteristic of this element is the background research and the implication of the port community for the development of the project. This institution is part of the port center network, organize by the AIVP in order to share practices that could improve the diffusion and improvement of the port image.

In the guides of good practice one of the main concerns is to be able to combine the urban and port uses, and to develop a strategy for the transition of activities among both entities. For example the ferry terminal of Genoa combines the port uses, areas for the passengers, ticket

sale and embarkation with a small shopping center, allowing a direct contact of the local inhabitants with the port on a daily day basis.

We can find the uses transition, between urban and port programs, in the area between the port cruise terminals and the regenerated waterfront Porto Antico, where several public buildings were placed. The University decided to move the faculty of economics to the waterfront to a restored industrial building. This is a compatible use, and also gives an appropriate context to some of the courses like maritime economy. Next to the faculty the “Galata Museo del Mare” was also build, a museum dedicated to the sea and all the subjects related to it. This facility is located in a restored building, a project by Spanish architect Guillermo Vazquez Consuegra. Another aspect that is also relevant is the fact that they used existing buildings that once belonged to the port industrial tissue. This strategy allowed a better integration and transition between urban and port territories, and gives another idea to the public from the port facilities, this buildings can still play an important role for the city’s cultural and educational structure.

4.1 Piano Regolatore del Porto di Genova

The topography of the region limits the expansion of the port and determines the strategy to follow in the next years, which is to optimize the port operating capacity to the maximum within the available territory. In terms of increasing the capacity of the port it will mean to change the geometry by doing several landfills between the existing docks in order to fulfill the needs of the new ships, reaching 18 000-22 000 TEU.

One of the challenges for the team developing the new port plan was that in the port territories is placed the airport. This element added complexity to the planning process, since it implies further limitations to the high and activities in the areas next to the landing strip.

Another particularity in the case of Genoa is the role played by the *archistar* Renzo Piano. This architect, responsible for the Waterfront project of 92, has continued to collaborate with the city and the port. In the last decade he has developed several projects that are important for both entities and the relation between them. In 2004 he delivered the *Affresco* masterplan for the port and the urban interface, a project that gave several ideas for the future that could be used in the Port development plan. Later on, also in the urban planning scale, he gave as a gift for the city the “Blueprint” masterplan. This new plan would provide several key ideas for the new *Piano Regolatore del Porto*, presented in 2015, and introduces several concepts that could improve the port-city interface.

One of the most interesting elements of the plan was the elaboration process. A team of architects led the work, aiming to make compatible the technical needs of the port with the city

demands, in a constant dialogue not just with the municipality but also with the communities affected by the new plan. The motto of the plan is to create value for the territory, making clear that the main goal is not only to respond to new logistic needs, but also to be related with the city and the region, in order to produce positive local externalities.

The plan has three main operational areas, the PO (Operational Port), the PP (Passengers Port) and the PU (Urban Port). As we can see from the three main subjects two of them have a direct relation with the city. In the PP the strategies continue with some of the already existing elements, like the integration between port and urban functions in the passenger terminal. Nowadays this integration already exists in the ferry terminals, but it should be intensified in the new facilities to be developed, like the *Silo Hennebique* and the future cruise terminal of *Ponte Parodi*, a project that has been on hold since 2001. As it has been mentioned before we can find this sort of project in other cases, like *Terrasses du Port* in Marseille. Another important concept of the PP is the idea of creating what they call “graft”, urban spaces directed toward the port, getting inside the port area, in order to allow a better visual connection with these territories.

The PU will work together with the PP, in order to improve the port-city interface. In this operational area is where the ideas of the *Blueprint* were more present. The main goal is to allow a permeability between both entities, mainly visually, taking profit of the possible elevated positions looking from the city to the port. For this purpose the sight points and the promenades along the water will play an important role. To reach this goal the pedestrian connection with the lighthouse, *La Lanterna*, could be an interesting example, since it allows a direct view over the functioning port, and at the same time connects the city center with one of the main Genovese landmarks.

One of the other goals is to allow the city to reach the water. In this direction is where one of the boldest ideas of Renzo Piano is used. The concept is to literally separate the port from the city, taking it towards the sea. In order to do that a new water channel would be created between the city and the harbor. This new



Figure 1 *Blueprint Plan*

channel would be partially navigable, and at the same time it would create a “blue” buffer area between urban and port activities. The idea of creating a visual connection would also be present, since this separation

could allow a new view over the different port territories. This new soft edge could be an interesting approach to the issue of boundary. The concept of creating a buffer areas is an idea that we can find several times in the guides of good practice and in other study cases, like for example in Hamburg or Helsinki. In *Vuosaari*, for example, in the new port Terminal there are significant green areas, which work as a filter between the city and the port.

5. Hamburg

Hamburg is placed in the north of Germany, in the Elb River, over 100 km upstream. The city is the second biggest in Germany with a population of over 1,7 mill, and over 5 mill in the metropolitan region, and an important industrial and service hub. This port is the main one in Germany and the third in Europe, considering the tonnage (second one if we consider the number of container). It is a historic port city, in which this infrastructure played a crucial part in its evolution and character, even since before the times of the Hanseatic League. Considering the limited territory one of the main challenges of the port is to develop within its boundaries, without the possibility of growing towards the sea. Even though this space limitation the PA has freed up around 300 Ha over the last 30 years, as pointed out by staff of the port strategy and development team.

In Hamburg several initiatives for the coexistence between the port and the city have been working for some time. The port hosts once a year one of the most famous port festivals, where the people can visit the waterfront and get in contact with the maritime world in several events. The number of visitors increases every years, and the image of the port is widely spread. Although it is one of the most used actions for the public relation strategy of the PA, and is also one of the recommendation that we can find more often in the guides, when some port and port-city experts from Hamburg were asked their opinion about this festival, they criticized it because very often it falls in a fake folklore that actually has the opposite effect from what has been made in the Port Center, and that is to perpetuate the idealistic cliché image of the ports. This contrast raises the question of what strategy is better, if to inform about the reality or to insist in a folkloric image of the port.

There are other cultural venues in the port areas, among them we could highlight two special music and arts festivals, the *Elbjazz* and the *Dockville*. Both events are important dates in the annual cultural calendar of Hamburg. The Elbjazz festival takes place in the shipyards of *Blohm+Voss*, one of the most important shipbuilders in Germany. The *Dockville* is hosted in *Wilhelmsburgs* Island, in a new green buffer zone. Several other soft initiatives are being taking forward in Hamburg. For example the port is responsible for cleaning the fluvial beach of *Övelgönne*.

In the guides of good practices the barrier is identified as one of the main issues that damages the image of the ports and causes direct negative impact in the urban environment. In order to avoid this effect they recommend to improve the architecture and landscape of these limits. Another option is to integrate buffer zones in green structures and to work with the design of the public space next to it. In Hamburg we can see another strategy different from the one present in the new port plan of Genova. In this case the port acted in the island of *Wilhelmsburg*, on the south part of the port and the city, where port and housing areas coexist. Next to the Elb river branch *Reiherstieg* where several silos are placed they transformed an industrial brownfield into the *Uferpark*, a new green area for the city. This new space, besides providing a new park, allows a new view point of the port activities, following one of the precepts of the guides of good practices, to improve the visual connection of the port

The development of a cycling route network along the harbor territories over the years it has allowed a different interaction between the inhabitants and the port. The importance of this initiative resides in allowing a more direct contact, and also grants different perspectives over several port activities. This project started some years ago and it has been well accepted by the general public. For this reason the port plan over the next years foresees the increase of the number of available routes and the improvement of the connections to the existing urban network.

Finally one of the most important issues that are mentioned in the guides is the need of collaboration with neighbors. This problem includes both hard and soft strategies, since is a process that starts with constant dialogue and the result can be translated in initiatives formed of physical and non-physical actions. In Hamburg we can mention two examples of this sort of operations, the first one regarding the combination of urban and port uses in nearby areas in the waterfront regeneration project of *Hafencity*, and the second one concerning the port expansion plans and the village of Moorburg.

On the first case the issue is the need to place near each other programs that from an initial point of view would be incompatible, such are industrial areas and housing projects. We find this situation in the east development of the *Hafencity* plan, in front of the *Kleiner Grasbrook* quarter. For this part of the project a new housing neighborhood is planned, and in order to make it compatible with the industrial areas several actions were taken. The first strategic point has to do with finding an agreement with the companies in the area, in order to reduce the intensity of their activities during night hours. The second measure was to settled with the developers architecture "rules" for these apartments. On the one hand regarding the planning and distribution of the interior space, on the other hand the compromise to use material that would allow a reduction of the impact of the acoustic pollution. Besides all these measures some guides recommend to include an information note in the rent or sale contract of the

houses, so people recognize that they are going to live in an area that has nearby industries with the possible consequences that it could bring.

The second example regarding the village of Moorburg is more complex and is a process that has been evolving since 1982, when this area was catalogued as port expansion area. The port reached an agreement with the inhabitants to extend the compensatory measures in case of expulsion until 2035. The municipality (owner of the port) has guaranteed a preference position for the houses that go to the market, in order to buy them. Also several limitations to new buildings and expansion of the existing ones have been created. The expansion of the port has been a controversial subject in Hamburg, like it is in most port cities, and as the guides point out, the common ground has to be reached by a constant dialogue. For this purpose the port of Hamburg has participated in the different “dialogue circles” developed by the affected citizens.

6. Critics

Unfortunately not all the measures here presented are functioning equally. In Genova the Port center has been closed since September 2014, when the management of the institution passed to the PA. Still is one of the most innovative in the world, and a very useful tool for the diffusion and explanation of the port. Also the new port plan is very ambitious in its scope and requires a high level of coordination with the municipality, something that very often is not seen in the port-city relation, for this reason we could point out a certain skepticism regarding its full application.

In Hamburg the main issue for the port-city relation is the future application of the city for the 2024 Olympics. After beating Berlin in the national race the city is looking forward to host the event, and develop a new waterfront regeneration project, in port territories. This new part of the city would be placed in the *Kleiner Grasbrook* area, where several functioning industries are placed. The new



Figure 2: Rendering Hamburg Olympic Masterplan

Source: <http://www.hamburg.de/>

development should be integrated in the masterplan “the Leap across the Elbe” which intends

to connect the north and south parts of the city. The main issue in this urban strategy is the fact that if the port has to free the concerned area it would have to find new territories to relocate the industries. In this case the agreement for the protection of Moorburg could be jeopardized, since it is the planned port expansion, and serious social issues could rise. To host such an event should be a good opportunity for urban development when done properly, however it is crucial to ensure the balance between the different sectors of the city and to understand the complexity and consequences of the urban planning decisions.

7. Conclusion

Several author (BRUTTOMESSO, 2013, HOYLE, 2013) have already pointed out that the integration among these two realities is no longer possible. The technical needs, the ISPS security codes and the general functioning of ports do not allow a relation as it used to be in previous stages. We can only aim at reaching a coexistence that allows both entities to endure and succeed. As pointed out in the AIVP guide of 2005, the alternative for port expansion in brownfields is an interesting option that could imply less impact in the existing ecosystem and greater social acceptance. For this development model the precepts for the coexistence pointed out in the guides are even more important, since very often these brownfields are placed in the existing urban structure.

We have seen several tools and strategies to form a sustainable relation between cities and ports. The main issue is if there is the will and decision-making capacity to take them into action. Ports and cities have to work together to find the balanced coexistence. The question is whether the governing teams are able to see the long term benefits and go beyond the immediate results. If they can understand the key role of the port in the port cities, not just as an economic motor but as an identity feature, in conclusion if they can see beyond the cranes and containers and understand the city behind and its importance for the port.

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Port-city relationship and climate change: actions for resilience

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Abstract

Although the synergy between port and city is usually perceived as a fact, the two elements of the port city have been developing separately, both spatially and functionally. Economic development, a vital component of the urban socio-economic system, can be considered one of the sectors where port-city synergy is crucial. However, at the same time port cities need to build climate resilience because of their high exposure to climate extremes. The value of assets at risk and the economic importance of port cities, influencing their extended hinterlands and the global economic networks, highlight the need for adaptation to climate change.

Following this rationale, this research studies 40 port cities in 16 countries around the world. By collecting the separate climate change adaptation actions of the ports and the cities, and correlating them with Relative Concentration Index (RCI), the study explores how the port-city relationship is linked to the adoption of distinct types of adaptation actions by the port authorities and local governments, in some of the most exposed port cities globally. The results reveal the dependence of the city's adaptation response on the port-city relationship, as well as opportunities for multi-level and multi-scale collaborations between ports and cities. The benefits of synergies extend from the local to the global level, starting from climate change and aiming to build infrastructural, social and economic resilience.

1 Background

Globally, the awareness for climate change and urbanization is growing, as their consequences become increasingly apparent. Coastal areas are specifically threatened by the consequences of both: while 40% of the global population lives within 100km from the coast, "between the 1950s and 1990s, there was a 50 per cent increase in extreme weather events associated with global warming" at coastal areas. (UN Habitat 2008).

Port cities are on the frontline of climate change and urbanization due to two reasons, their location on the coast and the concentration of population and economic activity. Currently, 16 of the 20 most populated cities in the world are port cities. According to Hanson et al. (2010) "40 million people (in port cities) [...] are currently exposed to a 1 in 100 year coastal flood event", while "by the 2070s, the total population exposed could grow more than threefold due to the combined effects of sea-level rise, subsidence, population growth and urbanization". The assets exposed in port cities globally could increase more than tenfold by that time (Hanson et al. 2010). As more than 80% of the global trade is seaborne (Becker et al., 2013) port cities are the main recipients of trading activity worldwide. Their importance for the economy of the regions is crucial, as they are key nodes for the global supply chain networks.

For the aforementioned reasons, the need for climate adaptation in port cities is urgent, and emphasizes the importance of new synergies to be developed between the port and the city. Synergies arise when the combination of elements has a greater effect than each element

individually, a fact that highlights the comparative advantage that port cities can have, when their two elements collaborate with each other. Creating new synergies between the port and the city can lead to multidimensional answers to the challenges that port cities face and to social, environmental and economic resilience.

2 Research description

Port cities are studied in literature with increasing interest, due to their spatial and economic characteristics. However, the response of port cities to their climate risk has not been recorded, and the factors that are connected to this response (such as port city spatial, functional, institutional characteristics) have not been studied. Moreover, the identified dual nature of the port city (figure 1) and the relationship between its two elements has not been associated with the adaptation response of port cities. This research aims to identify the current adaptation actions of port cities as a system that consists of a port and a city, and attempt this association.

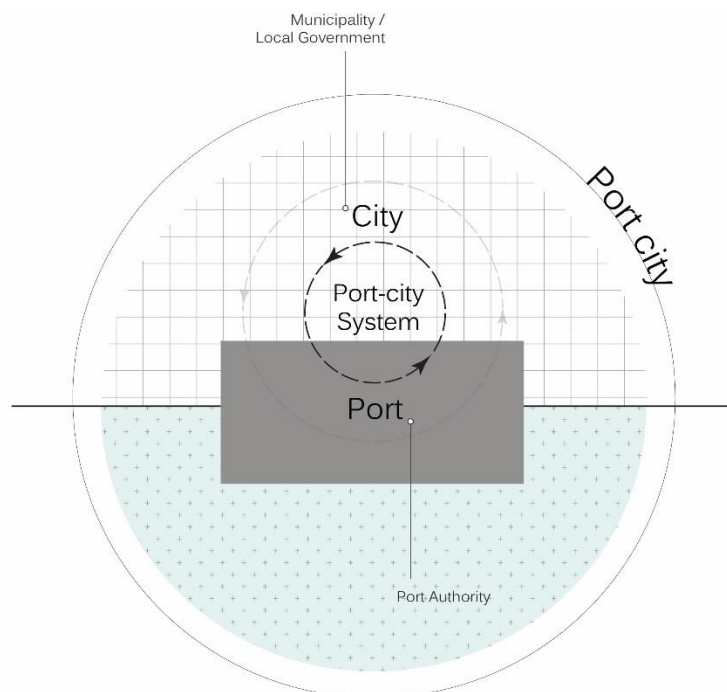


Figure 1: The port city system, comprising of two elements and two main authorities

However, as Hanson et al. (2010) mention, “data on [port city] defenses is sparse and no systematic analysis is possible”. The objectives of this research include the collection of data and combination of data sources to illustrate the current adaptation response (consisting of planned and implemented actions) of 40 of the most exposed port cities around the world. Subsequently, the adaptation actions will be analyzed in relation to the port-city relationship. The main research question of the study is: “how is the port-city relationship linked to the adoption of distinct types of adaptation actions by the PAs and the LGs respectively”?

Through exploring climate adaptation in the port city system and by relating adaptation response to the port-city relationship, the study aims in identifying opportunities for collaboration between the port and the city, the benefits of synergies and ways to optimize and capitalize on the adaptation processes.

3 The port city as a concept

3.1 *Port city: a port and a city*

As Ducruet and Lee (2006) argue, the port city is seldom being approached holistically in literature, but only unilaterally: either by the architect/urban planner's perspective, focusing on land use and urban design issues and ignoring the port area activity, or by the port specialist's perspective, focusing on port management, performance and economics - dismissing the urban environment that provides the ground for this port activity to evolve. Moreover, as the same authors highlight, most port city related research addresses specific case studies, the scope of which is led by the existence of the port and not by the city and port co-existence in a wider perspective. They identify a gap on literature regarding the relationship between the port and the city, at the same time arguing that these two aspects should indeed be studied separately as they require specific attention, but still under the port city concept.

However, throughout various study fields, the economic importance of port cities attracts more attention in relation to the rest of their attributes. As İleri et al. (2012) mention, in the past port cities used to be referred to as "cities of commerce" while nowadays Merk (2013) refers to them as "facilitators of trade". Due to the increasingly interconnected nature of the world economy and supply chains, the role of port cities as connectivity nodes in the global networks continuously enhances their economic profile. They are logistics hubs, maritime sector clusters, nodal points for tourism (Hanson et al. 2010; İleri & Mansel 2012).

The main drivers of this process during the last decades have been containerization and globalization. They have intensified the focus of ports on efficiency and performance, in order to be competitive in the global markets. The prioritization of port performance is also justified by the fact that ports are the main stimulants for the port city's economy and growth due to their strategic role between production, commodity networks and logistics infrastructure. But as a consequence, the port has been increasingly expanding and specializing, moving away from the city.

Under these changes, port cities have been mainly studied within the spectrum of port performance, urban size and urban redevelopment at the abandoned port areas in the city (Ducruet & Lee 2006). Ducruet & Lee utilized two of these characteristics, city population and the port's container throughput, to build the Relative Concentration Index (RCI), a matrix of port-city interdependence that illustrates the evolution of port cities from 1975, when the processes of globalization and containerization began, until 2005.

3.2 *Current constraints to the port-city relationship*

The growth or decline patterns of the port and the city and the dynamics between them have been varying and constantly changing throughout the years, as captured by the RCI index. The relationship between them is neither continuous nor temporary, their mutual influence can be stronger or weaker and they could even be two totally independent elements – at least for a specific period of years. This ambivalence is the indication of the port city being deemed to a constantly undefined balance between its land-based and its marine functions (Ducruet & Lee 2006). But as Ducruet (2006) overall explains through the RCI index, the interdependence between port and city has been since the 70's generally decreasing. The intensity of this port-city relationship decline varies between different world regions, but the trend remains global (Ducruet 2007).

One of the main determinants that affect this relation can be the steep increase of seaborne trade. Circumstances like this force the equilibrium between port and city functions to become "increasingly unbalanced" (Ducruet & Lee, 2006), including in its side effects the environmental degradation of port cities and confirming the long established view of port cities as busy, industrialised, polluted. This view is confirmed in recent research (Merk 2013),

which explains that the negative effects of ports are usually localized, while their benefits reach out to the regional and global level.

The attention drawn to the port from the city through demands for sustainability and integration with the local community constitutes an opportunity that port cities should seize, by identifying possibilities of collaboration between the port and the city regarding environmental issues, at first place. On a wider perspective, this would benefit both parties in terms of urban competitiveness and quality of life. Moreover, the environmental resilience of the port city, it could form the basis for social and institutional resilience, with the aim of facilitating the processes to achieve infrastructural and economic resilience (World Bank 2012). Especially for port cities, establishing the foundations for a resilient city could bring outstanding advantages.

3.3 Port cities at the forefront of climate change

In the research of Hanson et al. (2010) the authors calculate the exposure cost of 136 port cities that are the most vulnerable to flooding worldwide, using future scenarios for climate change, socio-economic conditions, natural and human-induced subsidence. In port cities, where the land of the port is susceptible to erosion as a result of port activities (UNCTAD 2011) and the seabed is constantly being developed by dredging disrupting the natural environmental processes (Becker et al. 2011), the risk of human-induced subsidence is increased.

As a result of the aforementioned risks, the total cost of assets exposed in port cities was calculated to be 3000 billion USD in 2005, corresponding to 5% of the global GDP of the year, and is expected to grow more than eleven times by 2070. An important argument that Hanson et al. (2010) raise, is that by taking into account the time requirements of implementing coastal infrastructure, which is estimated to 30 years, as well as delays in planning and implementation that arise from policy, governance and socio-economic factors, immediate action is necessary in order to avoid disasters from extreme climate events that can occur by the middle of this century.

To confront these risks and challenges, Hanson et al. suggest that there should be close cooperation of the national government, LGs, stakeholders and decision makers in order for more resources, expertise and engagement to be available for port city adaptation action. They emphasize that the willingness of governments and authorities to act effectively in order to protect population and infrastructure is related to financial issues but is not depended on the country's wealth: a motivated and proactive governing authority can identify and utilize other sources of financing in order to reach its adaptation and mitigation targets.

3.4 Climate change impacts on ports and cities

According to Nursey-Bray et al. (2013) ports face specific climate change challenges, with impacts that extend to environmental, economic and social dimensions. Moreover, the vulnerability of the port to these challenges results to the vulnerability of its surrounding settlement as well. The port sectors mostly affected by climate change are identified by Nursey-Bray et al. as the following five: environment, infrastructure, ports and people, occupational health and safety, supply chain and logistics.

The same authors mention that the impacts of climate change on cities can vary from physical to social or psychological and they can be indirect, or not immediately evident. An example is the hurricane Katrina in New Orleans, in 2005. Although the overall costs of the disaster were initially calculated to be 81 billion USD, later the amount reached 130 billion USD, with further yearly requirements of 100 billion USD/year to recover from the damage,

as impacts were increasingly becoming apparent. The importance of adaptation and building of adaptive capacity, regardless of their cost, is underlined.

4 Methodology

As a result of literature review, the research is dividing the port city concept to its two elements (port and city) and their relationship. This structure influences the choices on data collection and analysis methods. Overall, the research was conducted as combination of a survey and a desk research. A sample of 40 port cities was selected according to the availability of the required data for city adaptation actions and port-city relationship from secondary sources (carbonn Climate Registry and Ducruet & Lee, 2006, respectively). The 40 selected cities are among the 136 most exposed port cities as identified by Hanson et al. (2010).

The port adaptation actions were collected through a survey structured after literature review on port adaptation (Scott et al. 2008; Nursey-Bray et al., 2013; Ng et al., 2013; Becker et al., 2014) sent to the PAs through email. The response rate of the survey was 50% therefore the conclusions regarding the ports are inevitably based on a smaller sample, but on primary data. Statistical analysis was performed in order to reach conclusions for the correlations between the indicators. The data used in the research can be found online at <http://port-cities-climate-change.blogspot.nl>.

The chosen research methods exposed the study to specific challenges such as restrictions regarding the cities that can be included in the research, missing data entries in the databases, information available in various languages, different timeframes of data sources, accessibility and availability of specific persons within the PAs. These challenges were met with additional data collection from other sources and data triangulation. Moreover, due to the sample selection method, key port cities with ports of global importance such as Shanghai, Singapore, Rotterdam, Guangzhou, Antwerp, are not part of the research - however this provides the opportunity to study a wider variety of port cities and focus on ports which have not been extensively studied before.



Figure 2: The 40 port cities of the research

5 Data analysis: port-city relationship and port/city adaptation actions

The port-city relationship is represented in the analysis by the RCI values of 2005, as this is the most recent calculation. As mentioned before, the RCI describes the port-city relationship (the dependence of the city on the port), therefore higher RCI values indicate a strong port-

city relationship in terms of a prevailing port and a city influenced by the port's performance. The port-city relationship and adaptation actions analysis is done by correlating the RCI of the selected port cities to the total of adaptation actions of the port and the city respectively, and also to the number of actions per category. In total, the RCI is correlated to eight types of port actions and eight types of city actions, and also to the totals of port and city actions.

The results from the 18 correlations (table 1) indicate that the relation between the RCI and the total of port adaptation actions is not significant. However, the correlation of the RCI with the total of city adaptation actions but also with some of the specific action types (action plans and reports, infrastructure, terrestrial ecosystems) is both positive and significant according to Spearman correlation (table 1). What can be inferred is that the higher the dependence of the city to the port is, the more adaptation actions are taken by the LGs. This is especially confirmed regarding action plans and reports, infrastructure and terrestrial ecosystems actions.

Although the rest of the correlations do not indicate statistical significance, we can mention the trends observed. Five out of eight of the port actions types generate a negative trend line when related to the RCI: technological, soft and hard engineering, management, policy and action plans. These types of actions appear less frequently in port cities with higher RCI in the sample. Similarly, city early warning systems / disaster management actions appear less frequently as RCI values increase. All of the other city action types (coastal zones / marine ecosystems, food security, health, water resources) increase along with the RCI, even if there is no statistical significance of their correlations.

Port city actions	Types of actions	RCI	
		Pearson correlation	Significance (p)
Port actions	Total port actions	0,048	0,876
	Technological	-0,058	0,850
	Soft engineering	-0,025	0,935
	Hard engineering	-0,036	0,907
	Design & maintenance	0,122	0,692
	Planning	0,317	0,292
	Climate mapping and risk assessment	0,214	0,482
	Management	-0,014	0,965
	Policy and action plans	-0,126	0,681
City actions	Total city actions	0,527 ***	0,000
	Action plans and reports	0,540 ***	0,000
	Coastal Zones / marine ecosystems	0,230	0,153
	Early warning systems / disaster management	-0,107	0,509
	Food security	0,228	0,157
	Health	0,029	0,857
	Infrastructure	0,363 **	0,021
	Terrestrial ecosystems	0,468 ***	0,002
	Water Resources	0,203	0,210

Table 1: Correlation of port and city actions with RCI (* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$)

Overall, despite the context specific nature of adaptation and the wide geographical and socioeconomic range of the port cities examined, a difference between the “sensitivity” of the port and the city to their relationship is observed. Regarding the port, the relation of the actions with the RCI is weak and lacks a clear direction. However, regarding the city, the correlation of the city total actions but also of specific typologies are strong and significant.

This observation can be interpreted from both a positive and a negative perspective. Starting from the negative aspect, from this result we understand that the more the city depends on its port, the more adaptation actions it adopts. There is an underlying inability of the LG to realize the climate risk to which the city is exposed, unless there are eminent economic risks and possible consequences on its main economic asset, the port, involved.

On the other side, the optimistic observation we can make is that the more dependent the city is on its port, the more its attention is inevitably focused on the quality of infrastructure, but also to actions with mitigation co-benefits (such as terrestrial ecosystems actions) and plans for sustainability and resilience. Therefore, the competitive development and global trading perspectives of the port could affect positively the overall adaptation response of the city. However, this is not the case regarding action types with more social character such as health-related actions, which appear as the least correlated to the RCI. We can assume that the increase of adaptation awareness in the city can gradually extend to all sectors, and it is certainly optimistic that the performance of the port, which is the main priority of ports worldwide, can trigger adaptation activity for port cities.

Although the interdependence of the port and the city regarding climate change adaptation indicates the positive outcomes that the collaboration between them may entail, part of the data collection (2 questions in the questionnaire regarding the relationship between the PA and LG) lead us to conclude that this collaboration is not happening at a confident level. Although the importance of synergies seems to be identified and some institutional relations and collaboration between PAs and LGs already exist, in depth analysis regarding institutional structures and the different types of PAs and LGs in their local contexts is required in order to reach robust conclusions on this subject.

6 Towards new port city relationships

6.1 The equilibrium between the port and the city

The equilibrium between the port and the city regarding climate change adaptation leans towards the side of the port, as the results of this analysis indicate. There is indeed a considerable interdependence between the two elements in the port city system, evident mainly from the perspective of the city, as it seems sensitive to its dependence on the port in ways that affect its climate adaptation response. Moreover, as Merk & Dang (2013) note, the prosperity of the port city seems to be highly related with port activity. This confirmed relation between port and city is the opportunity on which port cities can focus and capitalize on, through partnerships between port and city.

The need for partnerships between different parties and stakeholders (UNCTAD 2011), collaboration of the port with the local / regional / national governments (Hanson et al., 2010; Nursey-Bray et al. 2013), and the knowledge exchange in international level (Nursey-Bray et al. 2013, UNFCCC 2007) in order to approach climate change adaptation in a holistic and significant manner are also underlined in literature. As Pesquera & Ruiz (1996, p. 15) mention, “the durability of city ports calls for a new commitment between ports and cities”. The special identity of port cities should be conserved and remain obvious, in order for their dynamics to be utilized and the port city system to function competitively. The same authors, concerning the relation between the port and the city, recommend the following: “the reformulation of the existing parameters of their relationship and understanding, the alteration of predetermining equilibria and the construction of a new framework for their relationship” (Pesquera & Ruiz 1996, p. 15).

6.2 Port-city synergy

Synergies are required and can be introduced through policies, planning, financing and investment mechanisms. As climate change is a multidisciplinary and complex issue, it can only be addressed successfully with alliances that cut through various scales and levels of the human – environment interactions (Cash et al. 2006). Interactions deriving from the overlaps of the spatial, temporal, jurisdictional, institutional and managerial scales could be utilized and lead to close collaborations within the port city system and effectiveness in decision making and implementation processes, while addressing institutional bottlenecks.

Alignment of the local, national and international governments and organizations, synchronization of actions, projects and strategies, and reforms of laws and regulations would enable the implementation of climate change adaptation and enhance its impact on both the local and global level. Multi-level and multi-scale (Cash et al., 2006) collaborations in the port city system could take advantage of the close relation between the port performance and the city adaptation response, as was identified in the data analysis, and build on this mutual interest.

Starting from synergies on planning, climate change adaptation in both port and city could be addressed more efficiently. For example, planning for improved and well-connected infrastructure can advance the port as a supply chain hub, as well as reduce the negative spillovers of traffic within the urban environment. This would provide mitigation co-benefits (such as reduced air pollution) that would reflect on the quality of life and health of the population, providing the city with sustainability and resilience advantages.

Climate mapping and risk assessment as a joint venture from both the port and the city could provide a clearer picture regarding the specific climate risks and needs for adaptation. Being more confident on climate change consequences could reduce budget uncertainties and facilitate financing of actions and projects. The synergy on climate mapping and risk assessment could be combined with efficient collaboration on early warning systems design and disaster management mechanisms extending to both port and city.

Sustainability and resilience can also be built through port and city synergy on resource management through coastal zones, marine and terrestrial ecosystems actions. Green and blue infrastructure could help in protecting or restoring the city's coasts and natural resources, bringing environmental, economic and social co-benefits (World Bank & IHS, 2015). According to literature a competitive urban environment with a strong port city identity would lead to additional economic development. The cautious blending of urban and maritime functions, such as introducing urban functions closer to the coast and port, or water and maritime elements in the city through green and blue infrastructure, could provide a wider interface between port and city for building new frameworks of understanding and collaboration.

6.3 Future research

Further research on port-city relationship indicators and the institutional / governmental structures of the port city system, as well as detailed collection of port cities' adaptation actions is required, in order to fully understand and reach concrete conclusions for decision making on climate adaptation in port cities. The climate adaptation actions that are already planned or implemented as a joint effort of the PA and the LG should be identified and analyzed as well, as evidence of existing port and city collaboration on climate adaptation.

The creation of a database or platform that collects, classifies and describes port adaptation actions would raise awareness on the subject and facilitate future research while providing useful information for the adaptation response of ports around the world. Such an initiative would encourage PAs to define their climate adaptation response and could provide visibility to synergy opportunities between ports and cities.

7 Conclusions

The agility of cities plays a crucial role in defining the trajectories they will follow under climate change, urbanization and growth uncertainties. However, port cities possess all the necessary resources to be among the “winners” of these circumstances, and lead urban transformation processes in an innovative manner, through new synergies between the port and the city.

The principal advantage in favor of port cities is the strong interdependence that still exists between their two elements, even when functioning separately. Specifically, the strong correlation of the port-city relationship as expressed by the RCI index, with the city adaptation actions provides many opportunities to build sustainable, resilient and competitive port cities. Several types of adaptation actions can provide fertile ground for port and city synergy towards risk reduction with multiple co-benefits varying from economic growth to social coherence.

In an increasingly competitive and interconnected world, port cities owe to capitalize on their unique assets as well as on their unique risks in order to build resilience, promote their economy, provide competitive living environments and contribute to innovative practices on urban development.

Note

The research on which this paper is based on was conducted in the context of a master's thesis on Urban Management and Development at the Institute for Housing and Urban Development Studies (IHS) Erasmus University Rotterdam in May-September 2014, supervised by Stelios Grafakos. The thesis included analysis of additional port city attributes (climate exposure in monetary terms, TEUs, city GDP per capita, population, port size, type of port authority). The current paper focuses on the port-city relationship aspect, while upcoming publications will present the climate change exposure and other aspects. The data used in the research can be accessed online at <http://port-cities-climate-change.blogspot.nl>.

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The Economic Port City Interface of Ghent, Belgium

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Abstract

The economies of scale of the maritime transport industry is creating a diverse set of long term problems. The infrastructure costs are rising, employment rates are declining and the local capture of the created value added is low. Therefore, the OECD called to re-establish the relations between port and city to achieve a more resilient and competitive port city complex. However, before these re-establishments can be achieved, the port city has to be theoretically redefined taking into account the four different port city interfaces: economic, social-cultural, institutional and spatial. In this paper a conceptual model and methodological framework is constructed to understand the port city assemblage. Based on these, part three examine the economic interface of the Belgian port city of Ghent, an atypical ARA port with minor transport activities and a high share of value added by industrial activities

1 Introduction

At some point in history, ports became perceived as a place of transport instead of a place of production. Although the attraction of ships and their cargo always will be an important aspect of a port, long term problems are rising. In a recent report, the International Transport Forum (ITF) in collaboration with the Organisation of Economic Co-Operation and Development (OECD) questioned the current trend towards ever bigger cargo ships. This trend forces ports to invest constantly in their port infrastructure (port terminals, docks, dredging, etc.). The economies of scale of these so-called 'Mega-Ships' on ports is becoming a disadvantage instead of an advantage (OECD/ITF, 2015). First, more ports are having increasing (i) spatial expansion problems leading to important ecologic-economic dilemmas (Van den Berghe & De Sutter, 2014) and to spatial conflicts between port and city (Wiegmans & Louw, 2011). Second, the maritime transport industry (ii) lacks innovation and has (iii) low employment rates. Since the introduction of the container in the 1960s the maritime transport industry processes became highly standardised and automated (Levinson, 2010). The only way to gain profit is to enlarge the amount of cargo by developing new port areas, enforcing the first long term problem. Third, a lot of (iv) the benefits spill over to other regions. Nevertheless these economic spill overs are important, they remain relatively difficult to measure plus they do not justify the existing dichotomy between global chains and local pains (Hesse, 2006). As Jacobs (2007) states, 'the creation and enhancement of value at a certain location is literally worthless when it is not captured'.

Therefore, the OECD (2013) called to re-establish the links, or interfaces, between ports and cities in order to increase the competitiveness of port-cities. Historically, port and city had strong symbiotic relations. These began to erode from the second half of the 20th century on (Bird, 1963). The separation of port and city is driven by the worldwide competition between ports following the growing economic globalization. Briefly summarized, ports are obliged to react as fast as possible on the ever changing wishes by transnational port actors, this to obtain or increase their competitive advantage. If not, port activities could decline rapidly. This global competition of ports resulted in the disappearing of the tight interdependence of different port city interfaces: (i) spatial (Lee, Song & Ducruet, 2008), (ii) economic (Atzema, Boelens & Veldman, 2009), (iii) social-cultural (Boelens & Taverne, 2012) and (iv) institutional (Brooks & Cullinane, 2006; Jacobs, 2007). Latter is the most recent one. Instead of city governments governing both the city and port areas, almost every important port is governed by a more or less independent port authority authorized for a delineated geographical port area (Verhoeven & Vanoutrive, 2012).

The establishments of port authorities enforced the focus of ports on cargo activities. On the one hand, ports are ranked based on their annual throughput figures, this expressed in million tonnes or in number of containers (AAPA, 2014). Port use their ranking as an important communicative tool (see annual reports of Port of Antwerp, 2014; Port of

Rotterdam, 2014 among others). If a port wants to climb the ranking, it thus has to attract more cargo activities this by investing in their infrastructure. Examples of these are the new container terminal 'Maasvlakte 2' in Rotterdam (Port of Rotterdam, 2014), the 'Deurganckdokklock' in Antwerp (Port of Antwerp, 2014) or the dredging of the Elbe river in Hamburg (Hamburg port Authority, 2014). On the other hand, port authorities are companies which have to make money. Their business model is based on taxing ships and leasing grounds (Colpaert & Loyen, 2011). Thus, the ranking and the specific business model of port authorities are reciprocal enforcing.

Nevertheless, the establishment of port authorities led in general to economic success stories. Even in regions where different competing ports are relatively closely situated, ports are doing well. One of these interesting port city regions is the 'ARA region', part of the Euro Delta (Figure 1). ARA refers to the Dutch ports of Amsterdam¹, Rotterdam² and the Belgian port of Antwerp, respectively the fourth, first and second biggest port of Europe in terms of annual throughput (Merk & Notteboom, 2013; OECD, 2013). Next to these three, other important ports in the ARA region are the Dutch ports of Dordrecht, Moerdijk and Zeeland Seaports³, and the Belgian ports of Ghent and Zeebrugge (Jacobs, 2014). In 2012 the direct value added by the Dutch and Belgian ports was respectively 22,2 and 16,4 billion euros (Mathys, 2014; Merk & Notteboom, 2013).

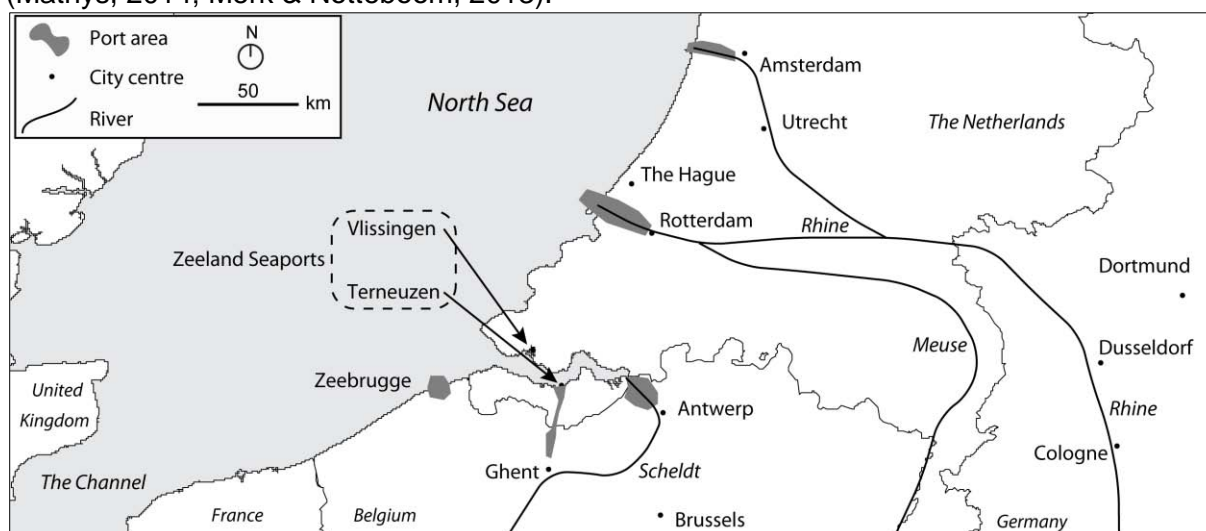


Figure 1: The Euro Delta and ARA ports

Before re-establishing the links between port and city, first we need to clarify theoretically how the port city is perceived. In other words, 'What do we understand by the port city?'. In the first part of this paper, a brief overlook will be given of how port city research approached the port city. It will be shown that today port city research is still following the structuralist paradigm, used in port city research since the 1960s. However, it will be argued that the structuralist analysis method is insufficient and even self-fulfilling. It neglects contextual factors (Jacobs, 2007, pp. 153-154), and forces that the port city development follows a rationalised uniform trajectory. In contrary, instead of an 'Any port', there are many ports or different port city interfaces. This paper focusses in particular on the economic interface. There is a real need to unravel the complexities of firm-place relationships in a more theoretically sophisticated and empirically rigorous manner (Dicken, 2002). This part result in a conceptual model and methodological framework to examine the economic port city interface. In part three, the port city of Ghent, Belgium, will be examined. The objective comparison (Ducruet & Jeong, 2005) of the different ARA ports shows that the port city of

¹ Dutch ports of Amsterdam, Zaanstad, Beverwijk and Velsen/IJmuiden (Ministerie van infrastructuur en Milieu, 2014; Port of Amsterdam, 2014)

² Dutch ports of Rotterdam, Schiedam, Vlaardingen and Maassluis (Ministerie van infrastructuur en Milieu, 2014)

³ Zeeland Seaports is a fusion of the Dutch ports of Flushing and Terneuzen

Ghent generates a relative high direct value added, although there are only minor maritime transport activities. The share of value added per sector, shows that more than half of the total value added is generated by the industrial sector (Figure 2).

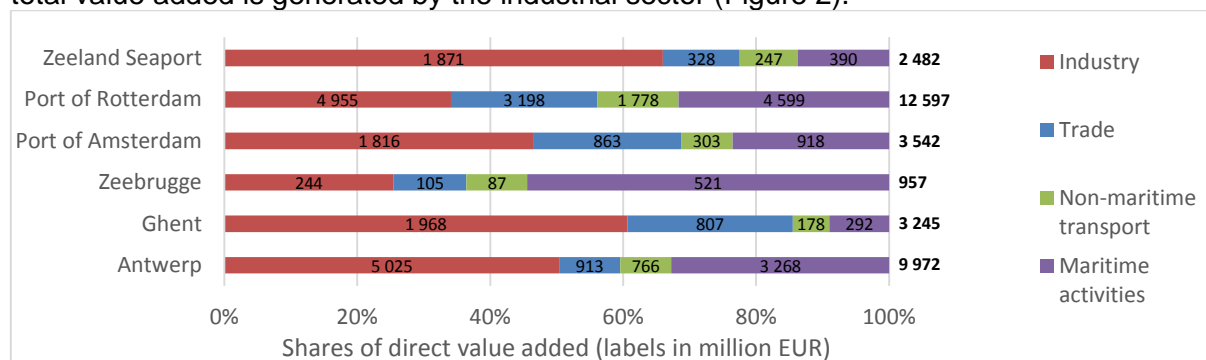


Figure 2: The shares of direct value added by sector by port in the ARA region, year 2013. Own calculations based on De Vlaamse Havencommissie (2014); Mathys (2014); Ministerie van infrastructuur en Milieu (2014)

As researchers are searching for new connections between port and city (OECD, 2013), this to become more 'sustainable' and to be able to capture the value added locally, the port city of Ghent could provide us with some interesting ideas. This paper concludes with a discussion of the relevance of our findings for theory and practice, and suggest avenues for further research.

2 The self-fulfilling structuralist models

2.1 The historical-morphological models

Because the maritime transport industry became global since 1950, the spatial changes of port areas became too. Especially port areas in the developed world, thus also ports in the ARA region (Atzema *et al.*, 2009; Smits, 2011a, 2011b), began expanding downstream and installing similar port infrastructure as docks, terminals and locks. These apparent universal spatial changes attracted the attention of especially geographers (Daamen, 2007; Olivier & Slack, 2006). One of the first geographical conceptualisation was done by the Any port model of Bird (1963). This model remained highly influential during four decades of theoretical and empirical understanding of the port city (Slack & Wang, 2002). Especially the Port City Interface Model of Hoyle (1989) is developed using the same paradigm (Daamen, 2007; Olivier & Slack, 2006). Instead of focusing only on port areas, the Port City Interface Model focusses on the changing spatial zone in between port and city.

Both models have a similar first phase. They both comprehend a sort of former or medieval coherent spatial port city complex. However, how this complex was constructed, why port and city were intertwined and how this endured for centuries is not explained. This phase lacks a more thorough analysis of the port city complex. It neglects specific context dependent economic, social or cultural characteristics. They use an abstraction of this and only focus on the spatial aspect.

2.2 The self-fulfilling prophecy of the structuralist definition

The reason why these models define port and city spatially different is a consequence of the prevailing structuralist paradigm at that time. Structuralist researchers believe that all structures, as for example the port city, can be understood if all the elements of the system, these are thus the port and city, and their relation, this is the port city interface, are well known and studied, no matter how diverse their superficial appearance is. Going back to the 1950s and the ongoing worldwide spatial evolution of port areas, and especially the spatial downstream movement of port areas, researchers soon concluded that port and city are separated things and are a universal thing.

The specific historical cross over between on the one hand the spatial changes of port areas and on the other hand the structuralist analyses is path dependent and shows even a certain level of self-fulfilling capacity. One could argue that the call of the OECD (2013) to improve

the relations between port and city will just be a new phase of the structuralist historical-morphological models of the port city. Following this argumentation, phase 1, which is the co-existing 'medieval' port city, till phase X⁻¹ would explain why port and city grew separately. Phase X would then become the phase in which port and city grow towards each other again. However, the lack of context sensitivity inherent to the structuralist paradigm, will struggle to find the solutions. As Jacobs (2007, p. 154) states "Although the competition between ports might lead to some convergence (e.g. stronger role of the private sector in port operations, development, finance and management) it will not necessarily lead to exactly similar institutional structures or a universal model because of contingent factors such as local politics, the role of the (nation-) state, history and the embeddedness of firms and communities". Therefore, it can be questioned if the contemporary specific separated institutional port city structure, which is based on the structuralist definition of the port city, will be capable of dealing with the, not fully understood, more dynamic interfaces of the port city.

Instead of defining port and city spatially and out of this definition determining which are the port or urban actors, the opposite way could provide new insights. By first looking which are the main port city actors, how they are related to each other and what spatial embeddedness this generates, could help us understand how we can improve the relationships between port and city (Figure 3).

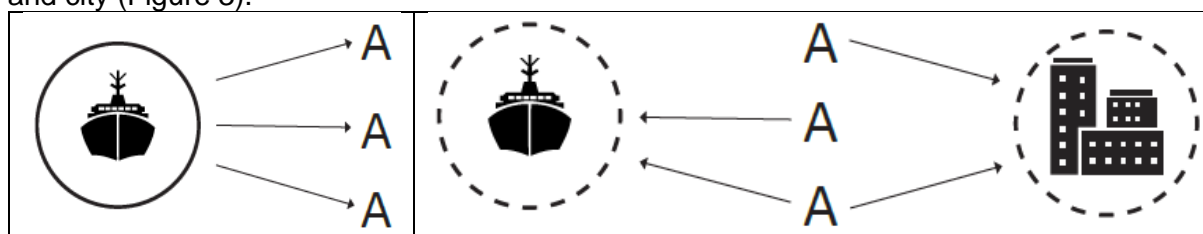


Figure 3: The structuralist spatial definition of port actors (l) and the definition of the port city based on actors (r)

This follows the critique of Ducruet (2007) on the search for causality of many port city research. It is not useful to try to answer if the port develops the city and its economic activities, or it is the city that is the engine of port expansion, because they just go together. Therefore, in the next part the conceptual model to examine the economic port city interface will be constructed.

3 The economic embeddedness of port city actors

To understand the complexity of (global) economy, as pointed out by Coe, Dicken and Hess (2008), the concept of the network is useful, this in contrary to, in this case, the structuralist spatial definition. The network concept could be seen as one of the more recent concepts to analyse (global) economic processes. The network concept '[...] reflect(s) the fundamental structural and relational nature of how production, distribution and consumption of goods and services –and always have been- organized' (Coe *et al.*, 2008). Coe *et al.* (2008) further point out that '[...] economic production networks are inherently dynamic; they are always, by definition, in a process of flux –in the process of becoming- both organizationally and geographically. The spatio-temporality of production networks, therefore, is highly variable and contingent.' Following this, they argue, it is necessary to use a heuristic framework, a framework capable of dealing with time- and space-sensitivity. Therefore, the Global Production Network (GPN) concept (Coe *et al.*, 2004; Dicken, 2004; Henderson *et al.*, 2002) lends itself for examine economic production processes in a certain economic sector (Coe *et al.*, 2008). In the next part the GPN will be elaborated in detail.

3.1 The Global Production Network

The concept of GPN starts from the assumption that the processes of globalization did not led to a detachment of social relations from their localized context of interaction. The GPN concept instead stresses out both the local and translocal relations which are crucial for the development and performance of the regions and actors involved (Hess, 2004). A GPN is defined as the globally organized nexus of interconnected functions and operations through

which goods and services are produced, distributed and consumed (Coe *et al.*, 2004; Henderson *et al.*, 2002; Jacobs, 2007). It consists of three categories. The first is the value which is the surplus value as well the economic rent (Henderson *et al.*, 2002). Especially the creation of value in a certain firm is important (Jacobs, 2007). The second is the degree of power of the different agents within the GPN, which is decisive for value enhancement and capture. This implies that a position of power of an agent is relative to others and to key material and institutional resources (Henderson *et al.*, 2002; Jacobs, 2007). The third category is the embeddedness. The embeddedness tells us why firms of a particular GPN, or part of a set of GPNs are located at a particular location (Henderson *et al.*, 2002).

A GPN is thus highly complex, dynamic, multi-scalar and relational. Therefore, it is extraordinarily difficult to generalize across the board about the precise ways in which firms and places are mutually interconnected in a GPN. The global economy is made up of intricately interconnected localized clusters of economic activity which are embedded in various ways into different forms of corporate network. Such corporate networks vary greatly in their geographical extent and organizational complexity. Interesting is that firms therefore can be seen as both being 'placing firms', which is the amount of influence and effect a firm exercises on its surrounding place, and at the same time also 'firming places', which is the embeddedness of a certain firm into a certain place (Dicken, 2002). Understanding these place-specific processes is increasingly becoming important. More and more, ports, port cities, but ultimately regions and nations in general, have seen an increasing competitive bidding for the relatively limited amount of internationally mobile investment (Coe *et al.*, 2008; Dicken, 2002).

3.2 *The Embeddedness of a GPN*

Analysing the embeddedness of a certain firm of a certain GPN (Henderson *et al.*, 2002) is the core of the analysis of the economic-geographical globalization of a GPN (Dicken, 2004). The embeddedness tells us which key relational assets a successful place possesses which makes it able to create its competitive advantage (Sheppard, 2002). According to Jacobs (2007) these processes of embeddedness have to be understood '[...] as evolutionary, [that is] path dependent and contingent, (which are) leading to unique but uneven development trajectories in space. Space is in that respect understood in a relational sense, meaning a multi-scalar interdependent constellation of social relationships and institutions. As such the processes of embeddedness are both the outcome as well the driving force of economic-geographical globalization.' (Jacobs, 2007). It makes possible that places are able to channel the uncertainties of globalization to their advantage. Territorial economies can still flourish within the space of flows (Amin, 2002; Castells, 1996; Graham & Healey, 1999; Sheppard, 2002). As such, embeddedness is a key element in regional economic growth and in capturing global opportunities (Henderson *et al.*, 2002).

However, the increasingly popular concept of embeddedness is a confusingly polyvalent concept (Jessop, 2001). As Hess (2004) states, the concept of embeddedness is somehow overterritorialized by proposing local networks and localized social relationships as the spatial logic of embeddedness. Although it is clear that there is a local or territorial embeddedness, this is not the only spatial logic of embeddedness (Hess, 2004). Three different kinds of embeddedness can be distinguished (Jacobs, 2007):

- *The territorial embeddedness:*
These are the factors constraining a firm and its GPN to a certain location. These constraining factors often lead to a path dependent embeddedness, emphasized also by Evolutionary Economic Geographers (Boschma & Martin, 2010). The concept of territorial embeddedness has its resonance in the work on economic clusters (Delgado, Porter & Stern, 2010; Langen, 2002; Nijdam & de Langen, 2003; Porter, 2000; Roh, 2006).
- *The network embeddedness:*
This reflects the existing connections between the different actors of the GPN themselves (Henderson *et al.*, 2002). This network of actors is the structure of relationships among a

set of individuals and organizations regardless of their country of origin or local anchoring in particular places (Hess, 2004). Therefore, this form of embeddedness can also be appointed as the actor-network [theory] (ANT) embeddedness (Boelens, 2009; Latour, 1999).

- The *social or societal embeddedness*:

This signifies the importance of where an actor comes from, considering the societal (for example the cultural, political, etc.) background (Hess, 2004).

Although different in focus, these three dimensions of embeddedness have to be seen as interdependent (Boelens, 2010). In combination, they form the space-time context of socio-economic activity (Hess, 2004). Embeddedness therefore can be interpreted as a spatial process elevating the tension between territorial relationships and transterritorial developments (Amin, 2002).

3.3 Conceptual model: the port city assemblage

Taking into account the different discussed spatial theories, the local economic port city interface could be conceptualised as a sort of interface, or economic complex, built up by two interrelating economic networks. In this respect, the economic port city interface is an assemblage of the urban actor network and port actor network. The concept of an assemblage deals logically with assembling. It brings heterogeneous elements into connection with others, separating elements and reconnecting them elsewhere and so on (Hiller & Abrahams, 2014). This way, simplified spatial divisions, as the structuralist definition of port and city, can be recast. Assemblages help to link these previously divided spatial zones into complex sets of spatial relations (Murdoch, 2006, p. 127). Nevertheless, this does not mean that port and city have to be erased. As Murdoch (2006) argues, topographical zones are still needed to be combined with topological processes as networks or assemblages. The advantage of the concept is that eventually, it can help to find and develop new governmental approaches that move beyond two opposed spatial forms into a new spatial dimension, in which discrete area are defined both by what they have been and what they will become.

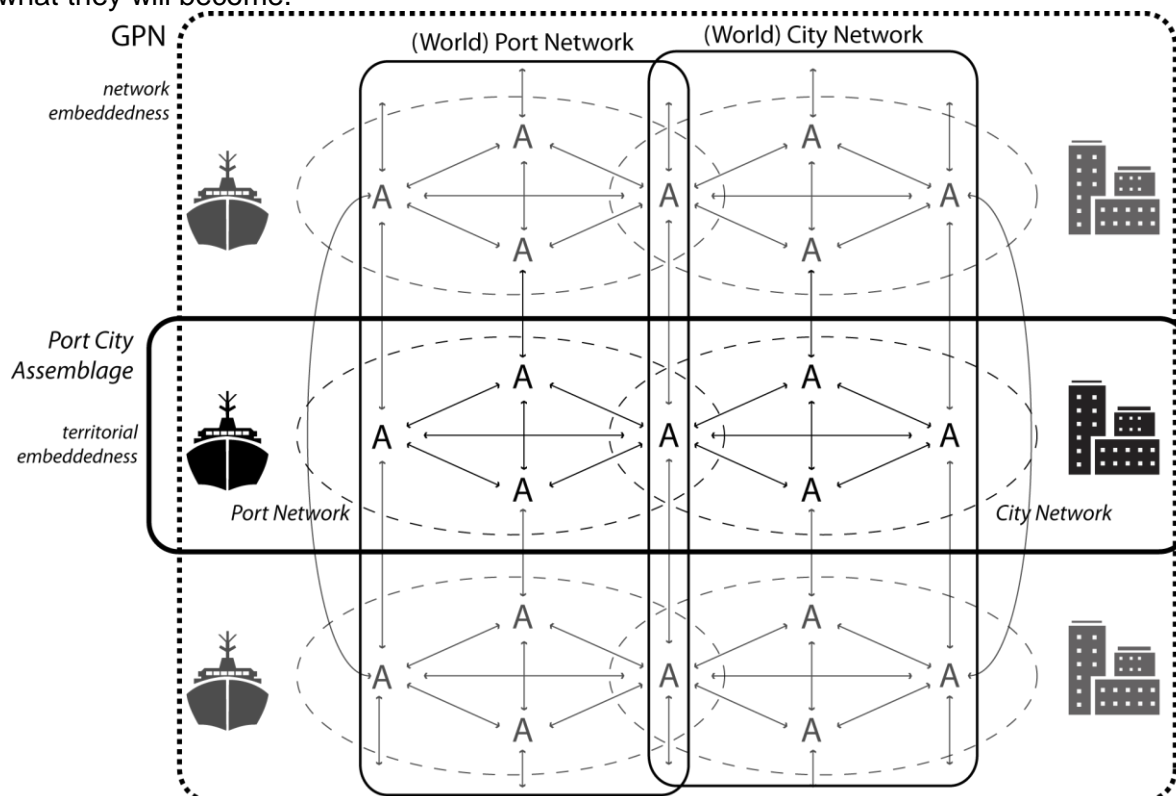


Figure 4: The Port City Assemblage

Therefore, the port city assemblage can be conceptualised as the connection and overlapping of the historically interwoven port network and city network (Figure 4). Both are independent networks consisting of different actors which belong to the GPNs of the world port and world city network. In this respect, every actor, which are the firms, has multiple connections with other actors on different levels and locations, and thus forming different actor networks. These firms become territorially embedded as they invest in particular locations. This territorial embeddedness at a certain location can lead to cross connections with the urban actors. It is in particular this cross connection that shows us how 'resilient' or 'sustainable' a certain port city assemblage is. In other words, it is an indication how much of the value added is locally captured. Moreover, it tells us if there are missing port city connections or port city connections which could be improved to make a particular port city more 'resilient' as called by OECD (2013).

4 Methodological framework

To operationalise the conceptual model (Figure 4), variables are needed to build up the port city assemblage. The key challenge is to determine the specific and unique characteristics or specialities of a certain port and city of a port city. First the most important economic sectors of the city and port have to be selected. The city and port is defined by the authority of respectively the city government and port authority. To do so, every sector (e.g. public sector, industry, agriculture, etc.) has to be analysed by the number of people working in it and the share of annual value added on the total annual value added. After this, in each sector, the subsector (e.g. health care, metalworking sector, etc.) has to be selected in the same way. In an ideal situation, every firm of this specific subsector would be considered, but this is practically difficult to realise. Therefore, the alternative is to select every lead firm of each subsector. Each subsector can be perceived as a cluster of firms. The behaviour of the leader firm(s) and its capacity to coordinate and steer change influences the performance of the cluster as a whole, because firms have both the ability and incentive to invest in the competitiveness of a whole network of firms (Boelens, 2010; de Langen, 2004). The leader firms are selected by looking at their annual value added, their employment rate, their investment rate and the location of their headquarter. Latter reveals the decision power. Once the leader firms are identified, the next step is to determine their connectivity with other firms, these on the one hand belonging to the same port/city subsector or on the other hand belonging to other port/city subsectors. The connectivity gives an indication of the level of cooperation of a certain cluster of firms. The analysis of the crossover between the city and port network determines the specific territorial embeddedness of the total port city assemblage. It is most likely that with a high concentration of crossovers between port and urban actors, which is what the OECD (2013) is aiming on, this leads to a higher level of sustainability and a higher local capitation of the created value added and employment rate. Otherwise stated, a higher variety of activities in a certain port city region lead to knowledge spillovers (Nooteboom, 2000). According to de Langen (2004) the port cluster, but in this case also a port city cluster, can be seen as 'a population of geographically concentrated and mutually related business units, associations and public (-private) organizations centred around a distinctive economic specialization'.

According to Boschma and Martin (2010) there are five levels of cooperation of a cluster of firms: (i) A formation is the geographical cluster without any cooperation; (ii) Industry is a cluster within a firm uses the end product of another firm to start its production; (iii) Complex is a cluster of firms working together to produce one product; (iv) Alliance is a cluster of two or more firms aiming to innovate their processes by investing in training and infrastructure among others; (v) A milieu cluster of firms improves intensively their knowledge networks, there is an optimal alignment of their activities. This cluster is most capable to persist and grow on long term basis (Figure 5).

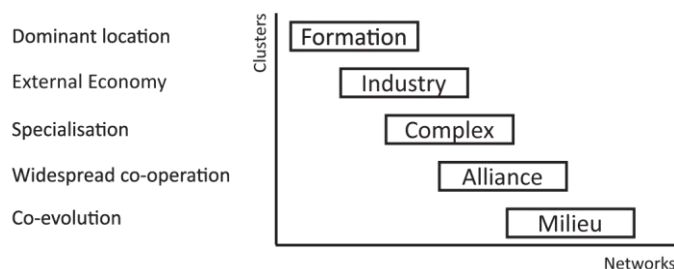


Figure 5: Cluster-network analysis (Visser & Atzema, 2008)

This gives result to the methodological framework to examine the economic port city interface of the port city assemblage (Figure 6).

	Variables	City (~ city authority)	Port (~ port authority)
Economic sector	Share of Value Added Number of jobs		
Economic subsector	Share of Value Added Number of jobs		
Leader firm	Value Added Number of jobs Investment rate location of HQ	A A	A A
Port Network City Network	Cluster/Network analysis		
Port City Assemblage	Cluster/Network analysis		

Figure 6: Methodological framework to examine the economic port city assemblage

5 The port city assemblage of Ghent

5.1 The economic (sub)sectors of the port city of Ghent

The port of Ghent generated an annual direct value added of 3,246 million EUR and a direct employment of 27,200 FTE in 2012 (Mathys, 2014). The share of value added per different sector (Figure 2) shows that in contrary to the other ARA ports, most is generated by the industrial sector, both in direct value added (1,968 million EUR) as in jobs (19,574 FTE) (De Vlaamse Havencommissie, 2014). Moreover, maritime transport activities are minimally developed. Relatively, the industrial sector of the port of Zeeland is more important than Ghent. However, this is contributed by only one chemical plant (Ministerie van infrastructuur en Milieu, 2014; Zeeland Seaports, 2014). Ghent has a more diverse industrial profile, of which the largest subsectors are the metalworking (21%) and car manufacturing (33%) subsectors (Figure 7).

The city of Ghent is primarily a 'tertiary' and 'quaternary' city. Respectively, they contribute 47,6% and 25,2% of the total value added in 2012. The secondary sector (26,3%) is also relatively large, but this is because the port is counted within (INR, 2014). In 2012, the primary, secondary, tertiary and quaternary sector generated respectively 685, 32,957, 72,845 and 65,535 FTE (WSE, 2014). The subsector analysis of the city of Ghent, shows that the tertiary sector is diverse. The largest subsector is the trade, logistic and catering subsector (18,3%). This sector is, however, on its turn diverse without one large employer. The quaternary sector consists of the Ghent University, hospitals and governance facilities of Ghent. A small part is contributed by the cultural subsector (Figure 7).

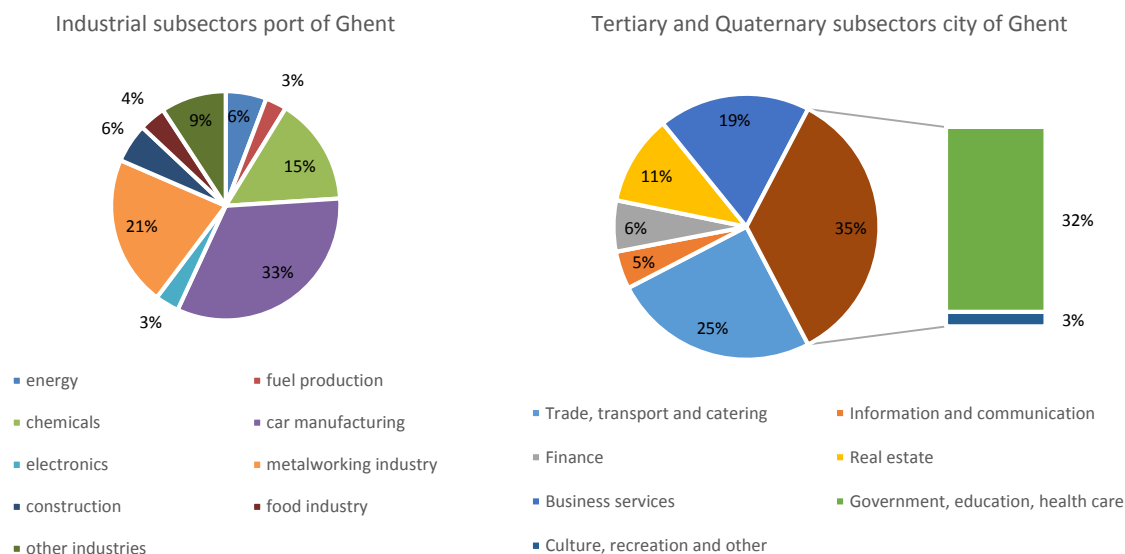


Figure 7: The share of value added of the industrial subsectors of the port of Ghent (l) and the share of value added of the tertiary and quaternary (brown) subsectors of the city of Ghent (r)

5.2 The leader firms of the port of Ghent

The subsector analysis of the port of Ghent shows that the car manufacturing, metalworking and chemicals subsector are important with a total share of value added of 69%. However, when examined more in detail, especially the metalworking and car manufacturing firms are the most important, this based on the variables 'value added', 'employment' and 'investment' (Mathys, 2014) (Table 1).

Table 1: Value Added, Employment and Investment top five at the port of Ghent in 2012 (Mathys, 2014)

Ranking	Company name	Sector
VALUE ADDED TOP 5 AT THE PORT OF GHEENT IN 2012		
1	TOTAL BELGIUM	Trade
2	VOLVO CARS	Car manufacturing
3	ARCELORMITTAL BELGIUM	Metalworking industry
4	VOLVO GROUP BELGIUM	Car manufacturing
5	BELGIAN SHELL	Trade
EMPLOYMENT TOP 5 AT THE PORT OF GHEENT IN 2012		
1	ARCELORMITTAL BELGIUM	Metalworking industry
2	VOLVO CARS	Car manufacturing
3	VOLVO GROUP BELGIUM	Car manufacturing
4	DSV SOLUTIONS (AUTOMOTIVE)	Cargo handling
5	DENYS	Construction
INVESTMENT TOP 5 AT THE PORT OF GHEENT IN 2012		
1	ARCELORMITTAL BELGIUM	Metalworking industry
2	VOLVO CARS	Car manufacturing
3	BNRC GROUP	Other land transport
4	TAMINCO	Chemicals
5	KLUIZENDOK TANK TERMINAL	Cargo handling

The two most important port companies in Ghent are ArcelorMittal and Volvo. In the value added top five, Total Belgium ranks higher, but their activities are purely trade activities without large production processes.

ArcelorMittal is a steel company. Around 5000 employees work at ArcelorMittal (AM) in Ghent. AM opened its maritime steel factory in the port of Ghent in 1962. AM is officially a Luxembourg company. The steel factory in Ghent is specialised in making steel that is used in automotive and industrial applications including hot rolled, cold rolled and coated steel sheets.

After the establishment of the European Economic Community (EEC) in 1958, the Swedish Volvo Car company opened in 1965 its first non-Swedish factory in Ghent to avoid extra

import taxes for non-EEC countries such as Sweden. The port of Ghent was chosen because of its central location and the multimodality possibilities. Volvo Gent assembles especially cars for export, first to Europe and the United States of America, today also to Asia. Since 2010, Volvo is owned subsidiary of the Chinese Geely Holding Group, but still has its headquarter in Gothenburg, Sweden. Today around 5000 employees work at Volvo Ghent.

5.3 The leader firms of the city of Ghent

The subsector analysis of the city of Ghent shows that in the tertiary sector, the trade, transport and catering and the business services subsectors are the most important. These subsectors comprehend many small companies. This in contrary to the quaternary sector. In this sector, the subsector government, education and health care is by far the largest. On the total of the port city of Ghent, this subsector is even larger than the industrial sector (23,4% vs 19,6%). The high percentage of the quaternary sector is almost completely due to the presence of the higher education institutes, of which the Ghent University (9000 FTE) and Ghent University Hospital (6000 FTE) are the biggest. The third biggest is the City of Ghent (5000 FTE) (Agentschap voor Binnenlands Bestuur, 2015; WSE, 2014).

The value added of these firms is difficult to estimate. For example the Ghent University is an institution consisting of different faculties and research groups, each with their own contacts and performance figures. Most created value added is in this aspect indirectly through collaboration with other companies or institutions, which will be elaborated in the next part.

5.4 The cluster/network analysis of the port city of Ghent

5.4.1 The port network

The port network is mainly concentrated around the AM company and Volvo. The AM steel factory in Ghent is a fully integrated maritime steel company, from the intake of stone coal till the roll off of steel plates. The steel companies of AM in Europe are grouped in the Flat Carbon Europe group. To reduce costs, the purchase of stone coal on the international market is directed on this group level. The maritime trade of stone coal in Europe is concentrated in Rotterdam (Jacobs, Menno & Vries, 2015). From here, the stone coal is transported multimodal to the different AM locations in Europe, and thus also Ghent. There are different collaborations with other companies in the port of Ghent (De Rucker, 2014). The steel of AM is used by the other leader firm, Volvo Ghent, but only secondary, this because Volvo Ghent has no steel pressing line. Therefore the steel plates of AM are first going to the Volvo factories in Gothenburg or Salzburg before returning to Ghent. Another collaboration is between AM and the energy company Electrabel in the port of Ghent. Latter uses the residual heat of AM to produce energy (Van Dyck, 2009).

There are multiple collaboration between Volvo and other port companies in Ghent (De Mey, 2013). As mentioned, the steel comes from the other Volvo factories in Sweden by boat, which comes secondary from the AM factory in Ghent. In the past forty years a lot of knowledge in the car industry is build up in Ghent. Almost all car components for Volvo are produced closely to the Volvo factory. All these components are produced and delivered just-in-time, this to reduces storage and transport costs. Next to the production cycle, there are collaborations on behalf of logistics and heat exchange with other port companies.

5.4.2 The city network

The Ghent University on its own is in fact a large cluster, consisting of several (semi) independent faculties. Next to the 'purely' academic parts, the university possesses also several R&D spin off companies in Ghent and in other parts of Belgium. Obviously, a large cooperation exists between the Ghent University and the University Hospital in Ghent. Examples of collaboration between the City of Ghent and the Ghent University are on behalf of spatial planning of student housing, cultural programs, mobility and socio-economic research.

5.4.3 The port city assemblage

Besides the residual heat exchange, the AM steel factory has no relatively important collaborations with other port companies. The only collaboration with the other port lead firm, Volvo, is the secondary supply of steel. Nevertheless, there is a strong collaboration between the AM and the urban lead firm, the Ghent University on behalf of its R&D. This is in contrary with Volvo. Volvo is the leader firm of a strong automotive cluster in the port of Ghent. For its production line, Volvo relies on multiple supply firms around its plant. Nevertheless, there is no important collaboration with the Ghent University. As discussions are happening at this moment, this could in the near future be achieved.

Altogether, the port city assemblage consists of several 'sub-clusters' (Figure 8). The Volvo company is part of a strong integrated automotive cluster. The automotive cluster is a 'complex' cluster according to (Visser & Atzema, 2008). On behalf of this, Volvo is strongly territorial embedded in the port network of Ghent. Nevertheless, its connections with the city of Ghent are relatively minor. There are no important connections with the main urban actor, the Ghent University. If this could be achieved, Volvo would become territorially embedded in the port city of Ghent and thus forming an 'alliance' cluster.

AM on the other hand is a standalone firm in the port of Ghent. This makes that AM is part of an 'industry' cluster in the port of Ghent. On behalf of the port network, AM is located in the Ghent particularly because of its path dependent investments. Nevertheless on behalf of the port city, AM has a strong R&D connection with the main urban actor, the Ghent University. Therefore, AM is part of an 'alliance' port city cluster.

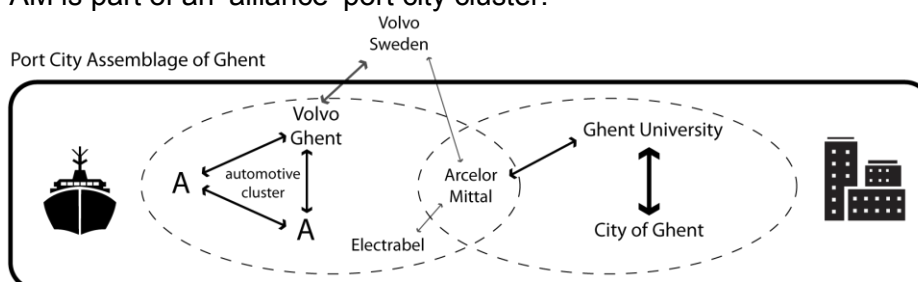


Figure 8: The Port City Assemblage of Ghent based on its leader firms.

6 Conclusion

This paper contributed to the research of port cities. In particular it tried to contribute to the call of the OECD (2013) among others, to strengthen again the vital port city interfaces. In this matter, we focussed on the ARA region, which is a collecting name for the biggest ports in Belgium and the Netherlands. In the ARA region, especially the port of Ghent has a different profile. Most of its activities are still industrial and no major maritime activities are present, in contrary to the other ARA ports. As the conceptual model shows, the port city can be perceived as a port city assemblage, consisting of two networks: the port and city network. This is in contrary to the structuralist definition of the port city and provides us with a more dynamic tool to perceive the port city. Moreover, there is no Any port (city), but there are several port cities. Even one port city consists of four different interfaces. This paper focused especially on the economic interface. Although the empirical research based on the methodological framework is briefly and only focusses on a few leader firms and therefore has to be elaborated especially with smaller companies, the results show that even the economic interfaces consists of several different economic interfaces.

There are several possibilities for future port city research. First, the research on the economic interface has to be improved. Second, more important, the comparison has to be made between the different interfaces: economic, institutional, social-economic and spatial. Only by doing this, fundamental new insights could be found of how the port and city are interwoven and how new and more sustainable connections can be achieved. This will give essential input to the port city governance.

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How to connect in a globalized world?



Arrival of Driverless Vehicles – Impact on Land and City Planning and the Future Needs for Transportation Infrastructure

Ueli BRUNNER, International Forum on Mobility and Transport (IFoMaT), Switzerland

1. Introduction

Policy makers are not yet anticipating, and certainly not planning for, the effects of driverless cars. Urban planners normally work with long-range transportation plans that look forward 20 to 30 years. This is within the time frame when a substantial portion of the automobile fleet is likely to consist of fully autonomous vehicles. This paper aims to initiate discussion among urban planners about the consequences of such dramatic change.

Transportation infrastructure must get adjusted to changing patterns of travelling and transport. Driverless vehicles open a large range of new possibilities. Economies of moving people and goods around will change drastically. As of now little research is made in this field, while technology advances rapidly. Car manufacturers, technology providers, insurances and legislators are doing extensive research about impact of driverless cars on their business. It is high time that urban planners, transportation engineers and rail and road authorities start thinking about the issue as well.

2. Roads and Parking

Capacity of existing roads most likely will increase, as driverless vehicles can make better use of traffic lanes and intersections. Public transport by large buses or trains cannot compete with small vehicles providing door to door travel for single users or small groups.

Space for parking can be provided outside of cities in remote areas. Or parking might not be required at all as vehicles are likely to be shared instead of owned.

Safety will increase as autonomous vehicles are expected to be more reliable than human drivers. Infrastructure and businesses related to car accidents, including insurance, might become obsolete.

An aging population eagerly awaits the driverless car providing continued mobility to those who are not permitted to drive anymore. Quality of life of the handicapped will improve as well, as driverless cars will enable them to travel door to door in a vehicle designed to their specific needs. And parents are longing getting relieved from chauffeuring their teenage kids around.

While driverless vehicles will increase the capacity of existing roads, demand for road transport might increase even more, offsetting any productivity gains and making construction of new roads necessary.

3. Commuter Trains and Intercity Rail

Driverless transport has implications for commuter and intercity transportation as well. Imagine vehicles that will pick up passengers in front of their house, head to the appropriate interstate and insert themselves into a passing platoon of vehicles travelling at say 180 kmh. Given such capabilities, developing dedicated roadways might be more cost effective than building high speed rail. Perhaps it would be wiser think about exclusive throughways for autonomous vehicles rather than plan for new rail projects.

4. Small Cars Replacing Buses

Driverless cars will scramble our current notions of transit, particularly in low density, suburban settings. It would make sense in limited demand settings to transition from buses to driverless cars and offer door-to-door service, faster transit time, and greater comfort than a bus. Additionally since driverless cars are perfectly suited to taking small numbers of people to diverse destinations, a transit agency untethered from buses and rails should see a huge growth in demand from former automobile owners. The private sector may provide a wide range of services supported by mobile communication and other ways of modern exchange of data.

5. Combating Urban Sprawl

With increased mobility at lower cost and better comfort, there is reason to believe that sprawl will increase. The economics of suburban real estate combined with lower mobility costs due to not owning a car most likely promotes suburban growth. Pressure on agricultural land and unspoiled nature in remote areas will increase.

6. Platoons of Trucks instead of Trains

In the freight sector, “platooned” autonomous (and semiautonomous) trucks, in addition to safety and greater fuel efficiency, promise substantial economic benefits to their owners. Platooned vehicles will dramatically reduce driver costs, which today represent around 35 percent of per-mile operating costs.

Passing a platoon of trucks, which could be hundreds of feet long, however, will face resistance from the driving public. The question then arises whether, in some corridors, economic benefits would be sufficient to make construction of separated, autonomous-trucks-only roadways viable. Such roadways could also cut down on congestion which costs the trucking industry dearly. Given the fact that semi-autonomous trucks are already in use, it would seem that road authorities ought to be thinking about whether such roadways are warranted, and even initiate early stage planning.

7. Conclusions

The mobility enhancements associated with driverless-vehicle technology will allow more people in a metropolitan area to participate in the labour markets and civic life. These regions will capture a greater share of the new industries that undoubtedly will grow to support driverless-vehicle technology.

Driverless-vehicle technology is being deployed in stages with every new automobile model year and through the concerted efforts of innovators such as Google. As happened a century ago when the automobile was introduced, technological innovation was much faster on the vehicle side than the infrastructure side. However, in coming decades infrastructure providers and highway authorities will face many challenges responding to and enhancing driverless-vehicle technology. These same challenges are really opportunities to help reshape our built environment and transportation system in the 21st century in a very positive way.

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Theme: How to Sustain Connectivity in a Globalised World?

Intergovernmental Cooperation between spheres of Government-The case of Dube Trade Port Development

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Abstract:

The paper briefly outlines the nature of the Dube Trade Port development, a greenfields airport precinct located in KwaZulu-Natal, South Africa. The development is placed within a global, national, and regional context. Within a national context the KwaZulu-Natal Provincial Government adopted the Aerotropolis concept as a catalytic project to advance industrialisation and drive economic development in the province. The pursuit of developing an Aerotropolis would impact on the entire province through connecting KZN regional economies to South Africa, the Southern African region and the entire global economy through King Shaka International Airport (KSIA).

The paper will explore the aerotropolis concept as it has largely been developed and applied to the western and European contexts. International case studies suggest the need for a planned approach with higher growth rates and benefits widely spread. This translates into a strong argument for government intervention as demonstrated by examples of Hong Kong International Airport, Beijing Capital Airport, and Incheon Korea's Winged City in Asia.

Stevens et al (2007) provided a framework for analysing the impact of airports on regions. They hypothesize that airports have an impact in a number of "interfaces", namely infrastructure, economics, land use, and governance. This paper focuses on one of these "interfaces" to be unpacked as intergovernmental cooperation between spheres of government in implementing the aerotropolis strategy. The discussion is situated within the current debates around institutional arrangements necessary to facilitate economic globalisation from international structures such as IBSA (India, Brazil, and South Africa), regional blocks such as SADC (Southern African Development Community), and intergovernmental arrangements from national to local government.

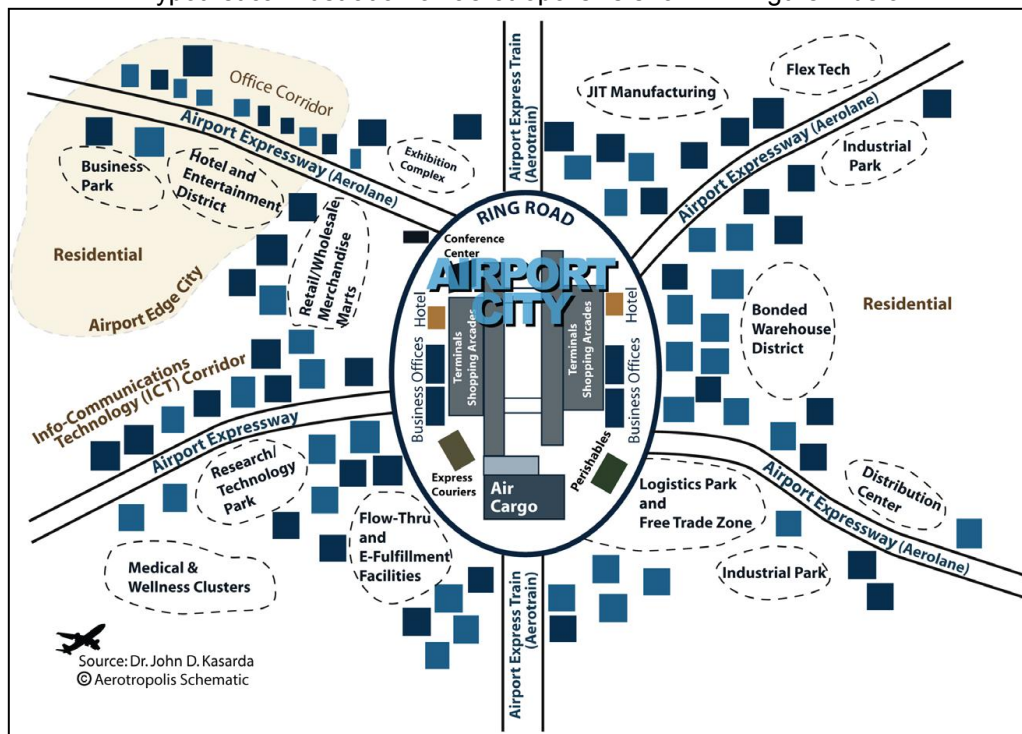
The challenges of planning for an aerotropolis in a developing world context will be discussed in greater detail, with a view to informing interventions that will contribute to the easing of the tensions that will potentially delay the implementation of the Aerotropolis Master Plan.

INTRODUCTION

The development of aviation transportation infrastructure is a key component of city development, with airport and associated development playing an increasingly significant role this century. In today's global economy, issues of connectivity and rapid access to markets are key for growing trade, and therefore stimulating investment. Globalisation and associated dominant transportation modes, particularly air passenger and air cargo transport, are impacting significantly on current urban development. This paper works from the premise that the development of the KwaZulu Natal (KZN) Aerotropolis will impact the entire province through connecting KZN regional economies to South Africa, the Southern African region and the entire global economy through King Shaka International Airport (KSIA).

The concept of the 'aerotropolis' or 'airport city' has been largely adopted in recent academic and commercial literature, most notably by Dr. John D. Kasarda - known in some circles as 'The Father of the Aerotropolis'. Kasarda argues that airports may shape business locations and urban development in the 21st century the way in which highways did in the 20th, railroads in the 19th, and seaports in the 18th centuries (Al Chalabi & Kasarda, 2004; Leinbach, 2004). Many of the major international gateway airports are giving rise to this new urban form called 'aerotropolis', where aviation-intensive businesses and related enterprises extend up to 15 miles (25 kilometers) outward from airports along transportation corridors that branch out from the central urban core areas (Al Chalabi & Kasarda, 2004; Leinbach, 2004). 'Aerotropolis' can be a powerful engine of local economic development, attracting air-commerce-linked businesses to the land surrounding major airport generating a centre of activity, similar to the form and function of central business districts (CBDs) in the downtown areas of major cities. The aerotropolis as put forward by Kasarda is a new form of urban development to create a city around the central core of an airport, linking businesses, services, and residential development. John Kasarda describes aerotropolis as the urban incarnation of the physical internet; the primacy of air transportation makes airports and their hinterlands the places to see how it functions and to observe the consequences. 'Aerotropolis' represents the spatial manifestation of the interaction of industries related to time-sensitive manufacturing, e-commerce, telecommunications and third-party logistics firms; entertainment, hotel, retail complexes and exhibition centres; and business offices (Kasarda, 2008; Pinkowski, 2007).

A hypothetical illustration of 'aerotropolis' is shown in Figure 1 below.



Source: Al Kaabi, K. A. Ph.D. (2010) The Geography of Air Freight and Metropolitan Economies: Potential Connections.

As pointed out above, the 'aerotropolis' form is actually a highly networked system with sophisticated multimodal surface connections.

Airports are the physical hubs, tying this new mode of global connectivity and networked system together. They can compare to the technology of the internet today allowing fast communication and research. People know when and how they can get something shipped faster. Airports decrease time and increase convenience. Convenience is something our society thrives on. People are constantly increasing their expectations, and speed is our main concern. As Le Corbusier put it "A city made for speed is made for success". Location and accessibility are the other main aspects of an aerotropolis. The speed and convenience of these areas attract diverse companies to relocate or open new locations. (Kasarda, John)

One potential outcome is that accessibility may replace central location as the most crucial business-location and commercial-real-estate organizing principle (Al Chalabi & Kasarda, 2004). Thus, time-cost access to the airport will determine land value and particular business locations. Kasarda argued that different kind of firms will compete against each other for airport accessibility to benefit from the lower time and cost of moving people and products to and from the airport and – via the flight networks – to regional and global markets (Al Chalabi & Kasarda, 2004; Kasarda, 2000). Al Chalabi and Kasarda (2004) also argued that land values, lease rates, and commercial use will be measured by accessibility to the airport from alternatives sites through connecting highway and rail routes.

As described above, the aerotropolis concept relies on incorporation into a global transportation network. Thus, air connectivity largely fuels aerotropolis development. Air service connectivity plays a key factor in making industrial sites attractive to professional firms that require face-to-face contacts with other customers, companies, and markets. Major airports play critical roles in serving as key points of exchange in the global economy. Nooteboom (1999) argued that reputation, linkages, and confidence are important keys to knowledge exchange, which is most easily accomplished when spatial, cognitive and cultural distances are reduced. Also, the critical role of government policy at all levels (federal, state, and local) in shaping innovation and technological change in the air freight industry, and therefore air connectivity, has been largely overlooked.

The context of Dube TradePort Development and King Shaka International Airport

King Shaka International Airport (KSIA) is the primary airport serving Durban, South Africa. Located in La Mercy, KwaZulu-Natal, approximately 35 km (22 miles) north of the city centre of Durban. The airport opened in 2010, after the existing airport in Durban was relocated. The relocation of the airport to a greenfields, undeveloped location presented a unique opportunity to plan the "aerotropolis" from scratch, and allow for appropriate land uses to cluster in the vicinity of the airport.

Provincial government recognised the opportunity associated with this airport relocation, and established the Dube Tradeport project. The purpose of this was to construct a state of the art air cargo terminal, in addition to property developments adjacent to the airport. Provincial government hoped to leverage off the development of Dube Tradeport and ultimately increase trade, economic activity, and create jobs.

The first phase of the Dube Tradeport consisted of the following elements:

- **King Shaka International Airport** – this facility opened with the capacity to accommodate 7.5 million passengers per annum. There is significant scope to grow the area's international services, it is also a key airport for domestic services throughout South Africa, serving the "Golden Triangle" between Cape Town International Airport, O. R. Tambo International Airport in Johannesburg, and KSIA itself.
- **Dube Tradeport cargo terminal** – A state of the art air cargo terminal was constructed, capable of handling up to 100,000 tonnes of cargo per annum.
- **Dube Tradeport tradezone** – A 45 hectare property development, accommodating logistics, light industry, distribution and warehousing.
- **Dube City** – A 12 hectare property development focussed on providing services to passengers, including conferencing, hotels, retail and office uses.
- **Dube Agrizone** – 16 hectares of glass houses have been constructed, in order to cultivate perishables which will, in time, serve an export market.

Dube Tradeport is also a master planned development, and over 3000 hectares within the broader region has been reserved to allow the airport and associated Tradeport to grow into the future. The Dube Tradeport master plan is indicated in the figure below, and will consist of the following key elements:

- The King Shaka International Airport has the potential to grow to 45 million passengers with 2 runways.
- The cargo terminal will be able to expand to 2 million tons of cargo per annum.
- The Dube Tradeport “Tradezones” will be expanded throughout the area to accommodate additional manufacturing operations.
- An “Airside area” has been planned for, which will look to accommodate maintenance repair and overhaul (MRO) facilities for aircraft, as well as general aviation.
- Several additional “Support precinct” areas will look to accommodate mixed use developments.

Figure 2: The Dube Tradeport Master Plan



Source: www.dubetradeport.co.za

During 2013, Dube TradePort transformed 26 hectares of land into serviceable stands that are earmarked for private investment to the value of R730-million. Presently there are 7 new industrial developments in the TradeZone, with manufacturing in the electronics sector, packaging and logistics forming the core of the investment. The idea is to target a cluster development of electronics manufacturers for the TradeZone as this constitutes one of the most air-freighted product groups both locally and globally. They are also lightweight, high-value and form part of the just-in-time supply chain system. This electronics cluster may form the basis for the Special Economic Zone as Dube TradePort explores the supplier linkages in the sector across a wide range of businesses with an emphasis on export and air freight usage. (eThekweni Municipality IDP, 2015:54).

The Dube TradePort Industrial Development Zone (DTP IDZ) will consist of 2 sectors within Dube TradePort and these include:

- Dube Agri-Zone (63.5 ha) focusing on high-value, niche agricultural and horticultural products, and
- Dube Trade Zone (240.3 ha) focusing on manufacturing and value-added goods primarily automotive, electronics and fashion garments. (eThekweni Municipality IDP, 2015:54).

Intergovernmental collaboration

At each level of government, support has been expressed for the Dube Tradeport project. National support for the development of Dube TradePort was sealed with the Cabinet decision in 2002 to support the TradePort Project. The national planning framework is provided by the National Spatial Development Perspective (NSDP) (2006) and the Accelerated and Shared Growth Initiative (ASGI-SA) which was adopted as government policy in February 2006. In terms of the ASGI-SA programme Dube TradePort is identified as a programme for investment in infrastructure. The Department of trade and Industry (the DTI) has recently declared part of the Dube Tradeport as an industrial development zone (IDZ), which will stimulate additional investment and attract FDI through various incentive offerings.

The KwaZulu-Natal Integrated Aerotropolis Strategy (IAS), is a commitment by provincial government to ensure that the opportunities presented by King Shaka International Airport, the Dube Trade Port, the ports of Durban and Richards Bay, and other infrastructural assets such as roads and rail are fully exploited to drive the economic development in the province. The strategy seeks to synergise operations in and around the airport by bringing together competing visions for the area, especially those of municipalities, government departments, state-owned entities and other major private sector landowners to foster a truly strategically competitive airport-linked enterprise network that attracts new private investment. The Aerotropolis concept is derived from a number of policy frameworks both nationally and provincially as depicted on Figure 3 below

Figure 3: Alignment of the Aerotropolis Strategy to Provincial and National Policy Frameworks



Source : EDTEA 2014

National Development Plan (NDP) and SIP

Nationally, while the NDP does not mention the Aerotropolis concept per se, it strongly brings out and prioritises the Strategic Infrastructure Projects (SIPs). It makes a number of references to the Durban-Free State-Gauteng logistics and industrial corridor (namely SIP2), which is envisaged to play a catalytic role in job creation. The KwaZulu Natal (KZN) Integrated Aerotropolis falls directly under the SIP2's list of priority projects.

Strategic Infrastructure Programme (SIP 2)

In reference to the National Strategic Infrastructure Projects (SIPs), SIP 2 has identified development of the KwaZulu Natal Aerotropolis as key project in order to improve the efficiency of connectivity between Durban and Johannesburg. This supports the vision for KwaZulu Natal as identified in the Provincial Growth and Development Strategy, which seeks to establish KwaZulu Natal as a gateway to South and Southern Africa.

Provincial Growth and Development Strategy (PGDS)

The guiding principles of the KwaZulu Natal Integrated Aerotropolis Strategy are contained in two strategic documents that have been published by the KwaZulu Natal Government. The primary one is the Provincial Growth and Development Plan (PGPD), which has been aligned to the National Development Plan (NDP). The provincial planning framework is provided by the KwaZulu-Natal Provincial Growth and Development Strategy (PGDS) (2012) and the Provincial Growth and Development Plan (2012) these pick up on the themes of achieving sustainable economic development and job creation. The Dube TradePort is located on the corridor between the eThekweni Municipality, which includes the City of Durban, and Umhlatuze Municipality, which includes the City of Richards Bay. The Dube TradePort development therefore forms a major catalytic project within this corridor. The Provincial Planning documents (PGDP and PGDS) make specific reference to the aerotropolis surrounding the Dube Tradeport as a key driver of growth within the province.

Local government is responsible for spatial planning within their boundaries, the tools at hand being the integrated development plan (IDP), and spatial development framework. The project falls within the eThekweni Municipality and is consistent with the eThekweni IDP where Dube TradePort is included as a mixed investment node on the northern corridor.

Municipal Horizontal and Vertical alignment

The Aerotropolis surrounding King Shaka International Airport spans several different local authorities. Achieving alignment, and ensuring that all plans seek to enhance the development of an aerotropolis is therefore crucial.

The eThekweni Municipality has used alignment as an instrument to synthesize and integrate the top-down and bottom-up planning process between different spheres of government. There are two types of alignment procedures that eThekweni Municipality has initiated in the planning process i.e. vertical and horizontal alignment. Vertical alignment is between eThekweni Municipality and neighbouring municipalities as well as other spheres of government (Provincial, National Departments, Private Sector and other stakeholders such as Eskom, Telkom). The aim of this alignment is to ensure that the IDP is in line with National and Provincial policies and strategies so that it is considered for the allocation of departmental budgets and conditional grants. It also guides the private sector in terms of highlighting areas of strategic investment and critical spending. The Cooperative Governance and Traditional Affairs (COGTA) initiated Provincial Integrated Development Plan (IDP) Forum brings together all the relevant provincial and municipal stakeholders in an effort to achieve this desired vertical alignment.

Horizontal alignment occurs within the municipality sector plans to ensure that the planning process is integrated, issues are co-ordinated and addressed jointly. The Municipal Integrated Development Plan (IDP) Forum, Spatial Development Framework (SDF) engagement process and more recent, municipal Integrated Cities Development Grant (ICDG) Forum are multi-sectoral processes that help facilitate this horizontal sectoral alignment from the high level strategic plans (IDP and SDF) through to the identification and implementation of catalytic projects and programmes in the Built Environment Performance Plan (BEPP). These on-going engagements with key sector departments have helped foster a more consensus-based and synergistic approach to city development.

While Provincial Planning legislation is now applicable across the Province, cross border planning is important and the eThekweni Municipality's Spatial Development Framework (SDF) and Spatial

Development Plan (SDPs) are contextualized within the regional/provincial scale. Consideration of issues in surrounding municipalities is important for the following reasons:

- To prevent conflicting initiatives and land uses being implemented on opposite sides of an administrative boundary,
- To ensure an aligned regional vision with regards to the region's infrastructural development to allow governments to take advantage of comparative advantages offered within an area. This also refers to cross border provision of services such as education facilities which can be utilized by communities residing in two municipalities. This allows for cost effective provision of services and is applicable to the provision of civil services, social services and economic opportunities.
- Cross-border planning and alignment is also crucial for the preservation of bio-diversity and ensuring an appropriate response to climate change and disaster management

The discussion above shows that mechanisms to ensure alignment between Provincial and Municipal planning processes are in place, and to a certain degree, ensure that the vision of the creation of an aerotropolis is articulated in plans at all levels of government.

Challenges posed by lack of alignment within government

One of the challenges that are hampering the rate of investment and development is the misalignment of the budgets of various government ministries. Policies and funding regimes impacting on spatial planning are governed by several different national ministries, with objectives that sometimes conflict. Specific recommendations to ensure better collaboration include:

- Maintaining the strategic importance of municipalities integrated development plans in providing demand-driven vision based on a deliberative process that cuts across sectoral departments, civil society and the private sector.
- Develop a more robust and empirically grounded understanding of the causal drivers of misalignment in intergovernmental relations and ways to correct it.
- Continue co-ordination of the Provincial Growth and Development Strategy with the Spatial Development Framework.
- Widen the policy debate to include a discussion on how the Provincial Growth and Development Strategy can connect to or complement economic planning instruments available to municipalities as well as the integrated development plans.

Co-ordination is essential in the region to ensure that sectoral policies are coherent, or at least not contradictory, in a functional metropolitan area that spill over municipal jurisdictions. The collaborative efforts of municipal spatial planning and engineering services provision departments plays itself out at local government level by consultation (cross border engagement) between affected municipal authorities whenever they are developing and reviewing their Spatial Development Framework.

South Africa's 1996 Constitution invoked a system that requires all three spheres of government to play a role-hopefully complementary- in most of the core functions pertaining to urban and regional development as follows:

- The planning system allows for bottom-up priority setting, but within nationally determined higher order priorities. These imperatives are often challenged by contradictory trajectories of departments, agencies and individuals in different spheres of government. Consequently, it becomes very difficult to align and synchronise government plans and programmes across the three levels to achieve supposed shared outcomes.
- Policies and funding regimes for spatial planning are governed by several different national ministries whose objectives sometimes conflict.

The recommendations put forward by eThekweni Municipality to ensure alignment of budgets with the Provincial Projects is captured in the Built Environment Performance Plan (BEPP). The Municipality is

moving towards aligning Provincial Projects with the Spatial Priorities contained in the SDF and BEPP. Provincial Departments are urged to spatially capture and map their Current and Future Expenditure. The BEPP is determining short and medium term priorities (taking cognizance of the Integration Zone and directions set in the IDP and SDF) and hence is leading to a pipeline of projects which can then fulfil the requirements of the Capital Investment Framework. The BEPP offers technical support in the form of a Project Preparation Facility. This support is necessary to help improve coordination and build a robust pipeline of well-designed, catalytic projects for implementation over the medium term with financial commitments and dedicated project management for Catalytic projects. This will provide the necessary support for spatially aligned Capital and Operating Budgets and improved vertical and horizontal integration of budgets.

“On the Ground” Connectivity

While the above points to the importance of creating alignment between the various spheres of government, stimulating connectivity is critical if Durban’s aerotropolis is to be a success. Air travel is the cornerstone of the so-called economies of speed, which embodies the new economy. Air travel accounts for up to 40% of the value of global trade, but only 2% in weight. It is for this reason that ground transportation to and from international airports has to match air travel through swift connectivity. This is what is referred to as the first mile and last mile of air travel. Any delays and bottlenecks in travel to and from an international airport negate the swiftness of air travel, and this has huge negative implications for air services. Ground connectivity by road and rail is therefore critical in supporting “in the air” connectivity. Lack of rail connectivity is also not helping the cause of KSIA. The Passenger Rail Agency of South Africa (PRASA) have responded to this shortcoming by proposing a rail line that runs parallel to the N2 and will connect Durban central, Umhlanga, KwaDukuza and runs through the airport and will proceed to Tongaat.

In the Air” Connectivity

King Shaka International Airport (KSIA), the tenth busiest airport on the African continent and third busiest in South Africa, serves Durban, the third largest city in South Africa and KwaZulu-Natal, the country’s second most populous province. Owned and operated by Airports Company South Africa (ACSA), KSIA is currently linked to 5 international destinations and 8 domestic destinations by ten commercial airlines. The viability of the KZN Aerotropolis hinges on the continued growth in passenger and cargo airlift out of KSIA. It is for this reason that KZN embarked on a global campaign to develop air services through direct connectivity of KSIA to other international hub airports in cities like Dubai, London, etc. The start of direct connectivity with Dubai was a huge milestone in this campaign, since the Dubai International Airport has the second (only to Heathrow) most international connections in the world.

Airlines are always looking for more profitable markets in their route development strategies. The growth of tourism in KwaZulu Natal through better and expanded product offerings is envisaged to boost air travel from key markets with a huge impact on air services at KSIA. In order to improve “In the Air” connectivity, KSIA will have to overcome some of its inherent challenges. On the passenger side, the airport is still being considered by South African Airways (SAA) and Airports Company South Africa (ACSA) as a feeder airport to OR Tambo International Airport (ORTIA). Major airlines like British Airways do not view KSIA as a perfect candidate for direct connectivity from their hub airports like Heathrow. These airlines are happy to bring passengers to the ORTIA hub and then do backward distribution to KSIA.

KZN is the only destination in the whole country that is actively and aggressively pursuing a strategy of growing air services. The province is very active in international events like World Routes in reaching out to international airlines. The strategic choices for “in-the-air” connectivity should therefore be more focused on increasing the number of direct flights from key regional and overseas tourism markets. Growing air connectivity therefore forms an important part of the KZN Integrated Aerotropolis Strategy, and work groups with the relevant government departments (Dube TradePort, eThekweni Municipality, KZN Tourism Authority, and Trade and Investment KwaZulu-Natal, for example) has been established to drive a joint marketing initiative for new routes to the airport.

Finally South Africa’s invitation to join a group of countries now calling itself BRICS (Brazil, Russia, India, China, South Africa) means that South Africa is now sharing a platform with a hugely significant

bloc having tremendous clout to influence tangible outcomes at the global level. On the regional front it gives eThekweni the opportunity to explore or strengthen economic gateways to the Southern African Development Community (SADC) and with the other members within BRICS as the City embarks on its ambitious plans to develop its freight corridor and expand operations at the existing- and the new Dig-Out Ports.

Conclusion

The KwaZulu Natal (KZN) Aerotropolis will impact the entire province through connecting KZN regional economies to South Africa, the Southern African region and the entire global economy through King Shaka International Airport (KSIA). The 'Aerotropolis' can be a powerful engine of local economic development, attracting air-commerce-linked businesses to the land surrounding major airport generating a centre of activity, similar to the form and function of central business districts (CBDs) in the downtown areas of major cities. The Airports are the physical hubs, tying this new mode of global connectivity and networked system together. Air connectivity largely fuels aerotropolis development and this will result in the KwaZulu Natal Integrated Aerotropolis becoming a key point of exchange in the global economy.

The KwaZulu-Natal Integrated Aerotropolis Strategy (IAS), is a commitment by provincial government to ensure that the opportunities presented by King Shaka International Airport, the Dube Trade Port, the ports of Durban and Richards Bay, and other infrastructural assets such as roads and rail are fully exploited to drive the economic development in the province. Intergovernmental collaboration carries the potential to advance a cross cutting regional approach for the KwaZulu Natal Integrated "Aerotropolis", this will maximise economic competitiveness of the Dube TradePort and KSIA nationally, regionally and on the international stage.

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DOHA AIRPORT AND CITY (RE)DEVELOPMENT

CITY REDEVELOPMENT AROUND THE HAMAD INTERNATIONAL AIRPORT (DOH), DOHA, QATAR

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INTRODUCTION

PURPOSE

The purpose of this paper is to present the case study of Hamad International Airport in Doha, Qatar. It discusses the opportunities that were created by relocation of the airport and presents in detail the various redevelopment plans around this area.

QATAR AND DOHA

Qatar is a country located in the Persian Gulf, known as Qatar Peninsula, which is surrounded by water from three sides and borders with the Kingdom of Saudi Arabia in the south. The total land area is approximately 12 thousand square kilometres. The country has experienced an unprecedented growth in population from just over 100 thousand in 1970 to an estimated 2.3 million in 2015. Extensive urban growth was evident during these years to support this relatively steep rise in population. This growth was primarily aided by the significant development of oil and gas industry, which now serves as the main pillar of Qatar's economy. In 2010 Qatar won the bid to host the 2022 FIFA World Cup. FIFA World Cup and a massive plan to boost the infrastructure developments has generated a large number of mega projects in the country that are to be completed by 2020.

The capital city Doha together with neighbouring Al Rayyan municipality is the main urban agglomeration. Currently there are many projects being implemented. Starting from housing and mixed use centres, through new districts like Lusail, including the stadiums and sports facilities and to finish with the infrastructure comprising of road network and a massive metro network to connect the whole metropolitan area. Among these projects there is the new Doha airport, known as the Hamad International Airport (HIA), which was completed in 2013 and is operational since April 2014.

VISION

There was a clear vision behind developing the new airport at its new location. Apart from the need to deliver a larger airport for the growing population and increasing

number of visitors and transit passengers and not only to provide the necessary infrastructure – the aspiration was for a high quality experience and new opportunities for the growth of the city.

Hamad International Airport authorities say: “Home to five-star airline Qatar Airways, our architecturally stunning, supremely efficient and truly welcoming airport is a genuine gateway to the world, serving over 360,000 flights and 30 million passengers every year. Our aim is simple. To provide you with a world-class airport experience.”¹ The Qatar National Development Framework 2032, an overarching spatial strategy of the Qatar National Master Plan (QNMP) also stipulates: “The HIA will enable significantly increased operations and efficiency and is set to become a cornerstone of Qatar’s economic and tourism development strategy.”

Such efforts at this scale might have not been possible anywhere else, as Rem Koolhaas said about the HIA project: “We are delighted and honored to participate in the exciting growth of Doha, in a project that is perhaps the first serious effort anywhere in the world to interface between an international airport and the city it serves.”²

AIRPORT RELOCATION

Currently there are three airports in Qatar. The main and the new one is the Hamad International Airport (HIA). But before its opening in 2014, all international flights were arriving to Doha International Airport (DIA) (Figure 1), which now is serving as a backup airport and for military and limited civil uses. The last one is a small Al Khor Airport in the northern part of the country, but it is not used for air traffic.



FIGURE 1 LOCATION OF AIRPORTS IN QATAR.
MAP DATA: GOOGLE EARTH.

¹ <http://dohahamadairport.com/about-us/our-airport>

² "Doha Airport City masterplan deal for OMA", Trade Arabia, 2013-03-10, http://www.tradearabia.com/news/CONS_232009.html



FIGURE 2 THE NEW AND OLD AIRPORTS IN DOHA.
MAP DATA: MME

The old airport (Doha International Airport – DIA) was located adjacent to the inner city, just at the Eastern fringe of central Doha. For a long time it was serving its purpose well, but finally in 2010, it reached the limit of 4.2 million passengers per annum and there were no growth opportunities to cater for the increased traffic, or expand the airport on the adjacent land. DIA had also a shared use with the military, which needed increased coordination with the civil use. The adjacent dense urban population was also exposed to a number of adverse impacts from airport operations.

To respond to the needs, a new scheme was developed to move the airport 4 km further to the East, and locate it on reclaimed land. This relocation offered relatively less constraints in terms of developing and building a properly designed master planned infrastructure with necessary services that it needed. The new airport (HIA) when completed accommodated traffic volumes up to 24 million passengers per annum, with expanded future opportunities for further growth of up to 50 million passengers per annum – as part of a larger phasing programme. Furthermore there are cargo facilities that are able to handle 0.75 million tonnes of cargo annually, with the future planned capacity of 1.5 million tonnes per annum. Moving the airport further away from the city boundary has lessened the impact of air traffic on surrounding neighbourhood and allowed for development of new areas between the old airport and the existing adjacent urban lands.

HAMAD INTERNATIONAL AIRPORT – DETAILS

Development of the site for the new airport was a very challenging effort, because most of it was in the sea. The works consisted of 62 million cubic metres of land reclamation that was armoured by 13 km of seawall protecting the construction. 28 square kilometres of land was made available for the construction of Hamad International Airport (Figure 3).



FIGURE 3 GROWTH OF DOHA AND HIA LOCATION (LEFT 2004, RIGHT 2015).
MAP DATA: GOOGLE EARTH.

The main building – three-storey passenger terminal (Figure 4) – has an area of 600,000 m², with 25,000 m² of retail space. Apart from that there is 150,000 m² of aircraft maintenance centre, cargo terminal and separate terminal for the Emir of Qatar. There are two runways (4,850 m and 4,250 m long), which are claimed to be among the longest commercial runways in the world. The whole area is overlooked by 85 m high control tower.



FIGURE 4 HAMAD INTERNATIONAL AIRPORT MAIN TERMINAL BUILDING.
IMAGE SOURCE: HIA

A large and distinguished Airport Mosque is located adjacent to the terminal and serves as public facility. It has 2,000 m² of floor space and is in a shape of a dome with 47 m radius and 13 m height. It is flanked by 37 m high minaret. There are also one of the world's largest airport catering facilities and high quality air traffic control equipment and security systems.

SPATIAL PLANNING AND REGULATIONS

EXISTING MAIN SPATIAL REGULATION DOCUMENTS

There are a couple of planning documents that regulate the spatial developments in Qatar. First of all there is Qatar National Vision 2030 (QNV2030) which sets the direction for future development plans of the country. Qatar National Master Plan Project (QNMP) addresses the spatial planning issues outlined in the QNV 2030. It comprises of two parts:

Qatar National Development Framework 2032 (QNDF) and Municipal Spatial Development Plans (MSDPs).

Qatar National Development Framework (QNDF) is the national spatial development strategy. It is supplemented by other sectoral plans that are being prepared at present, e.g. National Open Space and Recreation Facility Strategy, Integrated Coastal Zone Management Plan, Qatar Tourism Strategy, National Heritage Strategy and National Housing Strategy.

Municipal Spatial Development Plans (MSDPs) are regulatory zoning plans for the metropolitan area, town centres and action areas. They set the zoning and land use requirements for existing and new development. In addition, a number of new metro stations will be introduced through a hierarchy of centres, ranging from metropolitan to local centres. The existing and the new developments outside the centres will be regulated by specific zoned based regulations. The MSDPs have recently been approved. Before that there was Doha Interim Zoning 2007 (updated in 2008) which regulated all developments in Qatar (Figure 5).

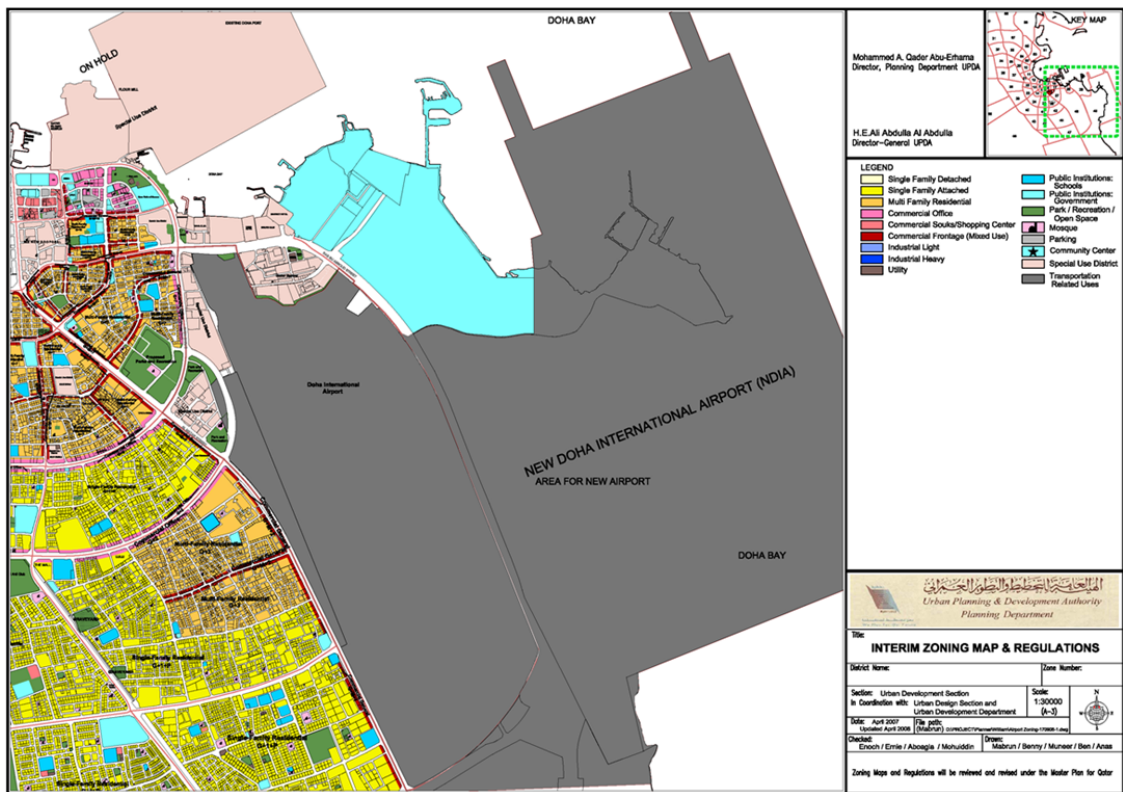


FIGURE 5 NEW AIRPORT AREA IN THE FORMER DOHA INTERIM ZONING 2007 (UPDATED 2008)
SOURCE: MME

QATAR NATIONAL DEVELOPMENT FRAMEWORK (QNDF)

The airport area is outside the jurisdiction of detailed Municipal Spatial Development Plans (MSDPs), but nevertheless it plays a significant role in other strategies, and also for the planning of adjacent lands (Figure 6). Spatial planning within the airport area is a responsibility of airport authorities.

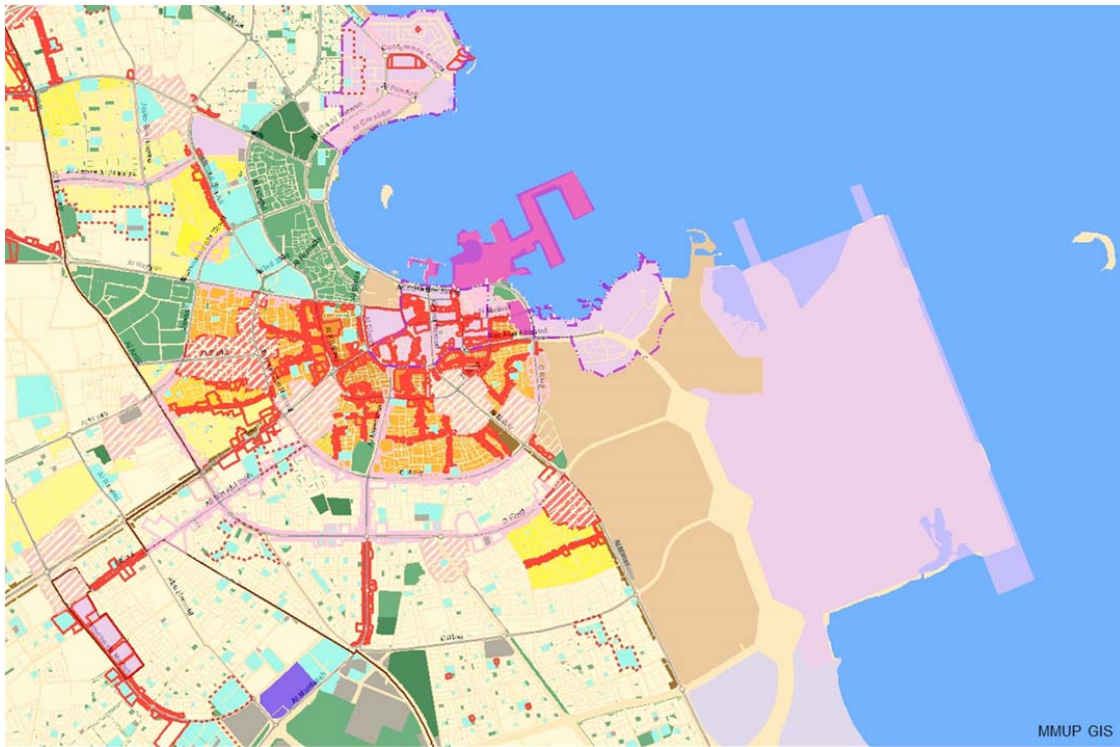


FIGURE 6 MUNICIPAL SPATIAL DEVELOPMENT PLANS – ZONING
SOURCE: MME

Qatar National Development Framework (QNDF) has a separate policy "M6" referring to Hamad International Airport: "Ensure the Hamad International Airport is well-connected to the strategic transport network and is supported by compatible economic activities".

Policy M6 in QNDF requires implementation of the following policy actions:

1. "Promote efficient access to the HIA by:
 - a. Ensuring strategic transport routes to the HIA support efficient and reliable journeys, particularly for public transport and freight
 - b. Safeguarding against inappropriate development which will compromise the efficiency and reliability of strategic transport routes connecting to the HIA
2. Ensure activities in locations around HIA that are compatible with airport operations and that can derive benefit from co-location
3. Applications for development that have an adverse effect on airport operations (including activities generating noise complaints) will not be permitted".

What is crucial to the development of Doha are the areas around the airport and the site of the former airport. The importance of these areas is stressed by designating a part of adjacent land to the old airport as a Capital City Centre (Figure 7 and Figure 8). Apart from this there are two such areas in Doha – Downtown Doha and West Bay Area. West Bay serves as commercial and financial centre whereas, Downtown has mostly historical and cultural aspects, being also a busy and active central area. In this context the Airport City would serve as business and logistics centre.

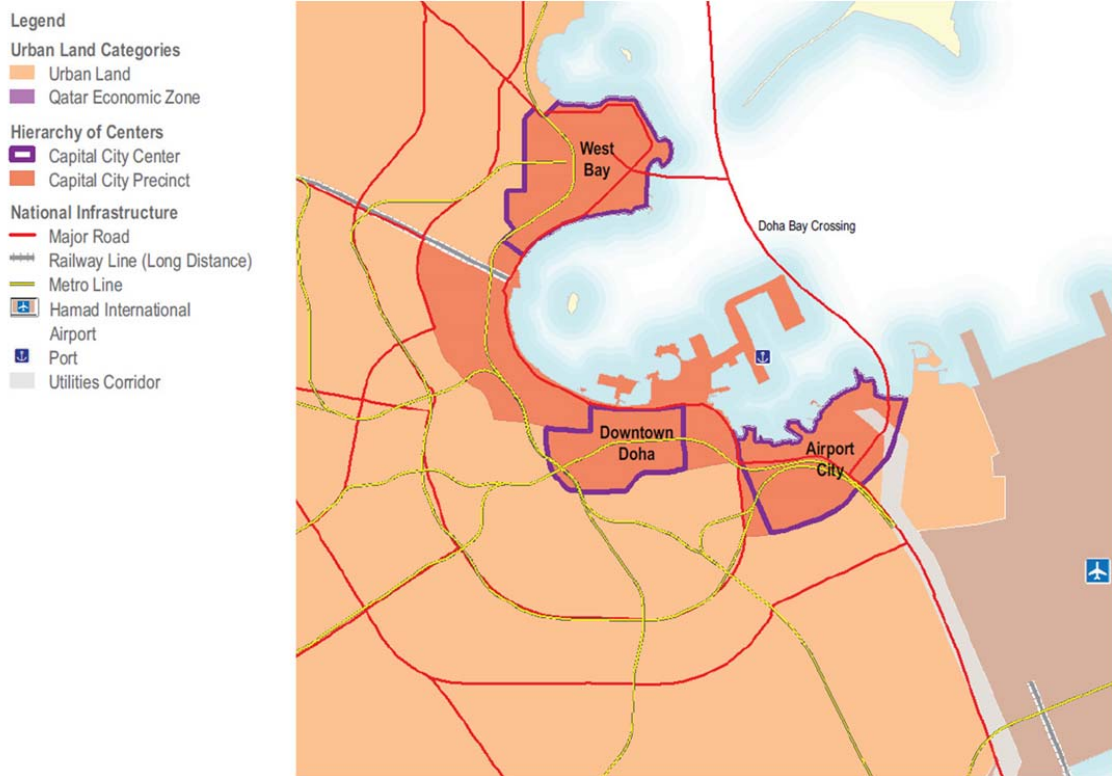


FIGURE 7 AIRPORT CITY AS ONE OF THREE MAJOR CAPITAL CITY CENTRES
SOURCE: MME



FIGURE 8 CENTRES AND METRO LINES
SOURCE: MME

According to QNDF (Section 4.5.15) "Towards 2030 and beyond, the existing Doha International Airport site will be redeveloped to eventually form the third Capital City Center. Airport City will be primarily aimed at providing facilities such as offices for high tech, value added and knowledge-based industries, a free [economic] zone, a technology incubator and sites for bulky goods storage. The redevelopment will focus on creating a high quality public realm with significant tracts of public open space adjoined by high and medium density residential development".

Moreover in "QNDF Schedule 3 - Mix of Land Uses Permitted within the Capital City Precinct", Airport City should have:

1. Mixed-use Commercial District with a focus on high technology knowledge-based businesses
2. Business hotels
3. High quality public realm
4. State of the art public transportation and transit oriented development (TOD)

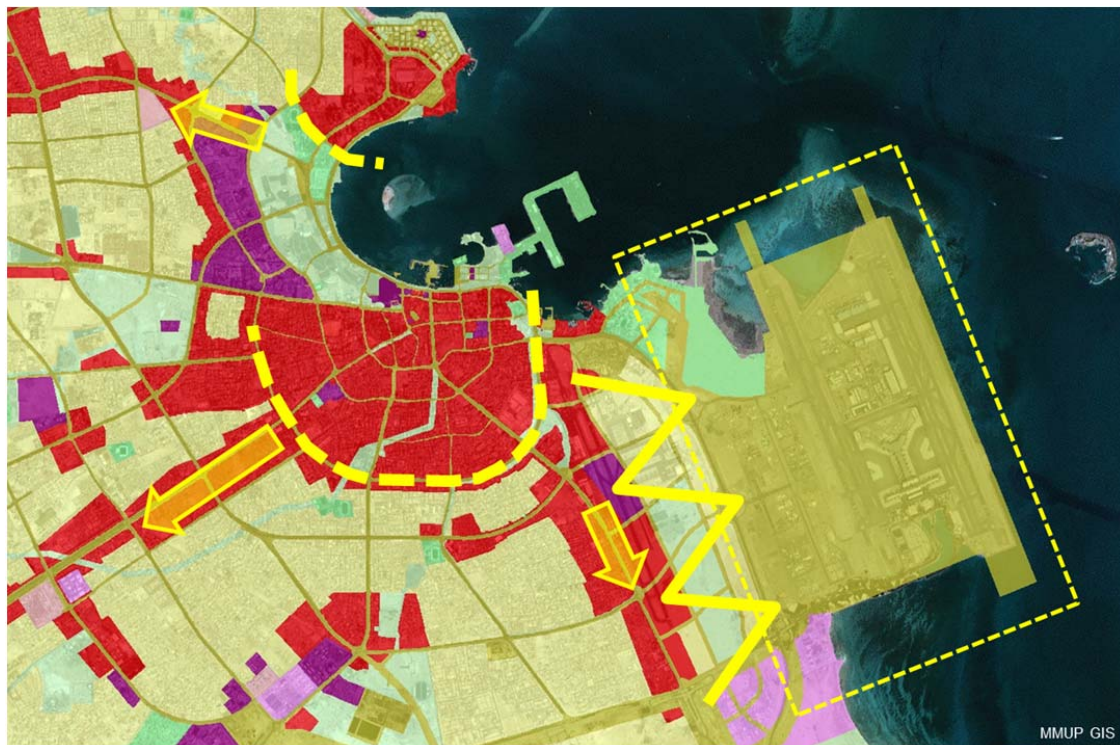


FIGURE 9 GENERAL LAND USE 2032 AND GROWTH PATTERN AROUND THE AIRPORT
SOURCE: MME

For the future development plans there is a clearly defined growth pattern. It assumes two main areas in the centre of Doha – West Bay and Downtown Doha to develop to a certain spatial limit, and then more intensive expansion would follow three corridors – to the west along Khalifa Street, south-west along Salwa Road and to south-east – Al Matar Street (Figure 9).

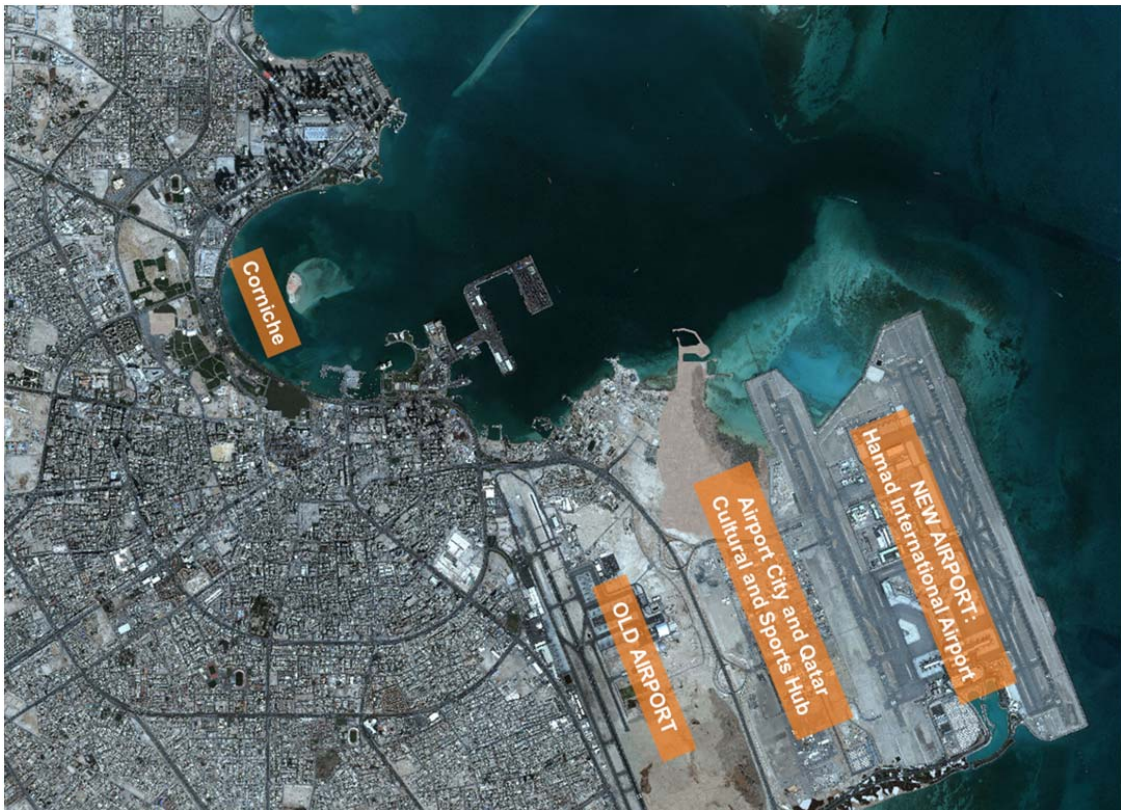
The latter is a strip that stretches beside the former airport. This creates a gap of the previous airport site that might be filled with investment in the future if the old airport would finally close down. For the time being this area is isolating HIA from the rest of downtown, except for the few connections in the north (Ras Abu Abboud Expressway) and south F Ring Road, which is the extension of the road leading directly to the airport.

PROJECTS

PROJECTS AND AREAS

There are quite a few projects planned or implemented that result from the relocation of the airport or benefit from the new land made available.

First of all there is the New Doha International Airport (NDIA), which was then called Hamad International Airport (HIA). Then there is the substantial development of infrastructure and also a redesign of the adjacent highway. The Right of Way was designed with landscaping, a linear park and one of the first cycling paths in Doha (10 km long) that is uninterrupted by intersections. In order to provide better road connection to northern parts (including West Bay) there is the concept of Doha Sharq Crossing (formerly named Doha Bay Crossing).



More projects are planned for Airport City and Qatar Cultural and Sports Hub (QCSH). This would be the new urban settlement to provide for a massive mixed use programme, located between the new airport and the existing city fabric. There is also a set of public spaces and facilities along the Corniche Street and, which may be claimed as the main public space of Doha. It stretches along the bay and is very popular with citizens and tourists. The southern end of Corniche (closer to the airport) has Museum of Islamic Arts (MIA) and a very well designed public park. Nearby there is the construction site for New National Museum of Qatar (designed by Jean Nouvel), which will extend the promenade southwards. In the middle part between MIA and West Bay a massive Al Bidda Park (Doha Grand Park) is being constructed to become the biggest green open space in Doha.

An important factor for all these projects is that they are aimed to be interconnected to form a synergy of uses, public spaces and attractive areas in the city. There would be links between the West Bay business area, traditional Downtown and the Airport City together with Qatar Cultural and Sports Hub.

NEW DOHA INTERNATIONAL AIRPORT = HAMAD INTERNATIONAL AIRPORT

One of the benefits of moving the airport was to eliminate the noise impact on the surrounding urbanised areas. Previously the areas under the noise influence were parts of the dense Doha Downtown, West Bay and Al Wakrah, a smaller city located on the coast to the south of Doha (Figure 10). By building parallel runways just 4 kilometres away to the east – most of the affected areas was moved over sea waters, even with the increased air traffic volumes (Figure 11).



FIGURE 10 NOISE AT THE OLD AIRPORT (AVERAGE DAY TRAFFIC, JULY 2003)
SOURCE: BECHTEL

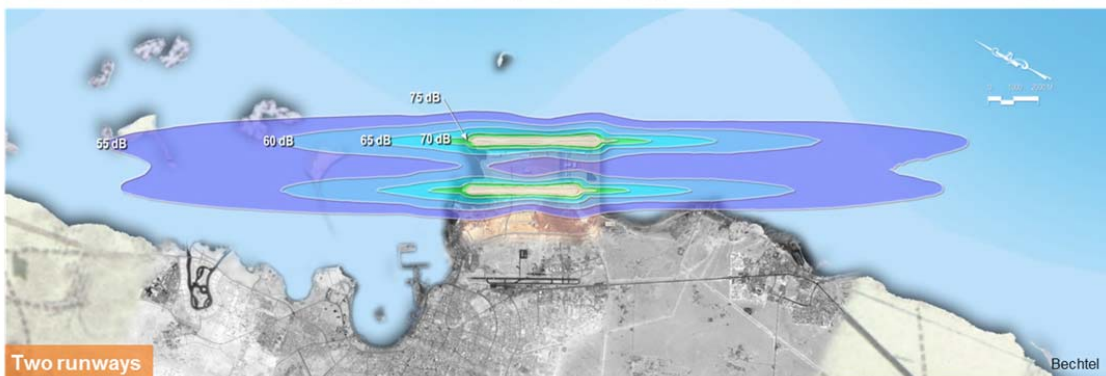
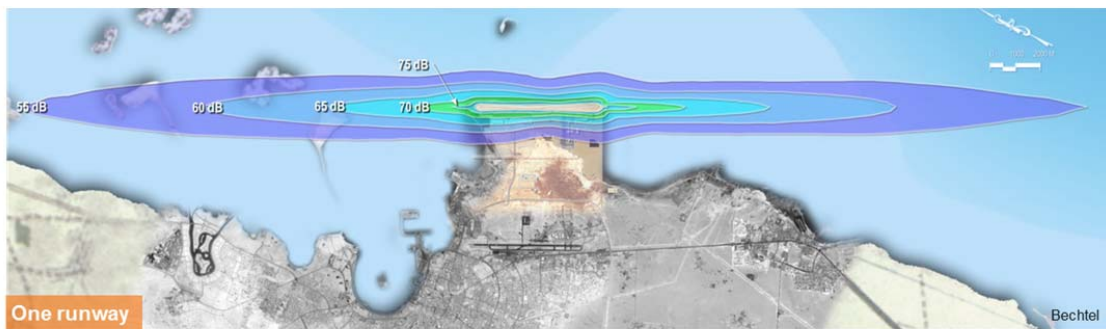


FIGURE 11 NOISE AT THE NEW AIRPORT (ESTIMATES FOR 12 MPPA)
SOURCE: BECHTEL

The masterplan for the New Doha International Airport (NDIA) was developed by a US based company Bechtel Ltd (Figure 12). It contained the layout of airport infrastructure and also a proposal for development of additional features such as mixed use area supporting the airport on the western side (along the highway).



FIGURE 12 ULTIMATE AIRPORT LAYOUT PLAN
SOURCE: BECHTEL

The main terminal and facilities are located between two runways, clearly dividing the space. On the south-western side there was a provision of land for business park, retail mall and hotels. This concept has not been realised, and later on, replaced by the proposal of Airport City and Qatar Cultural and Sports Hub. The old airport area was indicated as suitable for potential commercial development.

AIRPORT CITY

Airport city is a mixed-use project complementing the airport, located between the new airport and the highway. The concept was developed by Office for Metropolitan Architecture (OMA) that had won the competition. OMA was leading the master planning with a team of other consultants.

Airport City (Figure 13) is composed along the "Green Spine", which runs parallel to the runways and highway, and is divided into four circular districts (from north side): Residential District (lifestyle district with hotels, residential and entertainment facilities), Logistics District (administration and support facilities for cargo and maintenance services), Aviation Campus (headquarters Qatar Airways and Civil Aviation Authority) and Business District (mixed use scheme with offices, business hotels adjacent to the second terminal). The latter is located where the previous mixed use area was planned.

Additionally all is connected together by the "Curve" – a pedestrian path that extends and connects to the Corniche.

Initially part of the project was expected to be developed by 2022 FIFA championship. Currently it has been put on hold and postponed, with its first phase scheduled post 2030. The ultimate layout of the area is expected to be finalised by 2036. Nevertheless it can serve for temporary FIFA 2022 uses: additional, second terminal; maintenance and logistics area and also apron parking space. The project would be connected with an Automated People Mover that would ease the transport and communication within the scheme.

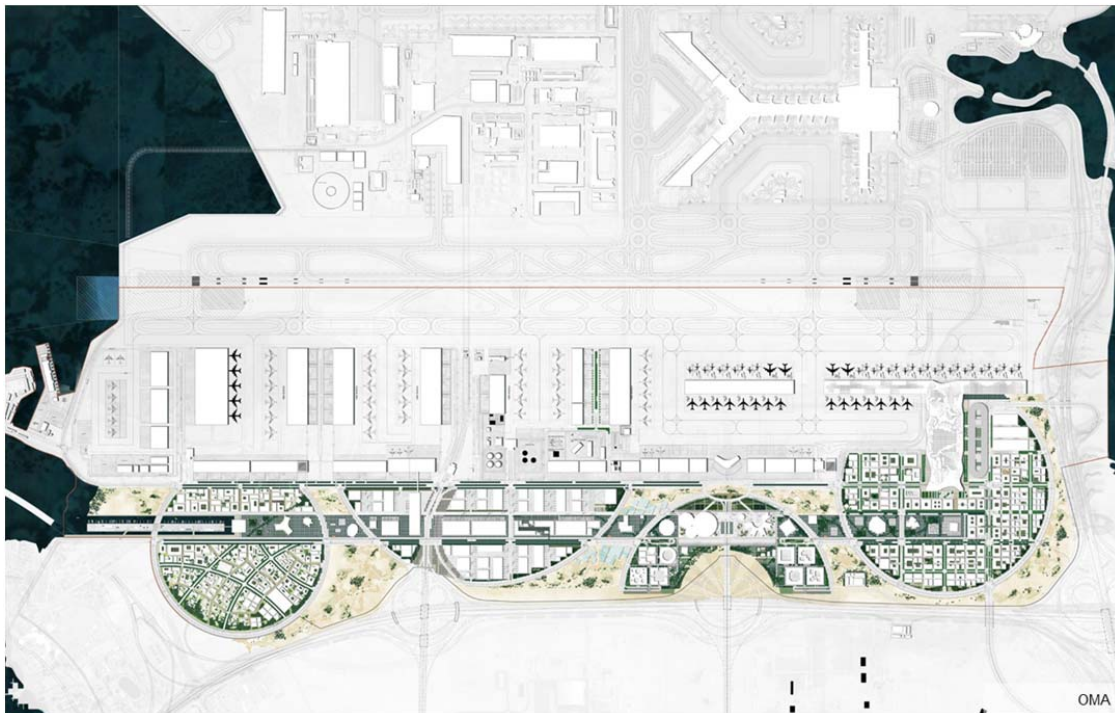


FIGURE 13 AIRPORT CITY MASTERPLAN
SOURCE: OMA

The initial masterplan divided the development in three phases. Until 2022, Phase 1 would deliver over 1.7 million square metres of gross floor area (GFA), mainly comprising of airport infrastructure (terminal and rail station complex) and offices. This would be aided by headquarters premises, hotels and public facilities. Phase 2 (2032), with nearly 1.5 million square metres of GFA would have 0.5 million square metres GFA as residential and the balance as office space, warehouses, cargo and maintenance hangars. The last Phase 3 by 2042 would account for 18% of the total GFA with 0.7 million square metres GFA, with around a half of this space for residential housing.

QATAR CULTURAL AND SPORTS HUB

Qatar Cultural and Sports Hub (QCSH) is a far-reaching project that extends between the new airport with Airport City and the runway of old airport. It would cover the area of a large part of the former airport, Doha port and land along the waterfront (Figure 14 and Figure 15).

The project is divided into several areas of different theme and function. Looking from north the components of QCSH comprises of Old Port, Southern Corniche, Sports Plaza, Celebration Park and Salt Lake Valley. Stage 1 would comprise of Celebration Park, Sport Precincts and Southern Corniche Precinct. Stage would be 2 Old Port area and connection to the Southern Corniche.

Programming of QCSH focuses mainly on the "destination" types of uses, as this is the main theme of the project. Nearly 79% of the total land area (which is nearly 5.0 million square metres total) will fall into this category, with 35% each for sports and entertainment/leisure zones. "Real estate" categories (residential, office, retail and hospitality) will constitute for 18% of total land area, but in terms of gross floor area it will be 55% of the total, mainly with residential (26%) and hospitality (17%) programmes. For housing there will be 243 thousand square metres of GFA. Total project GFA will be 920 thousand square metres. It is estimated that the whole programme, including the existing and adjacent lands will be more than double – nearly two million square metres of GFA.

The project aims to provide a potential support for future Olympic bid by Qatar. For example the Salt Lake Valley has special area designated for rowing course, parallel to the old runway, that is able to cater for the needs of required length and location. The concept has to wait until implementation, which has been postponed due to revision of priority developments. Nevertheless currently there are design works that are carried out in order to build a stadium on the waterfront. It will be used for FIFA 2022 games, and then later on transformed into a residential village.



FIGURE 14 QATAR CULTURAL AND SPORTS HUB (QCSH) MASTERPLAN
SOURCE: OMA



FIGURE 15 OVERVIEW OF SOUTH-EASTERN DOHA WITH OLD DOHA INTERNATIONAL AIRPORT,
QATAR CULTURAL AND SPORTS HUB, AIRPORT CITY AND NEW HAMAD INTERNATIONAL AIRPORT
SOURCE: OMA

DOHA SHARQ CROSSING

With the increasing traffic volumes in Doha a new connection was proposed that would bypass most of the central areas and connect the crucial nodes in the city. A new project was proposed – a Doha Bay Crossing – now renamed to Doha Sharq Crossing (Figure 16).



FIGURE 16 DOHA SHARQ CROSSING OVERVIEW
SOURCE: ARCHIVENU.COM

Doha Sharq Crossing is meant to connect Hamad International Airport with Dafna/West Bay business district and also Katara Cultural Village. The road would span over Doha Bay, going up and down as an underwater tunnel and series of bridges as well (Figure 17).

The project was designed by Santiago Calatrava and has four main features. There is West Bay Bridge, which has the form of two-deck tied arched structure incorporating a “longitudinal park” and elevated walkway. This part will extend to the public spaces in the centre and along the Corniche – into the water. Second is the Cultural City Bridge, which is a long bridge with a series of cable-stayed structures. On the other end of the connection there will be Sharq Bridge, with a tubular structure with low profile to accommodate air traffic. Lastly these elements will be connected by a submerged tunnel links.



FIGURE 17 DOHA SHARQ CROSSING
SOURCE: ASHGHAL / CALATRAVA

Project was planned to be built between 2015-2021, but currently it is under review and on hold.

SUMMARY

RESULTS: CREATING NEW CONNECTIONS

Moving the airport to reclaimed land has not only opened up new possibilities for development, but also created the opportunity and the need to create new connections. These affected not only the adjacent land, but also areas that are further from the airport.

The most immediate results are the **infrastructural connections**. The new road layout was realised, especially the Ras Abu Abboud Expressway, which is not only connecting the city with the airport but also allows for much better access to Al Wakrah settlement on the south of Doha. It includes new pedestrian and cycling paths. Once Corniche is extended it will connect the city public spaces along the waterfront, towards the new developed areas. The metro project will have two stations (HIA Terminal 1 and Ras Abu Abboud) in the airport area. Next two are planned in second phase of metro project (HIA Terminal 2 and Airport City South). The new Sharq Crossing will significantly ease the vehicular access to and from West Bay and also reduce congestion in the city.

In terms of **connecting the existing urban fabric** with new projects there will be a whole new city programme within the Airport City and the Qatar Cultural and Sports Hub (QCSH). A large part will be for the transport infrastructure itself – airport, aviation, logistics and communication. Also there will be an Aviation Campus with offices and training facilities. Besides commercial, retail, offices and business premises, residential areas will be introduced, which will create new investment opportunities and urban scape. Those uses will be supplemented by a large scale sport and recreational programme of the Sports Hub.

Finally it is crucial to connect and **coordinate all the various projects** planned in and around the airport area. These are designed, managed and operated by many different stakeholders. Also many are outside the centralised planning process (as they are treated as special development areas), which makes it more complicated to integrate into the comprehensive citywide plans. Additionally they all needed to fit into more complex strategies of hosting FIFA 2022 and bidding for future Olympics. Therefore the effort had to be much greater to make sure that they would be well coordinated and integrated.

DIFFERENT APPROACHES TO CHANGES

In order to maximise the opportunities and also plan for the integration – various aspects were considered as how to plan for the changes and how to introduce numerous, complementary projects. These led to several results listed below.

Connectivity and transportation was approached in two ways. First, the new airport allowed for larger volumes of passengers coming in to the country, which was not possible with the old airport running at its maximum capacity. This is crucial in a country that is mostly reached by air. It also opens up the possibilities for development in other parts of the metropolitan area, as there will be more people coming to the country and it will be possible to accommodate a larger population. It should be noted that Qatar has grown at an incredible pace from 370 thousand in 1986 to 1.7 million in 2010 with a forecast of 2.5 million in 2017. Secondly the new investment with road network and metro line opens up

possibilities for enhanced mobility not only of passengers, but also from the adjacent areas that were isolated from the city before. Now it will be much easier to develop these areas.

New lands available for new urban districts is another benefit. Apart from new Airport City and Qatar Sports and Cultural Hub, there will be a possibility in the future to redevelop the former Doha Airport and also lands to the south – towards Al Wakrah. The distance between the old Doha and its dense centre and the new airport will allow for better transition from the existing urban nodes to the new development. With this also the noise impact from the aircrafts will be mitigated.

Another element is **planning for a change**. By staging and allowing for temporary uses, the area will gradually be developed over time, but it will allow for changes during this process. It will be very important especially during the mega events, such as FIFA 2022. In the whole strategy of delivering infrastructure for FIFA, legacy is a very important issue. Many of the stadiums will be reused or converted to other functions. Areas around them will change their use as well, supporting for different needs in the future. The stadium at the waterfront will be transformed into a residential village. There will be temporary parking for aircraft at the airport, and the old Doha Airport will also serve as an additional runway.

Additional effect of coordination is the **coherent vision of public spaces** and building the **city's identity** with significant landmarks. The Corniche promenade is currently linking West Bay business district to the central Doha, connecting the prominent areas on the way, including governmental buildings (such as Emiri Diwan), open space (green areas, like MIA park) and tourist destinations (e.g. Souq Waqif). It also allows for a network of landmarks that are important and recognisable.

By opening the space for big scale and mass events there will be **more recognition** not only for the nearby airport areas, but also for the whole country. Big scale and mass events should bring global awareness of the country's assets and boost tourism.

CHALLENGES

In such cases of redevelopment of vast areas of land there are clearly many challenges to overcome.

The most important element seems to be the coordination of various projects, which are carried out by different stakeholders. Especially when they are all planned and designed at a similar time by various entities which makes the integration more complicated. Relevant coordination procedures should be in place. They also need to be well integrated into the planning processes, and the comprehensive development plans need to be adjusted. The planning and implementation strategy require lengthy processes and have to take into account staging and phasing of the projects. This also needs considering the specific business interests of different stakeholders. With special uses and events – like FIFA 2022 or planning for potential future Olympics – it is crucial to prepare legacy plans and provide means to implement them. To allow that it is crucial to provide a number of temporary uses. Moreover each development needs to care for sustainability and especially large scale projects have to mitigate the environmental impacts.

The city redevelopment plans around the Hamad International Airport presents the complexity of the work as well as aspirations of the nation to build a better city for tomorrow.

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Troubleshooting in the New International Airport in Mexico City

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ABSTRACT

Global economy has changed the way and needs of moving people and goods, and it is known among cities rather than countries that they compete and complement to each other, that is why nowadays airports play a very important role, generating jobs, tourism, commerce and a wide economic activity not only from aeronautical movements but from all the impact this kind of infrastructure has among its surrounding areas. The concept of airport city and its relevance comes from all the factors that makes of an airport and its surroundings an important engine for a region's development, including non-aeronautical revenue sources and complementary services such as hotels, accommodation, duty free shops, restaurants, housing, and entertainment among others. Mexico is building the new Mexico's city airport which aims to be one of the biggest in the world, with 3 runways and a terminal for 50 million passengers a year during the first stage of the project, and 6 runways and capacity for a 120 million passengers a year on its final stage. It is clearly important that the planning not only of the airport itself but of the landside is done considering the context and needs of population, aiming to generate jobs and opportunities for the country to take advantage of the economic impact that such an infrastructure can generate. In parallel, the land of the actual airport must be planned to complement with the new one and generate social and economic benefits under a sustainable approach, this will consolidate both the new and actual airport as central and metropolitan areas to work as the "gateway to the Metropolitan Area of Mexico City" which has a population of 23 million inhabitants. The objective of this paper is to establish the problems and opportunities that both the new airport and the actual airport of Mexico City represent.

Background

- *Urban and population growth of Mexico City's Metropolitan Area.*

The area nowadays occupied by the Metropolitan Area of Mexico City, has been recognized throughout history for having the highest concentration of population, economic activities and government. The first settlements were in the fifteenth century, and it was during the 1980s that the urban area grew and political boundaries were overwhelmed, mainly to the north and west of the city now known as entities Cuauhtémoc and Benito Juárez and the municipalities of Atenco and Nezahualcóyotl in the State of Mexico.

The process of urban growth in the metropolitan area is marked by a lack of planning and the centrifugal expansion of the urban area. While in the Federal District processes of different density, recovery and depopulation are given, the municipalities of the State of Mexico and Hidalgo are characterized by a strong expansion of its outlying areas at a time of depopulation of its most consolidated central areas.

In 2010 it had a population of 20,533 inhabitants in an area of 7,866 km², occupying 76 municipalities in 3 different states (Federal District, State of Mexico and Hidalgo). (CONAPO, 2010)

Image 1. México-Tenochtitlan, año 1500.



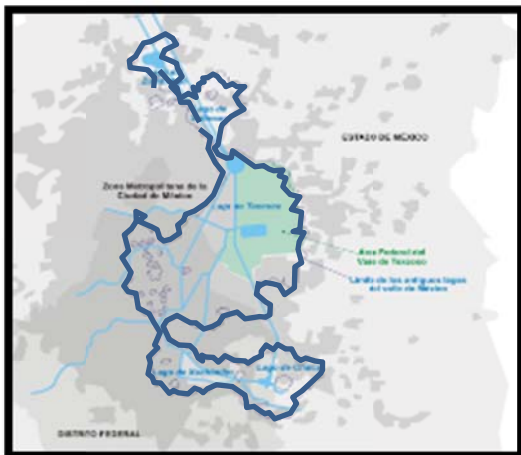
Source: Tomás Filsinger, 200; Mapas y visitas del Anáhuac, Espacio y tiempo en la cuenca y la ciudad de México, 1325-2000.

Table 1. Population, area and population density of ZMCM's urban area. 1950- 2020.

Año Población (miles)	Superficie (ha)	Densidad (hab/ha)
1950	2,953	22,960 129
1960	5,125	41,010 125
1970	8,816	68,260 129
1980	12,333	105,660 117
1990	15,047	121,320 124
1995	17,089	132,570 129
2000	18,210	145,000 125
2010	20,533	162,690 126
2020	22,253	174,830 127

Source: Covarrubias, 2000; en Proyecto para el diseño de una estrategia integral de gestión de la calidad del aire en el Valle de México, 2001-2010. MIT, 2000.

Image 2. Comparative map of Mexico City area and former lakes of the valley.



Source: Cruickshank García, Gerardo (1998): Proyecto Lago de Texcoco. Rescate hidrogeológico. Comisión Nacional del Agua. México.

The Valley of Mexico, where Lake Texcoco was located, is currently the most densely populated region in Mexico. Large portions of what was the lake are occupied today by urban settlements. The expansion of the urban area towards the dried regions began from the moment that the effects of drainage systems gave their first results.

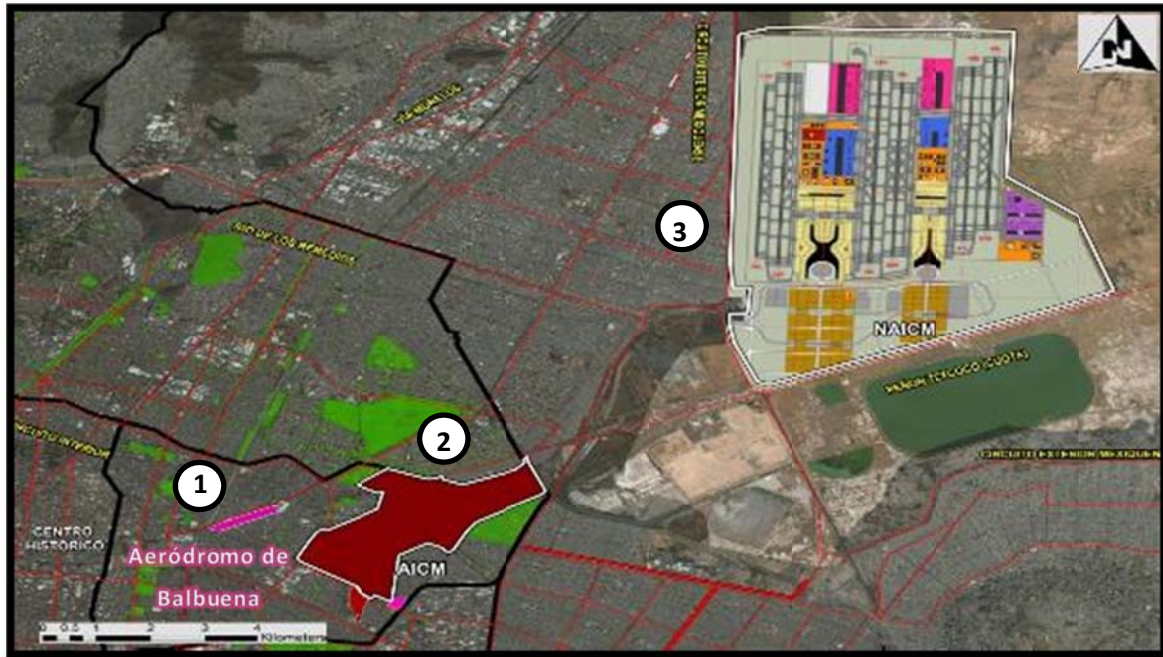
- *History of Mexico City airports.*

November 1911, President Francisco Ignacio Madero Gonzalez inaugurated the aerodrome on the ancient plains of Balbuena where in 1910 Captain Alberto Braniff made the first airplane flight over Mexico City.

President Pascual Ortiz Rubio on May 15 1931, officially inaugurated the International Airport of Mexico City (AICM), located in the neighborhood of Peñon de los Baños in Venustiano Carranza, the airport is 5 kilometers east Historic Center of Mexico City. In 2014 34 million passengers were transported.

On September 2, 2014, architect Fernando Romero Havaux with Foster + Partners were assigned the project of the New International Airport of Mexico City. It will start operations in 2020 with 50 million passengers per year and on its final stage it will move 120 pax/year.

Image 4. Comparative map of Mexico City's airports.



Source: Self elaboration with information from INEGI y ASA, 2015.

- Current status of the area where the International Airport of Mexico City is located and where the new airport will be located.

Road infrastructure, energy and sanitation generates anthropogenic barriers in the city. Currently the federal lands of Lake Texcoco pose a physical barrier to the development of East-West Valley of Mexico. The lack of integration between these two areas of the city is accentuated by the low density in the road transport network and it limits mobility between the territories, mainly the East. There are identified in the catchment area of a number of different high-capacity infrastructure that accentuate the limits of NAICM, as major barriers to municipalities and boroughs in the environment, such as; The Mexiquense Circuit, the General Drainage Valley, and the Cutzamala System.

The provision of such infrastructure in the peripheral territory of NAICM, uncontrolled landfills that continue to operate and that have not been closed or regenerated, involve a strategy of integration, mitigation and definition of the areas of study that should be considered to establish a first strategy for development and sustainable urban growth that is in line with the overall strategies of implementation of NAICM.

Image 4. Current status of the area where the International Airport of Mexico City is located and where the new airport will be located.



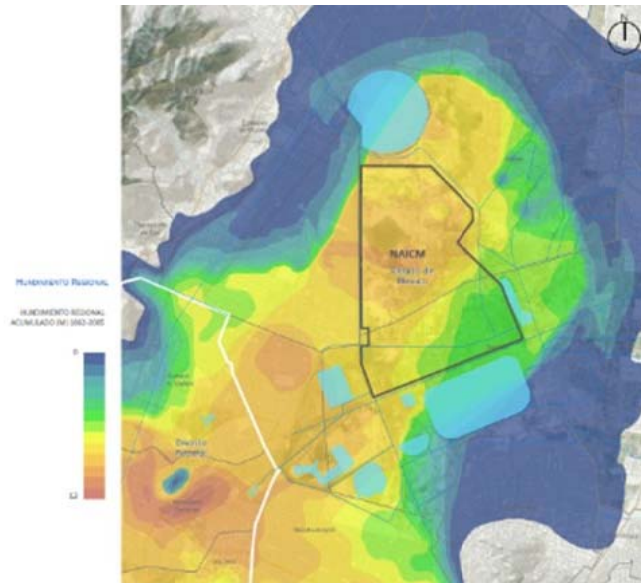
Image 5. Current status of the region subsidence where the New International Airport of Mexico City will be located (NAICM).

Source: SEDATU with Technical Assistance from IDOM base don compilation from CONAGUA; Atlas Risk from Estado de México; Mexico City Water Systems(SACM) and Water Comission of Estado de México (CAM) and Federal Electricity Commission, 2015.

- *Region subsidence*

The exploitation of groundwater caused the subsidence in the Valley of Mexico. This operation began with greater intensity in 1846 with the drilling of wells to obtain drinking water.

As a result of subsidence caused by pumping large settlements were generated in some areas within the city. The effects are visible and generate instability problems for constructions.



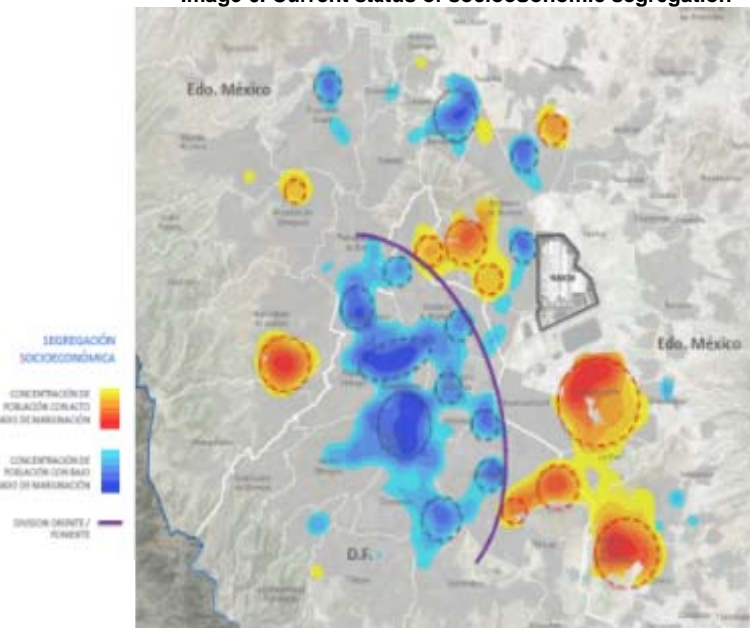
Source: SEDATU with Technical Assistance from IDOM base don compilation from CONAGUA; Atlas Risk from Estado de México; Mexico City Water Systems(SACM) and Water Comission of Estado de México (CAM)

- *Socioeconomic segregation*

A clear socioeconomic segregation, where people with low level of poverty is concentrated in the center and west of the metropolitan area, the population with high level of poverty is concentrated in peripheral areas and especially in the East Zone of the Valley of Mexico.

This allows to dial an axis of east-west division, where the imbalance between those areas of the city and a socioeconomic segregation that also responds to issues of inequity of services and equipment is observed.

Image 6. Current status of socioeconomic segregation



Source: SEDATU with Technical Assistance from IDOM and data from Population and Housing Census 2010 (INEGI), 2015.

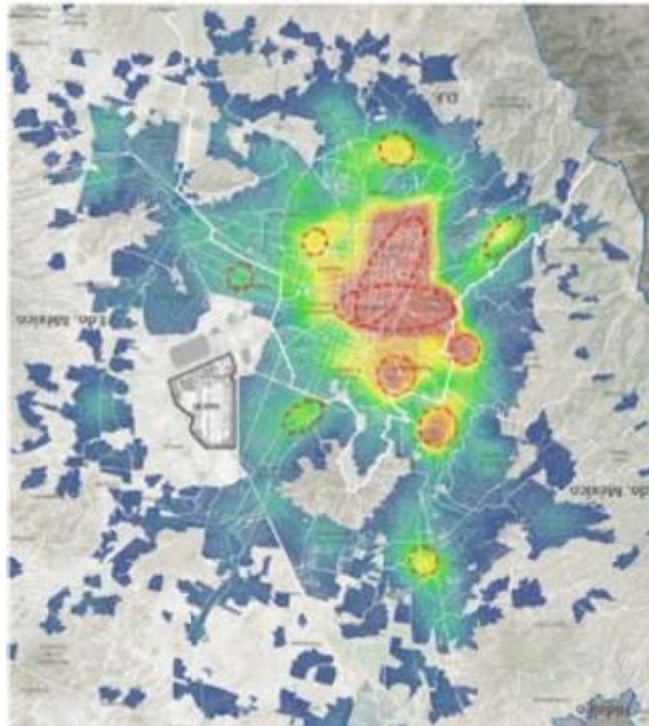
- *Targeted economic activity*

The ZMCM provides 27.2% of Gross Domestic Product (GDP) and concentrates most of the services, although it has declined in recent decades.

The greatest concentration is in the central districts of Mexico City: Miguel Hidalgo, Cuauhtemoc and Benito Juárez.

At other importance level, economic activities in Tlalnepantla, Naucalpan, Cuautitlán Izcalli, Cuajimalpa, Tlalpan and Iztapalapa stand out.

Image 7 Actual status of economic activities concentration



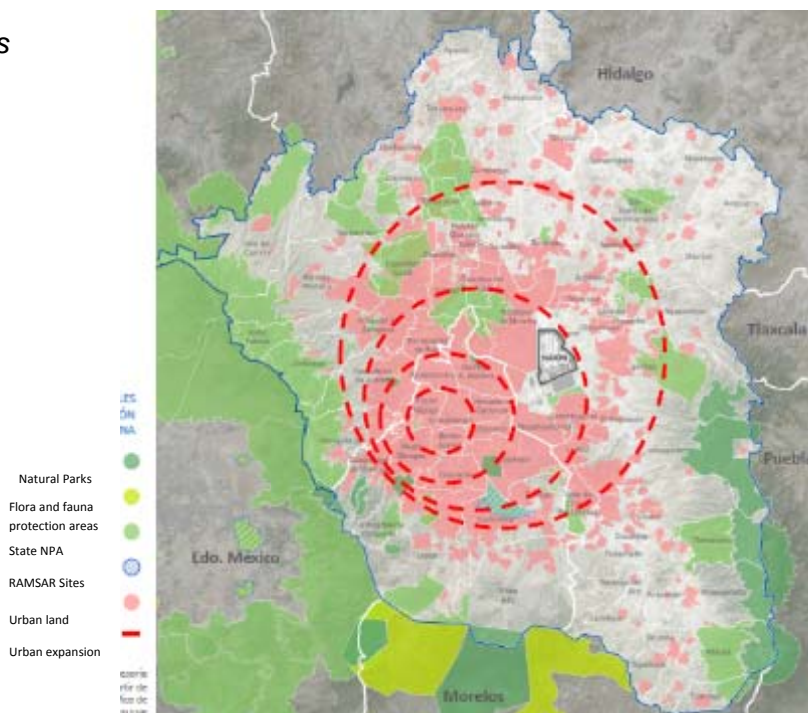
Source: SEDATU with Technical Assistance from IDOM and data from National Statistics Economic Units (INEGI, 2013).

Image 8. Natural Protected Areas

- *Natural Protected Areas*

Growth of the urban area in the MCMA puts strains on Protected Natural Areas (PNA), soil conservation and agricultural areas, affecting and endangering the environmental services that these areas provide to the city.

It will be identified at a metropolitan level a biotic horseshoe-shaped corridor that surrounds the urban area and that should be a clear boundary for expansion .



Source: SEDATU with Technical Assistance from IDOM, and mapping information from CONABIO and CONANP.

- *Population density*

The following map allows to locate the areas with the highest concentration of population based on the last Census of Population and Housing by INEGI (2010), standing out:

Federal district central boroughs (Cuauhtémoc, Miguel Hidalgo and Benito Juárez).

Municipalities of Ecatepec de Morelos, Nezahualcóyotl, Chimalhuacán and Valle de Chalco Solidaridad in the east.

Iztapalapa and Coyoacán in the south.

Naucalpan de Juárez and Álvaro Obregón in the west.

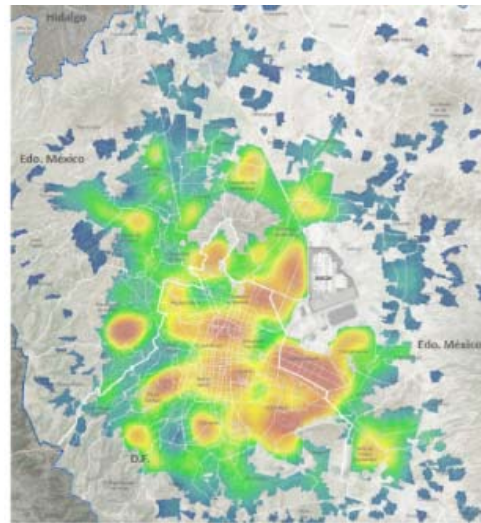
Coacalco, Atizapán de Zaragoza y Cuautitlán in the north.

- *Concentration of mass transit lines*

Mass transit coverage is great in the central area and it decreases towards the periphery.

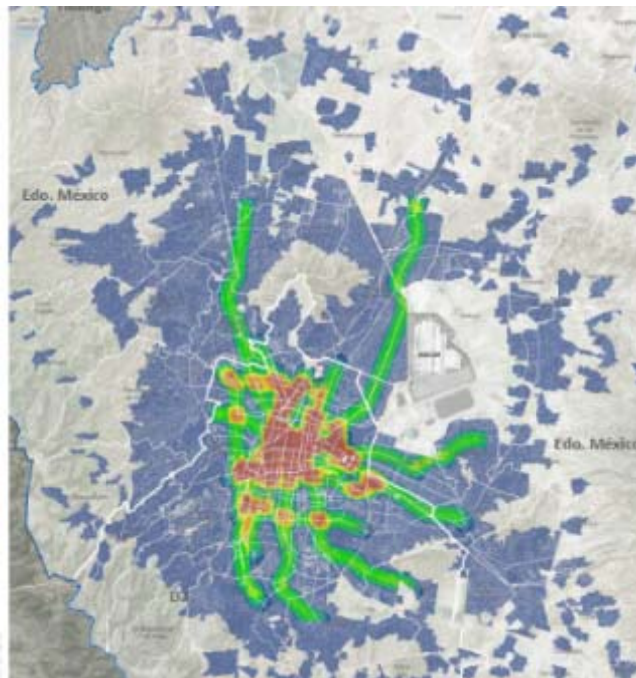
Most coverage is within 10 km from the historic center and decreases considerably in the range of 10-20 km, and there is little coverage to outlying areas of the city. The western area has limited coverage of mass transit, the east and north are partially covered with a small number of lines of transportation that exceed the range of 10 km from the historic center.

Image 9. Population Density



Source: SEDATU with Technical Assistance from IDOM and data from Population and Housing Census 2010 (INEGI), 2015.

Image 10. Current State of mass transit lines



Source: SEDATU with Technical Assistance from IDOM and data from National Statistics Directory of Economic Units (INEGI), 2013.

- *Problems - AICM*

- The main problem is the AICM is currently running saturated this generates delays, cancellations and a highly congested airport limiting the economic potential the airport has to offer to itself and the whole region. The airport has a maximum capacity of 40 arrival operations per hour distributed in 15 minutes blocks, each of them with 10 arrival aircrafts. Runways are not separated enough to work simultaneously. (SMART, 2014)
- There is no available land for expansion of the airport.

- *Problems – NAICM*

- The new airport will be located on wetlands which represent a risk of flooding of the runways and a high cost of infrastructure work to mitigate these effects.
- Being a mega infrastructure project, the NAICM will require of a clearly established tasks and responsibilities between all the actors and entities (public and private) involved in the construction and operation of the airport.
- Despite being located just 10km away from the AICM, the new airport will require severe investment in transit infrastructure.

- *Oportunities – AICM*

- Improve the life quality of the east zone, balancing it with the rest of the metropolitan area.
- Constitute a new centrality alternate to the historical Downton of the metropolitan area.
- Create a metropolitan milestone as a reflex of 21th century Mexico.
- Core of high-end educational, cultural, accommodation, and leisure facilities.
- Mixed real estate pole for commercial, financial, office, lodging and food service activities and high tech white industry.
- Consolidate a regional core to relocate public offices.
- Logistic, storage and distribution Hub.
- Sub compact metropolis of 708 hectares modern, environmentally sustainable and connected with neighboring federal lands and with NAICM project in Texcoco.
- High-potential job creation and value capture and resources via taxes to the three levels of government.
- Improve local and regional mobility to join its adjacent area and leverage existing mass transit systems and their connectivity with the metropolitan area.
- Its proximity to the NAICM (10km) and the road infrastructure enhance the potential relationship and the opportunities mentioned above.

- *Oportunities – NAICM*
 - 4,431 ha terrain to develop aeronautical and non aeronautical activities
 - Opportunity for small and medium enterprises to grow and benefit from attending the demand from different types of facilities and complexes.
 - Greater integration with local and global markets
 - Reduced connection costs with other countries around the globe
 - Creation of health centers, educational institutions, green areas, hotels, exhibition centers, that will attend inhabitants in a regional scale
 - Improved connectivity between the metropolitan area and adjacent municipalities
 - Urban and regional balance for the metropolitan area
 - New metropolitan forest

Troubleshooting

- *Polycentric system*

The ranking of centrality considering its strategic location and level of function in the polycentric network results:

Historical Center, as a traditional center of foundational character of this great city.

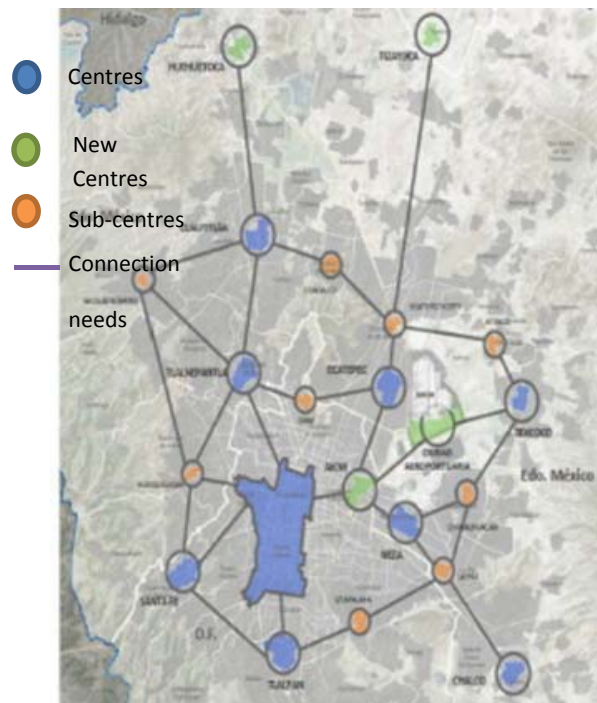
Eight centers with great strategic importance in the centralities system and having qualities characteristic of traditional urban centers: excellent accessibility, balance in the mix uses and provision of services, large spaces full of monumental representation, etc. Four new centers among which stands out the Airport City (linked to NAICM) and the development in the current AICM.

Nine sub-centers, which have complementary functionality to submit the Centres and help articulate the system.

- *Polycentric system proposal*

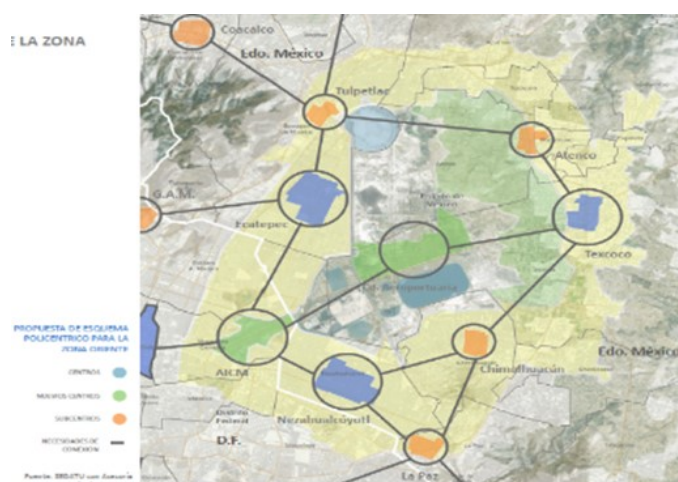
The subsystem centrality of the East Zone of the Valley of Mexico is characterized by the presence of areas that are still in process of consolidation and that in many cases have emerged from the sprawl of the city and even as substandard settlements.

Image 11. Polycentric proposed scheme for the ZMCM



Fuente: SEDATU con Asistencia Técnica de IDOM, 2015.

Image 12. Polycentric system proposal for the Easter Zone



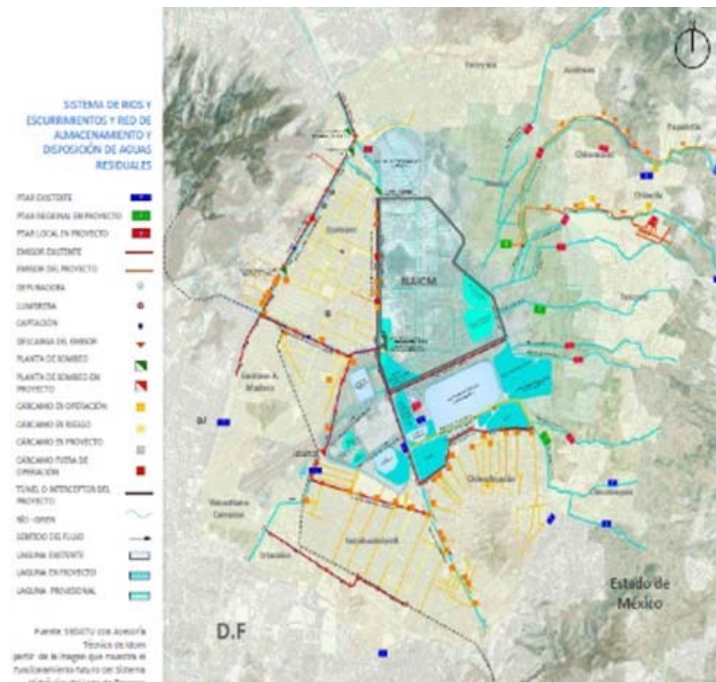
- Proposed system of rivers, runoff, network storage and disposal of sewage

Source: SEDATU with Technical Assistance from IDOM, 2015.

Image 12. Proposed system of rivers, runoff, network storage and disposal of sewage.

Use policy applies when the environmental unit is suitable for sustainable development of effective and socially useful productive activities conditions.

The Regulation and Sanitation Project of Eastern Rivers, which CONAGUA is the promoter and aims at implementing a series of works for the rehabilitation of the nine rivers of the East, considering the lining of these rivers as part of the sanitation



Source: SEDATU with Technical Assistance from IDOM, 2015.

- Conceptual image

With the renewal and transformation of the AICM to new uses and new urban functions, conservation of the two existing terminals and most hangars anchor equipment and uses, namely ,uses with a metropolitan and regional influence is proposed.

Image 13. Anchor integration proposal uses



Source: SEDATU with Technical Assistance from IDOM, 2015.

Image 14. Current status of the NAICM



Image 15. Proposal for integration with the environment and the NAICM



Image 16. Proposal for integration of the NAICM with the environment



Source: SEDATU with Technical Assistance from IDOM, 2015.

Placemaking and airport-related urban development

Michał STANGEL, Silesian University of Technology, Poland

1 Introduction

The notion of place has a basic significance for the trend of the sustainable urbanism, which calls for a return to a traditional, harmonious, vital and wholesome urban space. In this approach *placemaking* means a method of designing in which an emphasis is put on creating a unique specificity, a local spirit of a place and at the same time on the optimal usage of local resources.

Meanwhile, anthropologists treat transport hubs, especially airports, as objects of their criticism because these are the places where an almost model degradation of the values mentioned above took place. While describing contemporary civilization realities, Marc Augé (1995) describes 'strange, anonymous spaces', such as shopping centres, petrol stations, railway stations or airports themselves. In this point of view, phenomena such as airport city or aerotropolis are basically a negation of the urban theories proposed by 'conservatives'. In the traditional meaning there is nothing truly urban in the form of all those elements situated in an airport city (Wróbel, 2012). First of all, Airport City has no permanent residents (apart from some extreme cases, such as an Iranian refugee Mehran Nasser, who for a dozen years lived at the Parisian Charles de Gaulle Airport and became an inspiration for a film by Steven Spielberg 'Terminal', or Edward Snowden, who spent a month in the transit area of the Moscow Sheremetyevo Airport). Thus, can we say that 'Airport City' is to 'city' like 'shopping arcade' is to 'arcade' or 'industrial park' is to 'park'?

In the designing and development practice the idea of 'placemaking' has also a slightly different meaning – a concept of unique places attracting people with an interesting space and offering attractive impressions and experiences. It is used while realizing commercial properties, such as shopping centres, recreational centres or amusement parks. The used design measures often draw on traditional urban spaces as those in which people feel well and comfortable, while designing applies many measures in various scales to *create the urban impression*, e.g. dense frontage development, creating an impression of space in a street or square, floor surfaces imitating cobbles, shaping greenery or architectural details in a way which imitates open spaces, introducing urban elements of architectural details, such as fountains, benches and the like. Successful examples of creating commercial spaces which provide urban impressions may be realizations of firms which can boast with the greatest successes in this field.

Perhaps then, rather than looking back to traditional urbanism, we may consider the slogan of The Jerde Partnership: 'We make places that attract millions of people; places that create huge social & economic value; places that deliver memorable experiences; unique places'.

In this context one may wonder to what degree airport-proximate developments may have properties of wholesome neighborhoods and to what degree shaping airport-proximate zones may benefit from using a complex approach of sustainable urban design.

2 Airport City as a district in the sustainable urban structure

Developing urban analogies between an airport-proximate development and a city we may state that a terminal plays almost a role of the heart itself and the departure lounge is an equivalent of a market square and main streets surrounded by a series of service points

(trade, catering, entertainment). In the analogy the services around the terminal – offices, hotels, conference centres, trade – are an equivalent of a city centre and the functions located further away are equivalents of city districts.

The principles of shaping the built environment, formulated within the paradigm of sustainable urbanism, postulate a holistic approach in three scales: polycentric structure of regions, metropolis and cities; urban grid of districts and neighborhoods; and the micro scale of an urban block, and buildings providing active frontages for public space. It implies the rediscovery of the value of traditional, compact and multifunctional urban grid, with local access to services, green space and urban amenities. In such a structure, density and intensity rationalize sustainable mobility. It means reducing transportation needs, and promoting alternatives to personal motorization: walking, cycling and public transport.

Can principles of urban composition, on which contemporary urbanism draws with reference to shaping urban space, be applied in airport-proximate zones? After all, shaping developments in those places is determined mainly by economic factors and a strive after maximization of investment effectiveness. Nevertheless, it seems that in an urban structure with similar density, functions and other parameters a spatial composition – even if not 'beautiful', then at least 'logical and rational' – may determine positive aspects of a place.

2.1 Airport Oriented Development

The concept of sustainable urbanism calls for the development of an urban space as a polycentric structure of dense buildings complexes – districts or neighborhoods – with distinct characteristics. Metropolitan areas consist of neighborhoods with a varied specificity. The characteristics which sometimes decide about the names of neighborhoods are often important public spaces, buildings or junction elements (railway, underground), by which local service centres develop. In such an approach areas around airports which are within administrative city limits may be specific places of a new type which constitute a mosaic of neighborhoods creating an urbanized area. The districts can perform most city functions, maybe with an exception of typically housing areas, although there appear ideas of integrating housing developments within Airport Cities.

The model of a polycentric urban structure with neighborhoods constructed around local centres at transport hubs is referred to in the concept of a compact city as an optimal structure of developmental strips of urbanized areas. The *Transit-Oriented Development* (TOD) concept (Calthorpe, 1993) assumes development intensification and concentration of services at multimodal transfer nodes of public transport. Among other things it proposed concentrating buildings within a 400 metre radius from the railway station, concentrating services nearby the station as well as gradual decrease in the intensity of buildings development away from the district centre towards the outskirts.

The idea was further developed by Farr (2008) in the concept of *sustainable corridor*, which is a development strip of urbanized areas along transport lanes. The corridor consists of a fast city railway line and attached to it housing districts nearby railway stations with local centres and other development elements, such as business districts, university campuses and also an airport with the Airport City. Thus, the development of the airport-proximate district can be described as a kind of *Airport Oriented Development*.

While the spatial configuration of the commercial functions surrounding the airport terminal have resembled those of a large shopping malls, or suburban commercial zones, with freestanding objects separated by parking lots, the airport cities currently designed are envisioned as dense, multifunctional urban districts. Recent projects, such as the Airport Cities in Warsaw, Stockholm, Manchester etc. elaborate on qualities such as carefully designed open spaces, iconic architecture and public art. In this perspective, sustainable airport districts shall be development with rational use of resources and maximizing social, economic and environmental benefits.

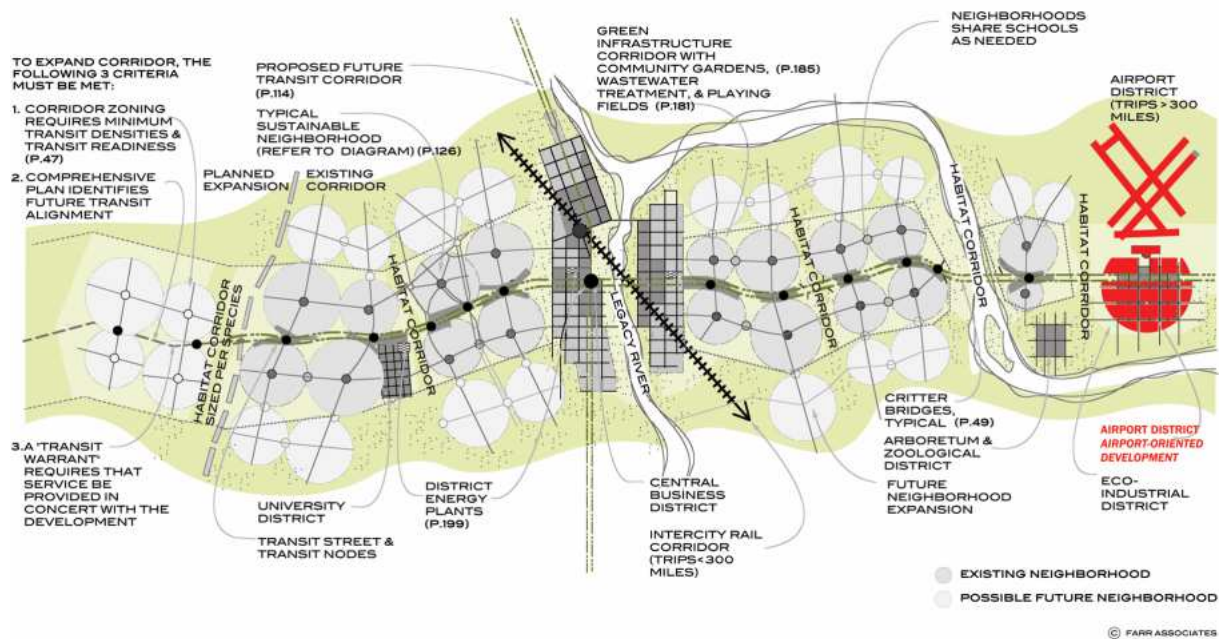


Figure 1: Airport District / Airport Oriented Development within the Sustainable Corridor structure. Sustainable Corridor diagram (c) Douglas Farr (2008) *Sustainable Urbanism – Urban Design With Nature*. y

2.2 Airport City Stockholm

An example of designing an airport-proximate zone as a complete city district is a concept of *Airport City Stockholm*. The project was developed in 2013 by Dinell Johansson and Spaceshape companies as a commission from Airport City Stockholm, which is a joint company of a firm managing Swedavia Swedish Airports, municipal authorities and Arlandastad Holding development company. The concept underlines creating a compact, pro-ecological and attractive urban space, which is expressed in an idea of building a living city connected to the world. Three fragments of Airport City were designed: *Sky City*, which is a dense urban centre just near the terminal, with pedestrian-friendly streets and full of greenery.

It would be a location for offices, hotels and different types of services for travellers and people working there. *Park City* would be a transport connection to the airport, where long-term car parks, car rentals and the like would be located. Those areas make also a reserve where, along the district development, offices, shops and hotels would be built. More landscape greenery was planned in this part. *DriveLAB Stockholm*, nearby the motorway, would be a cluster of firms connected with automotive industry. Airport City would be linked with the Märsta business park existing nearby the airport, where logistics centres, industrial and trade buildings are situated as well as *Cargo City* complex and logistics centre.

The concept pays particular attention to environmental aspects, shaping a dense tissue of buildings according to the guidelines of certification systems: LEED ND and BREEAM Communities, among others intensive development and compact forms of buildings, active frontages of buildings, mixing functions within quarters and buildings, connections with public transport, a pedestrian-friendly street network, integrating car park places along streets, shaping green areas as well as efficient and proecological infrastructural solutions. Development principles refer to the three scales of a compact city mentioned before: *a city develops around junction points, the development of districts is based on infrastructure, whereas individual quarters and lots develop around places.*



Figure 2-5: Airport city Stockholm Urban Design Strategy - Functional diagram, Sky City conceptual plan, urban space visualizations
(c) Stockholm Airport City / Dinell Johansson and Spacescape, 2013

2.3 Chopin Airport City, Warsaw

The most distinct example is the Chopin Airport City in Warsaw - a project of transforming the 10 ha area in front of Poland's largest airport into a dense, urban business and commercial district. It is located relatively close to the city centre, linked directly by rail, and has already attracted some commercial functions. The idea was developed through a winning competition concept by JEMS architects, and further masterplanned by ARUP. The plan envisions a dense, mixed-use urban structure with clear spatial links to the existing terminal buildings, the new railway station and the surrounding areas. The functions range from commercial and office space, a conference and exhibition centre, to sports and recreational facilities, organized around a park. The buildings are formed into a modern variation of the urban block, with well defined "active edges" of the open spaces. The proposed landscaping includes the creation of the Fryderyk Chopin Park. According to the authors description, the park shall be easily visible from the road leading to the Airport, and constitute a characteristic feature of the complex, establishing a new relationship between Chopin Airport City and the capital. Incorporating the principles of sustainable development is highlighted as one of the key features of Chopin Airport City, and the complex is planned to apply for the LEED for Neighborhood Development certification.

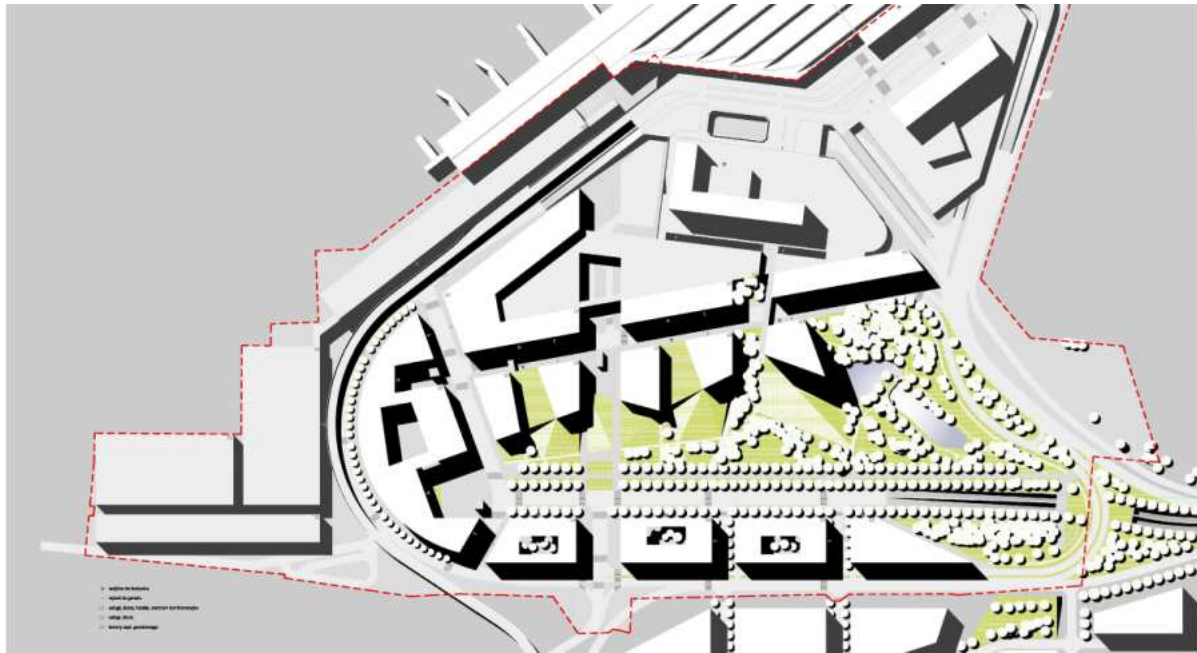


Figure 6: Warsaw Airport City - Winning competition project by JEMS Architects, (c) JEMS



Figure 7: Warsaw Airport City - Masterplan by ARUP. (c) ARUP



Figure 8, 9: Warsaw Airport City - Masterplan by ARUP - visualizations. (c) ARUP

2.4 Kraków Airport-related development

Kraków Airport is the second largest airport in Poland. The development of airport-proximate zones has been discussed for years, and is listed among the three key municipal strategic areas for the coming years. The recent expansion of the terminal (2015) and construction of neighboring hotel and multi storey car parking has been arranged in a dense form, which - according to the authors - APA Czech Duliński Wróbel - shall resemble an urban street. Some urban features include the frontages, high quality paving and landscaping, restaurant tables extending in front of the terminal facade, etc. An overall coordination plan of the area which includes land of the communes of Zabierzów, Liszki and the city of Kraków, was elaborated in 2012. It envisions a compact and harmonious urban grid of a new district near the terminal, which could be built up in several stages.



Figure 10. The street-like space in front of the extended terminal at Kraków Airport. Project by APA Czech Duliński Wróbel, under construction, July 2015 (fot. MS)



Figure 11. Schematic visualization of the urban structure of the future Kraków Airport District - Coordinative Development Plan for Kraków-balice Airport Area (c) Źródło: APA Czech Duliński Wróbel, 2012

3 Airport-proximate zone as a place for people?

A public space, consisting of streets, squares, parks and the like, is essential for creating a vital, wholesome urban space. Bustling places are public spaces together with the surrounding buildings and all the things that happen in the buildings and between them: economic activity, meetings, events, everyday human problems and so on. Can a public space in such a sense be mentioned in connection with an airport-proximate zone?

The notion of a public space is defined in different ways. In the actual meaning it is a non-private space belonging to everyone. However, it can also be seen as a space of social interactions available for the public, independently of property – the tradition of such an approach goes back to the Nolli map of Rome (1748). In this practical sense a public space may be a railway station concourse, shopping centre or airport terminal.

Shaping a clear and functional public space in a structure of new buildings complexes is an important element of the space quality in a city. According to Lorens (2006), a subjectively perceived beauty of a place becomes an objective economic category, which currently determines the price of the space and the market value of the location. In this way, an attractive space is not only a question of aesthetics, but also of increasing the economic value (the so-called central park effect). In order to take advantage of public frontages, among them walking on foot, numerous architectural measures are important – floors, architectural details, a method of shaping greenery, lighting, elements of artistic decor and the like. Also in the case of airports open spaces are currently a subject of creative searching for new forms and solutions. There are proposed new forms of architectural details or unconventional shapes of flooring to create unique impressions. Spaces at the Heathrow or Wrocław Airports may serve as examples.



Figure 12. Munich Airport Center at dawn. Fot. Werner Hennies (c) Flughafen München



Figure 13. Landscaped public space in front of Wrocław Airport terminal (fot. MS)



Figure 14, 15. Beer gardens in front of the terminals in Kraków and Łódź (fot. MS)



Figure 16, 17. Landscaping at Heathrow Terminal 5 (fot. MS)

3.1 Themed spaces and narrative places

Investing new commercial spaces with features of an urban space may lead in an extreme form to the so-called *theming*, also called *disneyfication*, which means replacing a real space with its unreal safe counterpart, devoid of many features of the prototype and consisting of forms non-existing anywhere in reality, linked with creating an urban spectacle meant for a mass audience (Lorens, 2006).

Innovative design can provide additional value, such as beauty, sense of place, pleasurable experiences, building local identity. The additional value of public space can include transmitting local heritage in spatial forms. Dennis Frenchman proposed the concept of *narrative places - spaces which transmit the multiplicity of stories – heritage, culture, history - of people and events that inhabit the city*, and noted that *heritage development is an aspect of the information economy* (Frenchman, 2001). He claims that *the growth of interest in heritage is not being pushed by a yearning for the past, but pulled by forces that are creating the future*. Designing interpretative places is raising challenges not only in terms of how to physically construct them, but also choosing what messages they should carry. Spaces which transmit the multiplicity of stories of people and events that inhabit the city play an important role in cities in the so called “experience economy”. Cities devote much of their energies to the management of information and transmitting their qualities and heritage, to present a unique spatial form and experience, relating to heritage and culture. The themes range from historic heritage and “serious cultural issues”, to interpretations of popular culture, folk stories, fairy tales, etc.

It seems that this trend appears increasingly often also at airports, especially the huge hubs, where passengers spend a lot of time. Schiphol offers several ways to give passengers *the impression of Holland in a nutshell*. Those who have more time may go by train to the centre of Amsterdam or use the *Floating Dutchman* - an amphibious bus (Amfibus) offering a several-hour journey from the airport to the city and back. The Holland Boulevard was constructed in the terminal's transit zone, which *imitates lights of a street in Amsterdam and offers, among other things, cafes, casino, stalls with tulips and seats in giant cups as well as sitting rooms*. Another question is *aviation theming*, for instance KLM shop, in whose design there were used imitations of parts from a passenger airplane of a natural size or airport playgrounds.



Fig.18,19. Aviation-themed spaces: KLM store, Schiphol; a playground, Frankfurt (fot. MS)

3.2 Mediated Spaces in the Airport City

A new tendency in creating a unique interior design and character of an urban space is visible in using digital media, such as: LCD displays, light projections, programmable elements of buildings' fronts, LED diodes set in elements of public spaces, sound installations and different kinds of interactive elements of architectural details (smart urban furniture).

LCD screens omnipresent in terminals are used mainly to inform about planes' arrivals and departures and as an advertisement carrier. However, there also appear new methods of using multimedia installations. At numerous airports virtual holographic figures greet passengers and instruct them how to prepare for the safety check. At Gatwick Airport Tesco company installed 'virtual shop shelves', offering a new unusual way of shopping. In the terminal of the airport in Frankfurt am Main interactive installations were constructed on the 75th anniversary of the airport in 2011, among others a multimedia tunnel with ten stands presenting various aspects of the airport's history.



Fig. 20. Tesco virtual shop shelves at Gatwick Airport, <https://www.youtube.com/watch?v=i6pM2aJL8Wk>



Fig. 21. Virtual assistant at Dubai airport

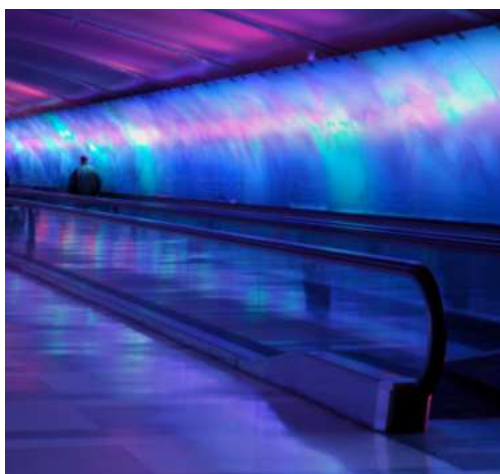


Fig. 22. Light installation along the moving walkway for pedestrians at Detroit Airport
(CC) Steve Hopson, 2006



Fig. 23. Interactive multimedia installations installed at the airport in Frankfurt am Main in 2011 on the 75th anniversary of the airport, 2011 (c) etnow.com/news/2011/9/frankfurt-airports-75th-multimedia

One of the most recent complex enterprises of that type is an interactive decor in the interior of the new terminal at Los Angeles Airport, which was installed in 2013 by Moment Factory company. The set of multimedia attractions is supposed to 'surround people from all sides' and through evoking a feeling of 'immersion in the multimedia space' to enrich impressions as well as 'to restore romanticism and magic of flights'. There are, among others, 'video walls' presenting video clips connected with aviation, the airport, Los Angeles and California. Projections sequences are generated automatically with reference to passengers traffic at the airport and flights data. By contrast, the 'time tower' is over twenty meters high construction equipped with over 600 m² of LED screens surface, which also shows multimedia compositions changing with a time of the day and the situation at the airport.

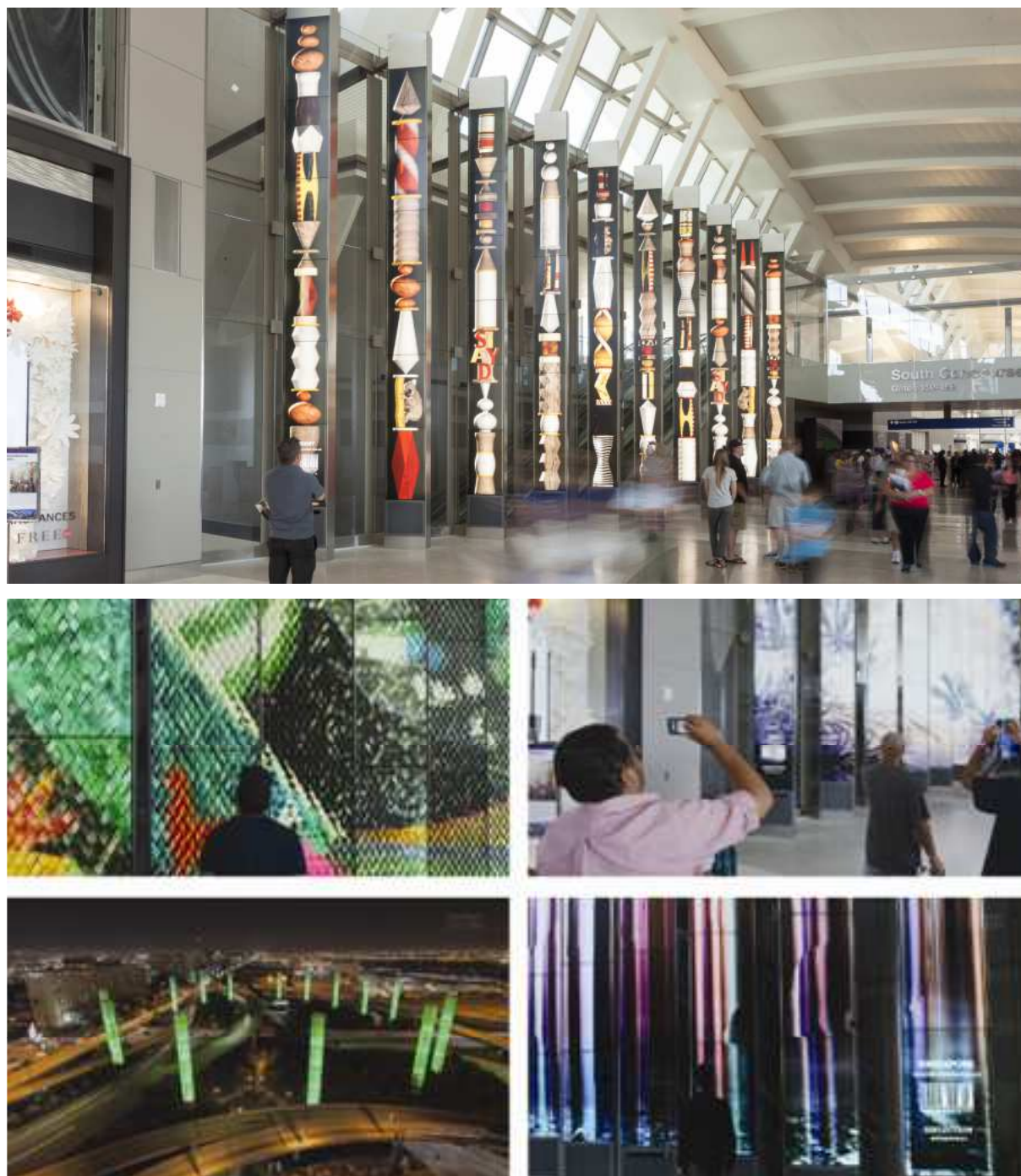


Fig. 24-28. Interactive decor in the interiors of the new terminal at Los Angeles Airport, installed in 2013 by Moment Factory company. (c) Los Angeles International Airport (LAX) — Demo, Moment Factory, <http://vimeo.com/72372304>

4 Conclusions

From the point of view of contemporary urban planning, but also from the perspective of contemporary investment mechanisms, we can perceive design and realization of buildings complexes in airport-proximate zones as 'placemaking' – creating distinctive, unique spaces in which local potential is appropriately used. Many aspects in various scales may be important in those processes: connection of the airport-proximate district with the city structure, a clear and harmonious form of the buildings structure as well as shaping urban interiors.

Effective planning and designing involves coordination of various aspects of an enterprise in such a way as to strive after synergistic solutions and feedbacks bringing added value in economic, spatial, environmental and social aspects. Among desired economic benefits we can mention here, among others, an increased rate of return from an investment, raising the competitiveness of the enterprise, an increase in the development's surface area through raising the density, a decrease in maintenance costs as well as creating an individual image and prestige of a place. All those aspects may be significant in shaping airport-proximate zones which will be rational, durable and useful.

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Hub Airports, the knowledge economy and how close is close?

Recent findings and some observations

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Introduction

Air transportation is gradually creating a new spatial configuration, as other modes of transportation did in the past. Although the deep impacts of airports on spatial structure have been known since 1950s (Taaffe, 1956), research on airport-linked spatial development has not attracted much attention within space-related disciplines such as human geography. This insofar is astonishing as airports have emerged as vital nuclei of spatial development, powerful engines of economic growth (Schubert and Conventz, 2011), “gateways of metropolitan economy” (Roost and Volgmann, 2013), “network magnets” (Budd, 2011), “city branding spots” (Freestone and Baker, 2011) and centres of permanent or temporary knowledge creation (Conventz and Thierstein, 2014a) – a phenomenon that notably emerges all around the globe (Conventz and Thierstein, 2015, Conventz et al., 2015).

Contrary to contemporary debates on airports – that generally point out the negative effects – in the early days of aviation, airports were symbols of progressive thoughts and a starting point of utopian urban planning (Gordon, 2004). Also world-famous architect Le Corbusier saw the airport as a central part of his “Plan Voisin” around which the newly created city is grouped (Le Corbusier, 1987). Early on, Le Corbusier recognized the significance of airplanes and noted, “The airplane is the symbol of a new age” (Gordon, 2004). In the 1930s he rejected his previous position on inner-city airports again and postulated that they should be located outside the city since this would be the only way that airports could unfold their whole beauty, “The beauty of an airport is in the splendor of wide open space!” (Gordon, 2004). Consequently, Le Corbusier postulates, “An airport should be naked” (Gordon, 2004). While the pre-World War II airports were situated in close spatial linkage to the urban structure – for example Berlin Tempelhof, Nuremberg or Hamburg – the situation changed in the “Jet-Age” of the late 1950s. A fundamental redesign of airports was required and operational and safety concerns dictated that they be relocated to the urban fringe, where they became mechanistic functional solitaires characterized by massive land consumption. Over the years, however, the role of airports has changed significantly. Most recently, they have taken on new functions and features as nodes of highest accessibility. The

recentralization of new functions formerly localized in the central city and the shifting perception of airports (Conventz and Thierstein, 2014a) enable airports to appear as modern kind of “marketplace” (Gottdiener, 2000, Edwards, 2005) where people can convene, exhibit, trade and change information and knowledge. Insofar airports should not be reduced to a solitary infrastructure facility somewhere at the edge of cities but as network infrastructures, and urban generators driving spatial development.

In order to wrap up: airports have stepped beyond the stage of being simply pure infrastructure facilities. Hub airports in particular are considered to function as supra-regional and international gateway infrastructure thus having a decisive impact on firms’ competitiveness and stimulating urban development. Hub airports have – through their capability of concentrating different types of flows, from local to supra-regional and to global – morphed into strategic nodes within the networked economy that combine landside accessibility and airside connectivity in a unique way.

Against this backdrop, this paper is concerned with the changing role of airports and its adjacent areas as new activity centres of knowledge generation and knowledge exchange. In this context the following questions arise:

- What are the underlying processes that have contributed to the evolution of airports as new peripheral functional nodes within polycentric spatial structures?
- How is the knowledge-economy driving the urbanization process of airports and its vicinity?
- What kind of knowledge-based real estate patterns have popped up in and around international airports?
- What makes airports highly attractive locations for knowledge-based activities?

Although the described evolutionary process of airports is a worldwide phenomenon, the paper focuses on German airports – namely Frankfurt, Munich and Dusseldorf.

The paper is structured as follows: The second part describes the spatial reconfiguration process of large-scale urban systems and the way the knowledge economy is reshaping the spatial texture. In the third section we present the findings of the case studies. The fourth and last section summarizes the most important findings and concludes with an overview of avenues for future research.

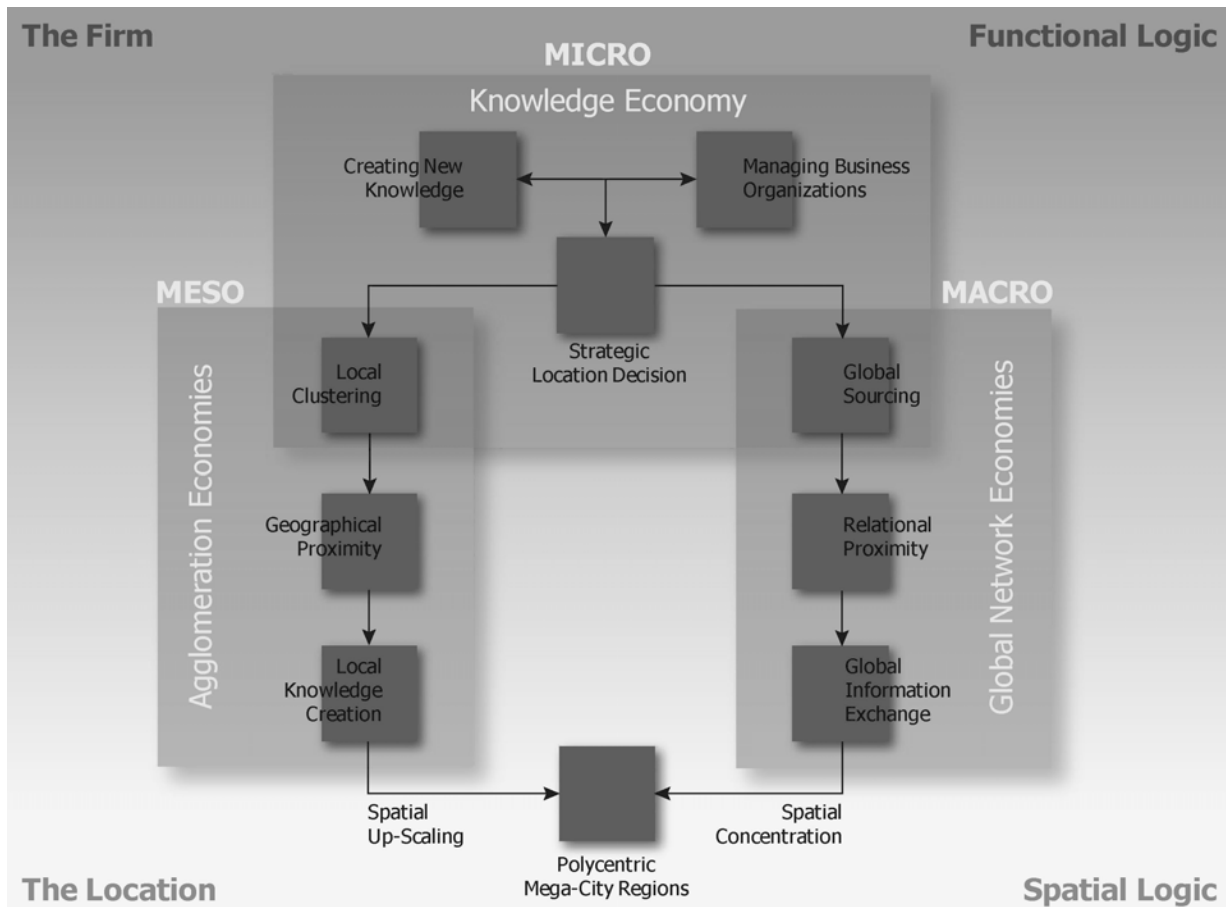
The knowledge economy and the proliferation of new large-scale urban systems

Urban configurations are highly dynamic entities. Since the emergence of urban systems, cities have been shaped by the location decision of private companies, households, and governmental bodies that want to use space for either consumption or production purposes. Most recently the knowledge economy has been identified as another powerful driver of

spatial development. The concept of the 'knowledge economy' as defined by Thierstein et al. (2006) refers to an interdependent system of Advanced Producer Service (APS), High-Tech industries and knowledge-creating institutions such as universities and research establishments (Thierstein et al., 2006). With reference to Lüthi et al. (2011) the knowledge economy can be defined as the "part of the economy in which highly specialized knowledge and skills are strategically combined from different parts of the value chain in order to create innovations and to sustain competitive advantage" (Lüthi et al., 2011).

For a long time the monocentric model (Alonso, 1964) was the dominating concept in urban economics characterized by a clear polarity between a core city dominating its urban hinterland. In recent years, however, changes in transportation technologies and the rise of new kinds of efficient communication devices have led to an erosion of the formerly established core-periphery relationship and have driven the evolvement of a complex, dispersed, polycentric spatial structure, with several cities and sub-centres that have emancipated themselves to a certain degree from the core city (Burger et al., 2014, Parr, 2004). Hall and Pain (2006) have thus introduced the term "Mega-City Region" as "a series of anything between ten and 50 cities and towns physically separate but functionally networked, clustered around one or more larger central cities, and drawing enormous economic strength from a new functional division of labour. These places exist both as separate entities, in which most residents work locally and most workers are local residents, and as part of a wider functional urban region connected by dense flows of people and information carried along motorways, high speed rail lines and telecommunication cables" (Hall and Pain, 2006). Taking this as starting point, we argue that polycentric Mega-City regions are the outcome of a spatial up scaling of agglomeration economies and spatial re-concentration process of network economies. Figure 1 schematically depicts the inter-relationships between the knowledge economy, which follows a functional logic, and the emergence of Mega-City Regions, which are essentially the effect of a specific spatial logic at work.

Figure 1: Agglomeration and Network Economies in the context of Mega-City Region development



Source: (Lüthi et al., 2013)

Agglomeration economies result from the local clustering of knowledge-intensive firms in certain areas, enabling them to benefit from spatial proximity and local knowledge spillovers. By locating at close geographical proximity, economic entities are able to enhance the innovation process and to realize competitive advantages by increasing their productivity and stimulating the formation of new businesses (Lüthi et al., 2013). Through geographical proximity personalized interactions is supported, which in turn enhance the exchange of tacit and experienced-based knowledge. According to Howells (Howells, 2000) this leads to the tendency for localised knowledge pools to develop around specific activities, which influence the communication, scanning and learning patterns, as well as the sharing of localised knowledge and the innovation capabilities of knowledge- intensive firms.

The spatial up-scaling process of agglomeration economies is determined by achievements realized in transportation and telecommunication technologies. The costs of certain modes of transport and communication have drastically declined, and speed and reliability have significantly improved. As consequence, polycentric Mega-City Regions are increasingly enabled to achieve agglomeration economies of comparable magnitude to those of large mono-centric cities.

The functional logic of the knowledge economy does not only have an impact on agglomerations economies (Bentlage et al., 2013). On the other hand the spatial re-concentration of network economies results from global sourcing strategies of knowledge-intensive firms and is largely determined by the location behaviour of knowledge-intensive companies. In order to stay competitive and to support better market access knowledge-intensive companies tend to spread their networks on a global scale. Global sourcing strategies, again, lead to relational proximity between different involved economic actors and economic entities. In order to optimize their added value, knowledge-based companies need a set of local, supportive business conditions such as proximity to international gateway infrastructures, including airports and high-speed train nodes, and easy access to communication devices. This global information exchange brings an enormous number of potential suppliers and customers within the reach of knowledge-intensive firms, without demanding enduring co-location and local embedding (Amin and Cohendet, 2004).

Airports have evolved within this context as locations where local, regional, national and global knowledge and information exchange overlap. This renders airports as powerful core with discernible impacts on the spatial structure. Edge Cities (Garreau, 1991), City Ports (Wijk, 2007), Aerotropolis (Kasarda, 2000), Airport Corridor (Schaafsma et al., 2008) or Airport City (Güller and Güller, 2003) are just a few of the expressions from an array of neologisms that attempt to catch the new reality of polycentric spatial configurations.

In the following section, the new office locational patterns around the three major German airports are analysed to illustrate this development and the way in which the knowledge-economy and its demand for office space and business related infrastructures is contributing to the transformation of airport locations. Beforehand, we provide some information concerning the case study areas and the data used.

Study area, data and methods

In the further course of this paper we show how the knowledge economy is reshaping the space at and around Frankfurt, Munich and Dusseldorf airport. In particular, our research focuses on the growing segment of office space. Office real estate key numbers, as for example, take-ups by user categories and rental classes or the development of top rental prices, provide good indicators to comprehend the reshaping process.

The three airports differ in terms of their spatial and functional circumstances and with respect to its rank within the airport categorization. In general, the impacts of airports on businesses decrease as the distance from the airport terminal increases (Einig and Schubert, 2008a). Pagnia's empirical studies for the cases of Cologne and Dusseldorf show that such an intensive relationship between airports and companies can range up to 15 kilometres (Pagnia, 1992). Based on these observations, our empirical focus in this paper is on the

office locations at and around the three terminals that can be reached by car within 10 minutes. For the Munich case a spatial radius of 20 minutes was chosen due to the isolated situation of the airport and its spatial distances to neighbouring municipalities of Eching, Garching, Hallbergmoos, Ismaning, Neufahrn, Oberschleissheim, Unterföhring and Unterschleissheim. With Frankfurt and Munich two – within global aviation networks well-integrated - hub airports are chosen that differ with respect to their spatial situation and landside integration into short and long haul traffic systems. While the airport of Frankfurt is located only 12 km outside of the city of Frankfurt and well-linked by public transportation and long-distance trains, Munich airport is situated approximately 30 km outside of Munich municipal area and characterized by a weak integration into landside railway systems. By contrast, the airport of Dusseldorf is only 7 km away from downtown Dusseldorf and accessible by an extensive ground transportation infrastructure. Although Dusseldorf airport is no hub by definition, it has increasingly gained in importance within European and international aviation industry as an airport with a hub-like quality. The initiative of Lufthansa, for instance, to establish Dusseldorf as third German hub with the company's international aviation network underlines the growing importance of Dusseldorf airport over the last years (Lufthansa, 2013).

We use a mixed approach of different methods in order to answer the questions raised in the introduction. We combine a quantitative analysis of real estate key numbers and a field research in the form of on-site visits. For the statistical analysis of real estate key numbers we use the office database by BNP Paribas Estate Consult.

Closer to the world: Airports as new office sites and places of personalized interaction

In a similar way as previously harbours and railway stations did, airports are contemporarily altering the spatial configuration of urban and regional systems and contributing to the emergence of new functional spaces and urban quarters (Conventz and Thierstein, 2013). Airport operators in particular have fostered the urbanization process by pushing the non-aviation sector as consequence of a changed competitive environment in the aviation industry and counteraction for decreasing revenue streams within their traditional core aeronautical business. Such non-aviation activities can be comprised of retail, office and leisure developments, advertising or the operating of parking facilities. In some parts the non-aviation sector is already contributing more than 50 per cent to the overall profit of airport authorities (Fraport, 2012). In this context the knowledge economy has become a vital source of demand and a powerful driving force of all kinds of real estate developments and business infrastructures. Attracted by the unique locational qualities and advantages of airports, knowledge-intensive enterprises have started favouring airports and the areas in the vicinity as new, strategic office and business locations (Conventz and Thierstein 2014).

Large-scale office related developments are currently initiated at all three airports. In Frankfurt and Dusseldorf office property developments are mostly taking place on the airports premises itself as for example in the Airport Cities. In contrast to this, office developments in Munich are spread around the airport on a larger spatial scale. Although the development of office space is not a completely new spatial phenomenon, current developments of office land show clear differences with respect to the quantity of the developments and the quality of the office characteristics as well as the architectural design of the real estate. While older generations of mostly mono-functional airport office real estate were predominantly dedicated to companies and industries with high affinity to aviation, like logistics, and mostly customized to their special needs, recent developments show a clear trend to more mix-used developments taking aspects of urban design and spatial qualities into account. Airport City Dusseldorf (photo 2) and the neighbouring Quartier (N) or the Squire (photo 1), the Main Airport Centre and the Gateway Gardens area in Frankfurt exemplify this development trend. In Munich the Munich Airport Business Park in Hallbergmoos or the GateGarching in Garching, both approximately 10 to 20 Minutes away from Munich airport, serve as examples.

Photo 1: The Squire



Source: Euroluftbild.de

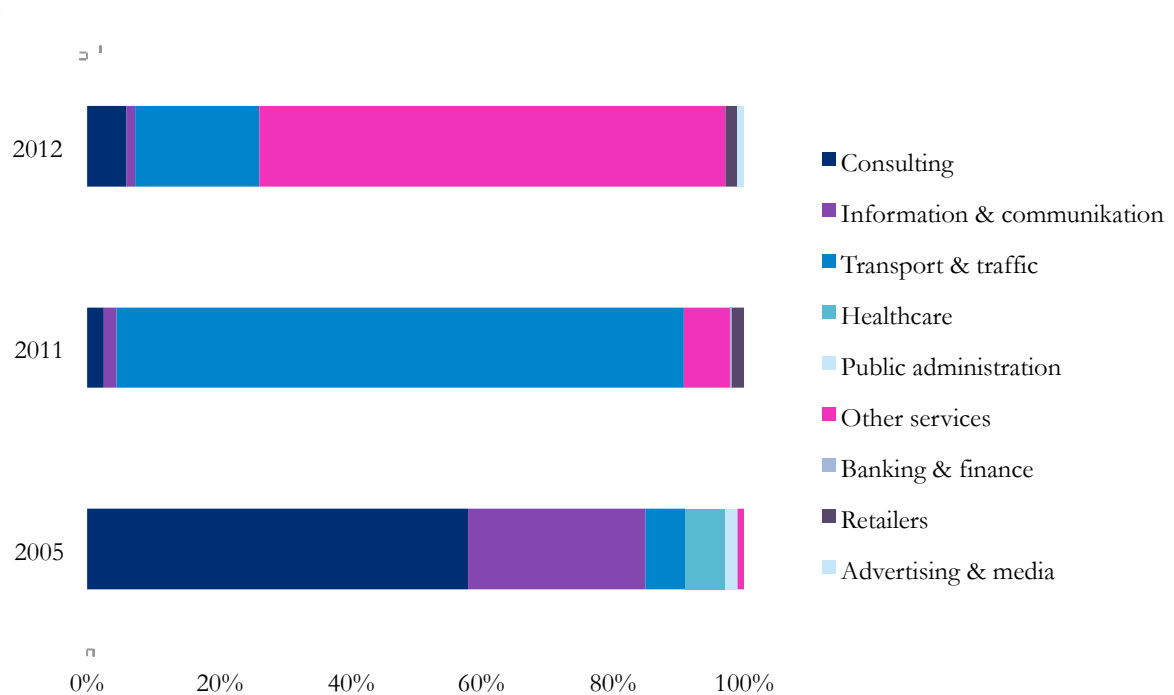
Photo 2: Airport City of Dusseldorf



Source: Ansgar M. van Treeck, 2012

In the last few years, we see that companies, which are not directly related to the aviation business, have shown a strong interest for office space in close spatial proximity to the airport. Particularly advanced producer services like management consultancies, accounting firms or engineering offices as well as High-Tech companies for example companies from healthcare, IT, or electrical engineering have chosen the airport locations as site for their offices. For example, in the Frankfurt airport office market the strongest source of demand in 2005 came from consultancies, as shown in figure 2. Other important sectors in 2005 with a share of 27 per cent of the total was the information & communication sector, just ahead the transport & traffic and the healthcare sector with 6 per cent each. Taken together, public administration and “others services” contributed around 3 per cent to the total take-up each.

Figure 2: Take-up by user categories in 2005, 2011 and 2012 at Frankfurt airport.

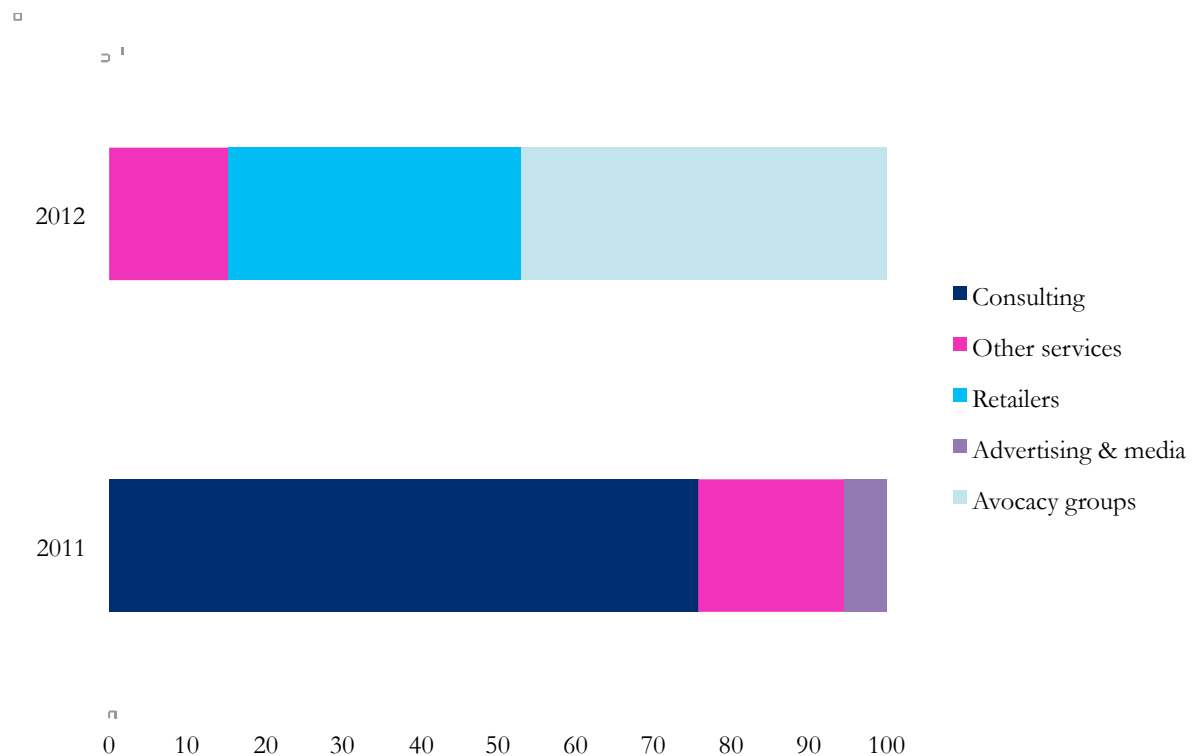


Source: BNP Paribas Real Estate Consult (2013)

In contrast to this, the transport & traffic sector and “other services” were the dominating user categories in 2011 and 2012. Both categories accounted for more than 90 per cent of the total take up. User categories like consulting or information & communication played a minor role in 2011 and 2012.

A similar picture of diversified user categories emerges at Dusseldorf airport. Take-up in the Dusseldorf airport market area in 2011 and 2012 were some 6.500 m² and 9.000 m² respectively (figure 3) (BNP Paribas Real Estate Consult 2013). In 2011 the consulting services sector was the most active source of demand with a share of approximately 76 per cent, followed by “other services” with 19 per cent and advertising with 5,4 percent.

Figure 3: Take-up by user categories in 2005, 2011 and 2012 at Dusseldorf airport



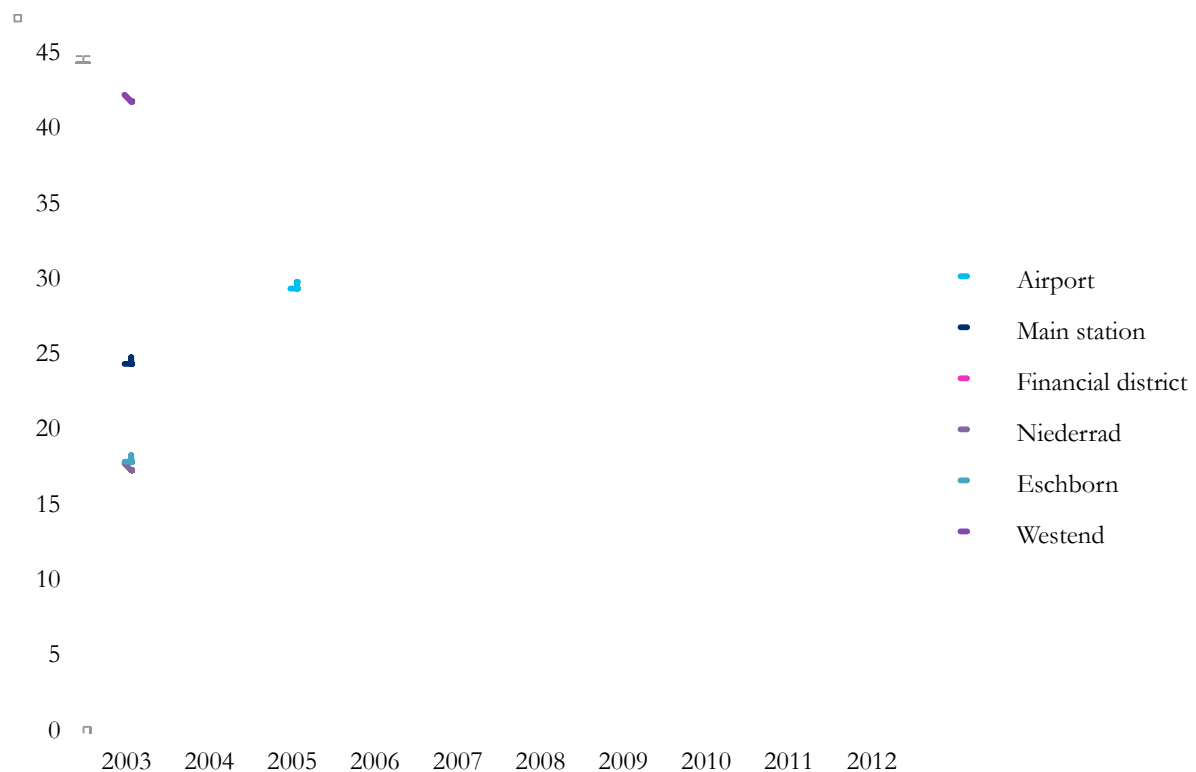
Source: BNP Paribas Real Estate Consult (2013)

Though in contrast, advocacy groups with 47 per cent and retailers with 38 per cent were dominating the market activity in 2012, while “Others Services” have contributed approximately 15 per cent to the total take-up (BNP Paribas Real Estate Consult 2013).

The case of Munich appears spatially less compact than the cases of Frankfurt and Dusseldorf but interesting nevertheless. Since the airport did open in 1992 the corridor between the city centre and the airport has been transformed into an economically prospering location (Dross and Thierstein, 2011) and centre of knowledge-based activity with many world leading companies like Baxter, Microsoft, GE, Cisco Systems, SAP and Oracle. Most of these knowledge-based activities are located within a 10 to 20 minute travel radius around the terminal.

The dynamics in the growing segment of airport office space is also reflected in other office real estate key numbers. The interplay of high-quality site characteristics on the one hand and a high demand on the other hand has led in some parts to an increase of office rents. Occasionally, the rents for office space located at airports are already approximating the top rents of more traditional office location for example within the core cities, as shown in figure 4 and 5.

Figure 4: Top rents in comparison for selected office locations in Frankfurt between 2003 and 2012

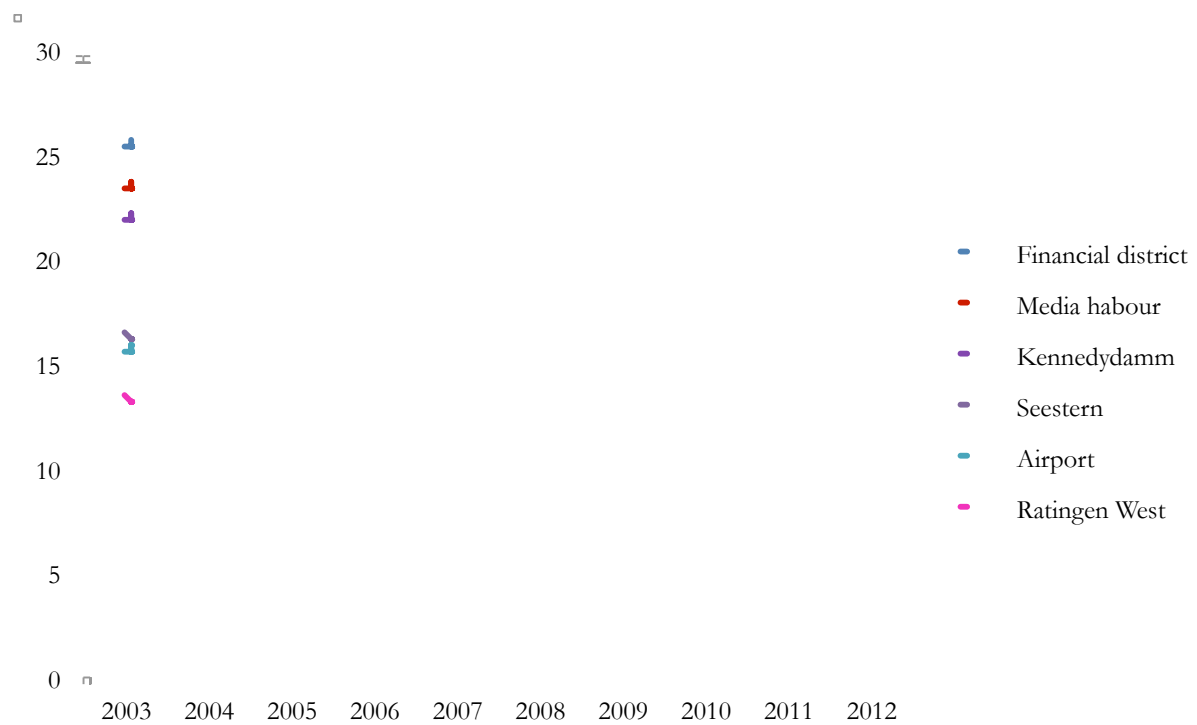


Source: BNP Paribas Real Estate Consult (2013)

In Frankfurt Airport for instance, the high degree of market maturity, the high demand on the part of a broad spectrum of office space occupiers and the unique location and object qualities of the airport location have transformed the peripheral office location into one of the premium sites in the Frankfurt total office market. Within the last eight years the prime rent has increased from € 17, 30 in 2005 to € 30 in 2012. In contrast to this, the premium rent of the financial district and the Westend, the top office locations in the core city, were around € 34 in 2005 and around € 35 to 36 at the end of 2012. Thus, the difference of the prime rents between airport and central business district of Frankfurt has been reduced by more than € 20 within the last eight years.

Similar to the case of Frankfurt, the airport of Dusseldorf and its adjacent area have also emerged as one of the prime locations within the local total market (Landeshauptstadt Düsseldorf, 2012). Today, the airport city of Dusseldorf represents one of the strongest office locations with the total market of Dusseldorf with prime rents of approximately € 16, 20 at the end of 2012. Solely, within the financial district, Media harbour or at Kennedydamm higher prime rents, ranging from € 21 to € 26, were recorded.

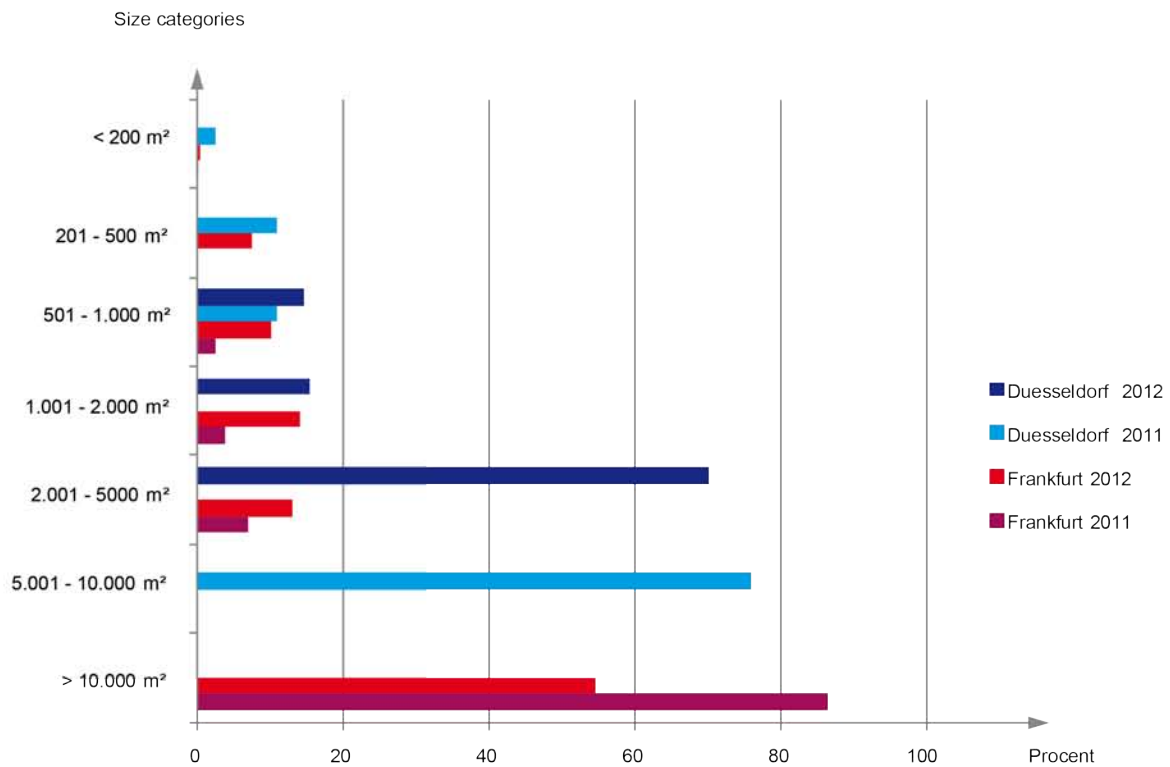
Figure 5: Top rents in comparison for selected office locations in Dusseldorf between 2003 and 2012



Source: BNP Paribas Real Estate Consult (2013)

The increased diversity of real estate objects and quality characteristics have led – like with established office locations in the Central Business District – to a differentiation of the office market supply in terms of rental classes and size brackets. With respect to size brackets, take-up was fairly dominated by large-scale leases. In Frankfurt the proportion of lease for office units of over 10.000 m² was around 55 per cent in 2012 as against 86 per cent in 2011, as shown in figure 6. Despite still lively demand in smaller size categories, knowledge-intensive companies at airports tend to opt for office units larger than 2.000 m². Similar empirical results can be confirmed for Dusseldorf where large-and medium-scale leasing was also dominating the demand a part of companies not directly associated with the aviation business. In contrast to this, small-scale leasing seems to play only a minor role.

Figure 6: Lettings according to size categories in Frankfurt and Dusseldorf in 2011 and 2012

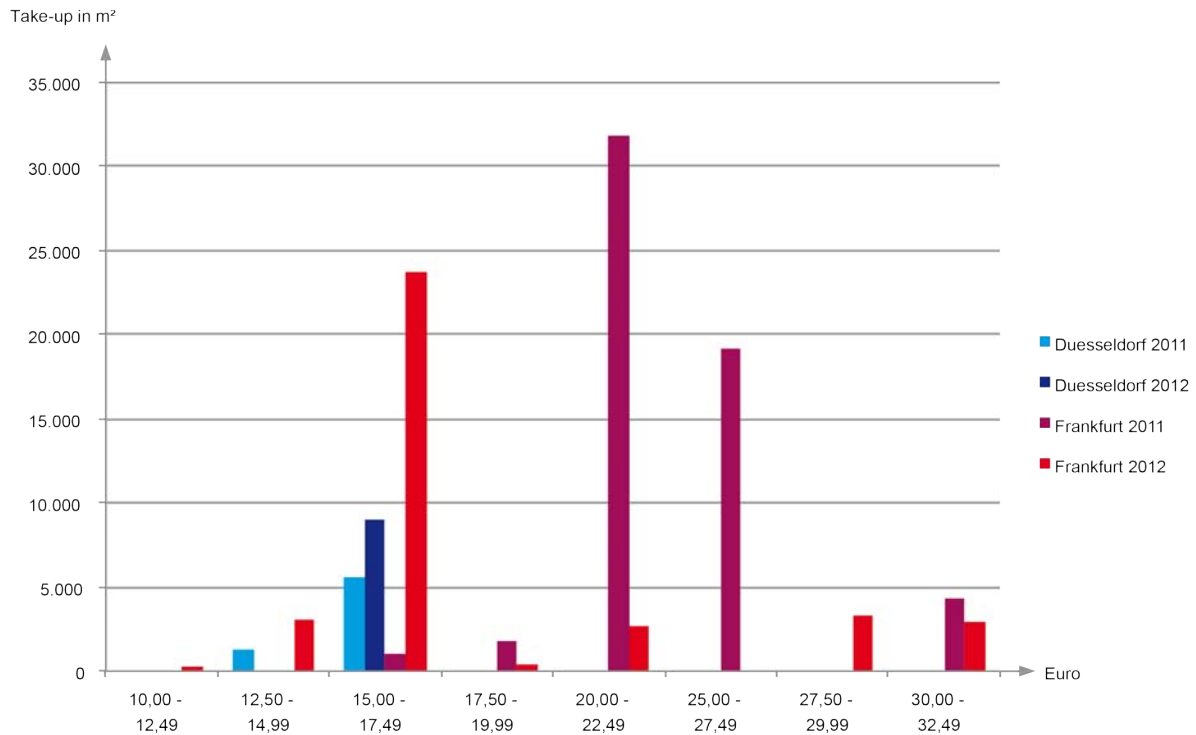


Source: BNP Paribas Real Estate Consult (2013)
 Editor: Lehrstuhl für Raumentwicklung (TUM)

Source: BNP Paribas Real Estate Consult (2013)

A similar process of differentiation can be observed with regard to the price categories recorded within the airport office market area. As in 2011, the majority of 2012 take-up was realized in higher price categories, as shown in Figure 7. From a total take-up of 6.860 m² around 5.575 m² were rented for a price per square meter of € 15, 00 to 17, 49, which is the top price category of the submarket. In 2012 even the total take-up of 8.993 m² was transact in the submarket's upper price category. For comparison, in Frankfurt only a minority of office occupiers has rented floor space for more than € 27, 50. Most of the recorded market activity has been performed in middle to upper-middle price segments.

Figure 7: Take-up according to rental classes in Frankfurt and Dusseldorf in 2011 and 2012



Source: BNP Paribas Real Estate Consult (2013)
 Editor: Lehrstuhl für Raumentwicklung (TUM)

Source: BNP Paribas Real Estate Consult (2013)

The high attractiveness of airport locations as premium office sites and nodes of knowledge exchange is not only benefiting from the increased quantity and quality of office floor space. An improved business infrastructure and a growing number of high-quality facilities such as hotels of different categories or meeting, exhibition and conference facilities are additionally heightening locational quality.

All three airports have invested into their conference and business infrastructure allowing periodical meetings and other forms of temporarily knowledge exchange. In Frankfurt the Squire comprised from the very beginning on a huge amount of the total floor space for conference, exhibition and meeting facilities which is progressively used for product shows, company-internal meetings, seminars and workshops but also for industry meetings (Squire, 2013). In Dusseldorf's airport city the biggest conference hotel of the state of North Rhine-Westphalia is located. At Munich airport the Munion conference centre in between terminal I and II offers spaces of different size classes for meetings, conventions and events. These facilities are regularly in demand by knowledge-intensive firms, which host different activities in the course of the year like training and recruitment events, conventions, symposiums or other networking events (Squire 2013).

Conclusion and direction of future research

For a long time airports were perceived as pure infrastructure facilities and service providers for the aviation industries. Most recently, however, airports have extended their business activities and have morphed into focal points of property-led development and centres of functional interaction. Airport operators were urged to generate new revenue streams, pushed through new general conditions within the international aviation industry. In order to diversify activities and to generate alternative income at the airport the non-aviation sector in general and real estate development in particular has grown in importance. The knowledge-economy thus can be identified as important driving force within the evolutionary process of airports into entities that gradually accumulate urban functions traditionally associated with core cities. The way in which knowledge is created in a networked and globalized business world requires highly accessible locations, which support the exchange process of knowledge and information. Inner cities are no longer exclusive locations of physical proximity and high accessibility; hub airports and high-speed train stations help to develop more polycentric urban networks. The German airports of Frankfurt, Munich and Dusseldorf are increasingly attracting these kinds of economic activities, as the development of office real estate key numbers show. At the same time the significance and quality of airport locations have changed and hub airports in particular are considered to function as international gateways and network infrastructures with profound impact on firms' competitiveness (Lüthi, 2011). Knowledge-intensive companies, especially those which consider geographical and relational proximity as crucial to their business models, make use of the accessibility, time, cost and infrastructure advantages of hub airports in order to optimize their value-added chains as well as the process of knowledge generation (Conventz and Thierstein, 2014b). Our empirical results confirm previous findings by Einig and Schubert (Einig and Schubert, 2008b) or Yigitcanlar et al. (Yigitcanlar et al., 2008) showing a clear process of change of airports towards more mixed-used real estate patterns with a clear focus on establishing airports as centre for knowledge-based activities and places of face-to-face interaction.

Apart from this commonality our case studies differ concerning the dimension and quality of property developments, the spatial integration of the airports, the landside accessibility as well as the appearance of the real estate developments. In contrast to Frankfurt and Dusseldorf, where the spatial patterns show more similarities than differences, Munich represents a particular case with respect to its feeble landside integration and the almost absent compactness and multi-functionality of the office developments. Frankfurt and Dusseldorf are characterized by compact, multi-functional and walkable office locations in some parts that are spatially closely connected to the airport terminals. Munich in contrast is characterised by a variety of singular, mostly mono-functional office parks that are scattered

around the airport, some aligned along the suburban light rail line, connecting the city centre with the airport. Since the airport in 1992 took up its operations, adjacent municipalities and its knowledge-based firms located in Garching, Hallbergmoos, Unterschleissheim, Ismaning, Unterföhring or Freising have benefited significantly from the advantages that global and supra-regional connectivity bring about to multi-branch multi-locations firms as well as to incoming tourism (Thierstein et al., 2007, Ernst Basler + Partner AG, 2010). On the other hand, these locations are still lacking a efficient integration into landside public transportation. The biggest strategic deficiency probably is the fact that the airport of Munich is not connected to European long-distance high-speed train system, and lacks an efficient landside integration for regional and light rail trains towards the East and Northeast of the airport.

The weak accessibility by public transport, in combination with the archipelago-like spatial configuration of the airport campus and the adjacent business locations and municipalities, have in total led to strong car-dependency of the airport premises. That feature clearly sets Munich apart from Frankfurt and Dusseldorf, where the knowledge-economy is benefiting from multi-modal accessibility and greater choice of landside transport modes – in the case of Frankfurt its excellent access to high-speed rail – in the case of Dusseldorf its integration in metro and high-speed rail. We even could stipulate a necessary – albeit not sufficient – condition for a successful integrated hub airport to become a variety of a primary urban node: connectivity for knowledge-intensive activity is provided the best when multi-nodal and multi-modal accessibility to and with the airport follows the ‘magic quadrant’ metaphor: inter-continental air, continental high-speed rail, regional/metro rail and local walkability.

Our results illustrate that the traditional understanding of airports as pure service provider for the aviation industry has drastically altered. More and more airports serve as sites for knowledge exchange and as intensifier of business relations. Further research is necessary in order to reach a deeper understanding of the knowledge-based spatial configurations around airports on a micro-spatial scale and the interrelationships between airports as network infrastructure and economic competitiveness. From our point of view, the keys in understanding these processes and dynamics are the locational requirements and changing internal and external value chains of firms. Knowledge-intensive companies optimize their locations in accordance with their individual value chains and their need for physical interaction with involved firm-internal and firm-external partners. A future research agenda must place a special focus on intra-firm and extra-firm linkages of APS and High-Tech firms that intersect in the vicinity of airports. How are these linkages structured spatially? By analysing the intra- and extra-firm networks of knowledge-based activities we are able to estimate the connectivity patterns of the different airport locations on a local, regional, national, European and global spatial scale. We then could combine these findings with a

qualitative social network analysis, with these expected results: (1) the locational strategies of knowledge-intensive companies and the required location and property qualities, (2) the network setting in which companies interact and their demand for air traffic services, and (3) the significance of relative spatial proximity to firm-internal and firm-external partners and the role of efficient multi-nodal network infrastructure like hub airports and high-speed rail. Such triangulation of methods makes it possible (1) to better understand the underlying dimensions of strategic decisions on business locations, and (2) to identify the role an airport plays as locational factor within the site selection process and within the organization of the daily business that is to say the network activities of knowledge-intensive firms.

Hub airports thus represent – against the backdrop of knowledge intensive firms optimizing physical and relational proximity within their knowledge generation efforts – exemplary cases where new urban functionalities co-produce new emerging urban patterns and vice-versa. Raising awareness of the spatial drivers and required spatial qualities is a prerequisite for forward-looking planning at urban and regional level that may eventually help to attain more robustness towards the constantly changing spatial needs of the users of such multi-nodal infrastructure hubs. The future success of the airport and the airport locations as site for knowledge-based activity will highly depend on the ability to retain the attractive locational characteristics and to extend this competitive advantage revolving around multi-modal and multi-nodal accessibility in combination with extensive business infrastructure.

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How to feed the world's metropolises?



Closing the loop: How food localisation contributes to the sustainability of settlements

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This project was carried out as part of the MSc Sustainable Urbanism at the Bartlett School of Planning (University College London, Faculty of the Built Environment) in 2013. Being equivalent to an MSc dissertation, the project is part research, part implementation and spanned three months of individual work.

Abstract

Food systems currently account for 29 per cent of global carbon emissions. The majority originates in food production, but the share caused by processing, distribution and disposal is growing. To address this, food systems are examined using the approach of food localisation. The research questions are: How can food localisation contribute to the sustainability of settlements? How can a sustainable food system be implemented?

A thorough review of academic and professional work on food systems and sustainability clarifies that benefits of local food systems go beyond reducing emissions: food localisation has a positive effect on health and well-being, the local economy, the environment and connections between people and food.

A case study of five local food systems uncovers distribution and disposal as weak links regarding sustainable food localisation. To address this gap in research and close the loop, a toolkit of design principles is developed and applied to four projects sites, distinguished by urban form, within one region. At the core, a compact solution for a gardening shed, transformable into a workshop space, is designed. In the fringe, objects guiding people to local food are planned. In the periphery and the rural hinterland, a network of food distribution and disposal is proposed around a transport hub, in the latter combined with tourism facilities. On the regional level, existing infrastructure like railways and cycle highways is used to handle distribution and disposal of local food.

The designs represent solutions for a general problem, not a site-specific one. The toolkit of design principles offers straightforward methods for implementing sustainable local food systems. By using the concept of closing the loop, a holistic perspective is secured. The implementation of food localisation is an exemplar of strong sustainability as it sparks off a wide array of benefits for people and the environment.

1. Introduction

Food systems, the process of producing, processing, distributing and disposing of food, currently account for 29 per cent of global carbon emissions. The majority of emissions originate in food production, with approximately 80 per cent, but the share of emissions caused by processing, distribution, disposal and consumption is growing (Stringer, 2012). Food is a major resource, like energy and water, needed to run settlements of all kinds and its impact on climate change is huge.

Traditionally, cultivation and civilisation have been closely integrated. Even the terms that describe those processes, culture and cultivate, are derived from the same Latin stem *cultus*.

Man and corn - it all comes back to that. Cultivation and civilisation, city and country, paradise and hell: food has always shaped our lives and it always will. Our legacy to those who inherit

the earth will be determined by how we eat now - their future lies in our knives and forks and fingers. (Steel, 2009)

Since the industrial revolution though, disembodied food systems have been widely implemented. Industrialisation of agriculture as well as globalisation has led to a clear separation between town and countryside regarding food production. Urban areas have become increasingly dependent on the rural hinterland (Steel, 2009). The global food system is disembodied to a great extent, leading to social, economic and environmental externalities for communities all over the world because “*you can't run a linear system on a finite planet indefinitely*” (Leonard, 2007). Food localisation, the concept of a local food system with proximity between producer and consumer, is increasingly seen as a sustainable alternative to our current food system and a better choice, for people and for the environment. In fact, food localisation is nothing new. For ages, people relied on what was produced in their vicinity, using traditional methods and growing local species. Switching from the current disembodied system to an embedded system is very challenging, since it requires not only a huge change in people's minds, but also in infrastructure and logistics. Therefore, growing, processing, distributing and consuming food locally faces many difficulties.

This project aims to investigate how food systems can be made more sustainable by using the approach of food localisation. To explore the challenge of sustainable local food systems, it looks at the benefits of food localisation and how it can be applied in different types of settlements to create sustainable food systems. Furthermore, the project aims to set up a system that can be implemented in and adapted to different types of existing urban form and at the same time develop a method to create awareness with the consumer. The research questions are formulated as follows:

- *How can food localisation contribute to the sustainability of settlements?*
- *How can a sustainable local food system be implemented in different types of settlements?*

The project is primarily concerned with how food systems interact with the built environment and existing infrastructure in different types of settlements. Regarding local food systems, the focus is on systems that produce, process and distribute fruit and vegetables, although the general concept can be extended to other categories of produce. It investigates what is needed in spatial and logistical terms to set up a sustainable food system. The implication is tested in four types of urban form, chosen within a European perspective: core, fringe, periphery and rural hinterland. Nonetheless, the conclusions and results are transferable to other locations.

2. Literature review

2.1 Defining food localisation

A food system is the chain of activities and processes related to production, processing, distribution, disposal and eating of food (Raja et al., 2008). The concept of a local food system is ambiguous. It can be seen as a geographical concept that describes the proximity between producers and consumers, even though the distance is interpreted differently depending on contextual factors like population density and climate. In the US, food produced within a 160 km radius is often considered local, while local food in the UK commonly is expected to be grown within a 50 to 80 km radius from the consumer. Some define food as local when produced within the country's boundaries, others state local food should be from the same county or region. Local food can also be defined by certain characteristics that consumers associate with the concept. People choose local food because of freshness, taste and environmental concerns and associate it with certain production, processing and distribution methods, like social embeddedness, ethics of the grower, organic farming and short food supply chains (Edwards-Jones et al., 2008, Martinez et al., 2010).

A local food system is geographically embedded, in contrast to the global food system that is disembodied from any local context. Increased yields, low food prices as well as low production and transaction costs contribute to the attractiveness of conventional agriculture

and the global food system. This system exists of vertically integrated monopolies and relies on a high degree of industrialisation and technology regarding seeds, fertilisers, etc. Furthermore, production and consumption are spatially as well as culturally independent. This is made possible by conservation techniques and worldwide transport infrastructure that overcome time and spatial constraints. Negative externalities arising in this type of food system are manifested through social and environmental costs. Pollution through over-fertilisation, the creation of pest-resistant crops, the loss of civic involvement and a growing dependence on the market for survival are some examples that shape these externalities. Globalisation has led to a disconnection of the food system from its physical, social and ethical embedding (Landman, 2011, O'Hara and Stagle, 2001).

2.2 Typologies of current food localisation

Food localisation is an integrated system where every element is addressed. Regarding production, local food that goes to the local community is often produced on a small scale: vacant plots or beds in public space, in private gardens, allotments, (organic) farms and community supported farms. Due to the nature of production and proximity to the consumer, local food is barely processed (Norberg-Hodge et al., 2002). Different channels for distribution are characteristic. Food can be sold at farm shops, farmers' markets, harvested by members at a community supported farm, delivered to homes and offices through box schemes or picked up at a local pickup point (Soil Association, 2013a, Soil Association, 2013b). Also more and more supermarket chains have started distributing local food (Budgens, 2013, Waitrose, 2013). Disposal is rarely integrated in the local food system. One type of solution is implemented at Skinner City Farm (case study, see attachment 2). Organic waste is picked up from local restaurants by cargo bike. At the farm, it is composted and reused as fertilizer (Skinner City Farm, 2013).

2.3 Is local food best?

Local food and food miles are powerful terms in the discourse around sustainable agriculture and alternative food systems. There is a tendency to see local food as a way to reduce emissions from food miles. Coley et.al. (2011) argue that the debate about the climate benefits of local food lacks a holistic view. The food system influences not only fossil fuel use, it also causes for example water pollution and influences rural economics and landscape amenities. Therefore, the use of the food miles concept is misleading. Studies show that the mode of transport is as important as the distance. So might the use of waterborne transport to import food result in lower carbon emissions than buying from a local farmer. But not only distribution affects the sustainability of a food system, the characteristics of the whole food chain influence the amount of emissions caused (Edwards-Jones et al., 2008). The concept of food miles distracts us from more urging social, economic and environmental changes that are needed in order to support sustainable development (Coley et.al., 2011). An integrated, holistic perspective, looking further than emissions caused by distribution, is needed to assess the value of local food systems for sustainability.

2.4 Benefits of food localisation

An increasing amount of literature looks at local food systems and its benefits. These benefits can be divided into four categories: health and well-being, reduced human impact on the environment, local economy and connections.

Health and well-being

A considerable amount of literature has looked at the effect of food localisation on health and well-being. These studies show a positive impact on several aspects. First of all, food localisation raises awareness and educates. In the Baix Llobregat Agricultural Park on the outskirts of Barcelona, "vegetable tourism" has attracted thousands of visitors to recreate and learn about food production in the agricultural park (Paül and McKenzie, 2013). As part of the

Incredible Edible campaign in Todmorden (case study, see attachment 2), actions like “propaganda gardening” in prominent sites like towpaths, cemeteries, front gardens etc. and the “Incredible Edible Greenroute” contribute to educating people about food production, seasonality, making them aware of local food traditions and their impact on the environment (Warhurst, 2012).

Food localisation also has a positive influence on individual well-being. Preserving land and creating space for food production enhances the livability of places because of the increased amount of green space (Raja et al., 2008, Sonnino, 2009). The transformation of urban wastelands into productive gardens establishes local character and sense of place (Sonnino, 2009). Proximity to agricultural land also gives people the opportunity for recreation. Recreational routes through the Baix Llobregat Agricultural Park in Barcelona are an example of this (Diputacio Barcelona, 2013). Furthermore, participating in food production at for example a community supported farm is a form of leisure activity (Kulak et al., 2013). Many studies also stress the importance of local food for food security. A local food system “facilitates residents’ access to healthful, affordable and culturally appropriate foods at all times” (Raja et al., 2008). It also reduces the risk of misdistribution of food and leads to the possibility of people relying on their own or nearby food production (Norberg-Hodge et al., 2002). Food strategies that create sustainable links between the fast growing urban areas and their surrounding regions are crucial in achieving food security (Sonnino, 2009).

Regarding community well-being, food localisation is seen as way to promote community empowerment, sense of community (Grewal and Grewal, 2012) and social justice (Raja et al., 2008), it catalyses interaction between people (CITIES, 2011) and creates links between producers and consumers (Norberg-Hodge et al., 2002). Furthermore, establishing local food systems leads to regeneration of neglected sites, when these are turned into attractive, productive spaces (Kulak et al., 2013, CITIES, 2011) and contributes to the overall livability of places. Cooperation between farms and schools, senior homes and other public institutions not only supports awareness and education but also contributes to the overall well-being of the community (Raja et al., 2008).

Furthermore, food localisation has a potential beneficial impact on people’s health. First of all, locally produced food often comes from organic farms or keeps its naturalness and freshness because of proximity to the consumer. Therefore, local food is often attributed a higher nutritional value than food from conventional agriculture (Raja et al., 2008, Edwards-Jones et al., 2008, Grewal and Grewal, 2012, Norberg-Hodge et al., 2002). Food localisation’s positive impact on food security leads to increased access to healthy food (Raja et al., 2008) and stimulates change towards a healthier diet (Sonnino, 2009, Grewal and Grewal, 2012).

Reduced impact on the environment

Besides benefitting health and well-being, food localisation also has a positive impact on the environment. In local food systems, organic farming is a conventional production method. Therefore, there is no risk of damaging the environment with chemical pesticides, herbicides, fertilizers etc. (Norberg-Hodge et al., 2002) and fossil fuel use is reduced (Norberg-Hodge et al., 2002, Grewal and Grewal, 2012). Although this sounds very positive for lowering emissions, the use of fossil fuels can also increase due to food localisation. Many individual car trips to pick up the harvest share at the farm is far less efficient than home delivery by van or walking and biking to the farm (Coley et al., 2009). At Stroud Community Agriculture (case study 4, see page x), they try to minimize car trips by encouraging people to collect each others’ shares and setting up pick up points at more central locations. Still, the majority prefer to pick up the food at the farm by car (Weir et al., n.d.).

Local food production is a way of maintaining a thriving green belt (Facilitating Alternative Agro-food networks, 2010). Especially in urban areas, the creation or conservation of green areas for food production can contribute to a reduced urban heat island effect and storm water management (Grewal and Grewal, 2012). By allowing a range of non-food species to co-exist, habitats for plants and animals are fostered and biodiversity is stimulated. The complex ecological system that is created makes the land more resilient and protects against

pests and blights. Local food systems require methods and crops adapted to the local climate, which leads to diversity (Norberg-Hodge et al., 2002). By promoting an integrated system, there is less waste and more synergies are created. An example from Rennes, France, is a complex system that produces wood, cider, eggs and butter for the city on the same piece of land (Facilitating Alternative Agro-food networks, 2010). This integrated polyculture is in high contrast with conventional agriculture where monoculture production is preferred (Norberg-Hodge et al., 2002).

Local economy

Food localisation benefits the local economy on two levels: it leads to improved economic conditions and reduced expenditure. The first arises out of the reduced economic leakage (Grewal and Grewal, 2012) as well as support for local farmers (Norberg-Hodge et al., 2002, Edwards-Jones et al., 2008). Food localisation creates new market opportunities for farmers, through box schemes, farmers' markets, pick-your-own schemes etc. (Raja et al., 2008). The Bioland farm of Georg Schmälzle (case study, see attachment 2) is a good example of this. With a farm shop, stalls at different markets in the region, home delivery of 1200 boxes per week and an online shop offering produce from their own farm and other farms in the vicinity as well as a wide range of eco products, Schmälzle takes advantages of new ways to boost his business while supporting other local producers (Gärtnerei Schmälzle, 2013). New opportunities for establishing food systems locally also leads to the creation of jobs (Facilitating Alternative Agro-food networks, 2010) while the farms that are part of the local food system are of a job sustaining nature because food production is labour intensive (Norberg-Hodge et al., 2002). Potentially, food localisation can lead to cheaper food, because there are less externalities and subsidies that need to be taken into account (Weir et al., n.d., Norberg-Hodge et al., 2002). Reduced expenditures are due to a more integrated approach with less technology. Thanks to better integration and reuse, there is less waste, reduced waste collection and processing costs. Also, a reduced use of chemicals leads to cost savings. A greener environment diminishes the urban heat island effect and reduces costs related to the cooling of buildings (Grewal and Grewal, 2012). Furthermore, food localisation can also have an effect on property value. When the local food system leads to urban regeneration, property value can increase when for example vacant plots are transformed into attractive allotments (Raja et al., 2008).

Connections

Food is all about networks; things that when connected together add up to more than the sum of their parts. Whether or not we care about food, the consequences of the way we eat are all around us. The global food system is a network in which we are all complicit. (Steel, 2009)

A main strength of local food systems is their embeddedness and the positive connections this creates. According to Sonnino (2009) "*food becomes an important prism to understand the complex web of connections that tie cities to wider relations, places and processes*". This relational view shows that local food systems support an interrelated city-countryside system (Facilitating Alternative Agro-food networks, 2010) that relinks urban with rural and people with nature (Paül and McKenzie, 2013). A local food system allows for decentralized sale and direct contact between farmer and consumer by for example farmer's markets or farm shops. This creates a lower dependency on distribution centres and supermarkets and contributes to a certain degree of selfsufficiency (Norberg-Hodge et al., 2002). Het Open Veld, a community supported farm (case study 3, see page x), is situated close to its members and offers them a weekly harvest share of seasonable fruit and vegetables. By harvesting their share and participating in events at the farm, the members learn about food production and nature. Furthermore, producing, processing and distributing locally also leads to less identical products being imported and exported simultaneously (Norberg-Hodge et al., 2002).

Why is food localisation not happening yet?

After having analysed the benefits of food localisation, one can wonder why local food systems are not implemented to a greater extent. "Local food" comes often from small-scale, organic farms. It is currently more expensive than food produced using conventional methods and therefore less attractive to the majority. Local food is though not necessarily more expensive, the price depends on many factors. When adding negative externalities of the

global food system, the price of conventional food would also increase. Furthermore, local food is dependent on seasons and other local conditions. Some people might find the supply rather unsatisfying during certain times of the year, when they can buy fresh food year round at the supermarket.

Every country has a limited amount of farmland and can produce according to local conditions. These local conditions obviously constrain food production, so food localisation is not a matter of “local food is best”, but of accepting the limitations of the local food system while using it to obtain benefits for community, environment and economy, without necessarily striving for self-sufficiency. In doing so, food localisation can certainly have a positive impact on the sustainability of settlements.

Attachment 1: Criteria for sustainable food localisation

According to the literature, food localisation has a positive impact on environmental, social and economic sustainability. In order to create a sustainable local food system, the benefits found in the literature review were distilled into seven criteria. These criteria cover the whole food system, from production, processing, distribution to disposal and are tested on several case studies to assess how sustainable the local food system in question is.

3. Case study review

In the case study review (*learning points in attachment 2*), the successes and failures of food localisation become evident. Regarding food production, the methods and growing conditions are very sustainable, leading to environmental benefits, but the productivity of the case studies is low, because they are mostly operating on a small scale. Regarding processing, the food reaches the consumer completely fresh maximum one day after harvest, this implies naturalness and high nutritional values as well as reduced fossil fuel use for storage and cooling. Furthermore, the case studies score high in engaging with local people through events and participation and other types of community empowerment.

Nevertheless, two aspects that have proven to be critical for a sustainable local food system are distribution and disposal. Many alternatives for distributing local food are at hand, the case studies show some excellent sustainable solutions like cargobike deliveries and direct sales at markets and farm shops. Nonetheless, a proportion of the distribution methods are leading to increased travel distances and individual car use, which undermines the concept of a sustainable local food system. The majority of the cases did not address disposal at all, only one project had solved this question. Furthermore, there are some initiatives that encourage reusable bags for carrying food but there is definitely scope for improvement in this area.

Attachment 2: Case study review

4. Framework for sustainable food localisation

From the literature and case study review, a gap in the current approach to food localisation regarding distribution and disposal becomes evident. The main focus of the existing literature and cases is on food production and processing, not on distribution and disposal. The case studies are excellent in producing healthy and fresh local food but they fail in making distribution and disposal sustainable. Another weak element of local food systems is productivity. Local food systems often only manage to supply a small part of people's diet. When implementing local food systems widely, the supply of local food increases and the productivity is automatically addressed.

To create an integrated and sustainable local food system, it is crucial to develop sustainable strategies and design principles for distribution and disposal, as well as for production and processing. By addressing every part of the food chain, a closed loop system will be created.

4.1 Design principles to close the loop

A toolkit of design principles for production, processing, distribution and disposal that can be implemented in and adapted to four types of urban form (core, fringe, periphery and rural hinterland), is set up, to guide implementation of sustainable food localisation. Even when concentrating on distribution and disposal, the two elements most critical to the sustainability of the local food system, the appropriate production and processing elements need to be in place. Furthermore, the toolkit needs to be adapted to two scales: the regional level and the local level. Only then can the entire food system be addressed and a closed loop established.

Regional loop

Depending on the urban form, there will be more or less food produced, processed, distributed and more or less organic waste that has to be managed. For example, food production is concentrated in rural rather than urban areas and due to higher population densities, certain areas create more waste than others. Therefore, links have to be created between different settlements on a regional scale, to make sure that distribution of local food and disposal of organic waste is taken care of in a sustainable way. On the regional level, links between settlements and the food system are created by facilitating distribution of food and pickup of organic waste along existing infrastructure systems.

Local loop

Production happens close to the consumer, on the scale appropriate for the amount of land available in the type of urban form. Processing is kept to a minimum, due to harvesting right before consumption or by being kept in storage for less than five days. For collecting food, a convenient carrier, used when picking food or collecting it from a hub, is provided. Markets, food hubs and bike delivery schemes bring the local food close to the consumer. For the disposal of organic waste, a convenient bin is provided to allow you to bring the waste to a compost point, at a farm or pickup point. The waste is then composted to be reused as organic matter that creates healthy soils.

Attachment 3: Toolkit of design principles for the local loop

5. Implementation

By applying the toolkit to project sites, different solutions for local food hubs are created. In the urban core, the local food hub takes the form of a box: a compact solution for a gardening shed, combined with a workshop space, a compost point, a community announcement panel,... In the city's fringe, the local food hub is not one object, but several objects spread out in the area. To support the existing cycling infrastructure to reach local farms, it focuses on facilities around cycling such as bike repair and route information. In the periphery, the local food hub is located at a transport hub and is the pivot point in a local network for local food distribution and disposal. The rural hinterland is where the majority of food is produced. Therefore, the local food hubs are focal points in a growing network of farms and distribution points. Its importance for food tourism is significant. A large network linking local food hubs with the agricultural landscape is set up.

The area of the four project sites starts in the centre of Antwerp and continues approximately 25 km southwards, in the direction of the city Mechelen. The sites are situated along this stretch. The area is well known for its food production, mostly vegetables. The food auction where 40 per cent of Belgian horticultural production is sold, is situated in this area. A large share of the food sold at the auction is produced in the region, but is not available to the local consumer before it arrives in one of the chain supermarkets. The area is comprised of different types of urban form, from the city centre of Antwerp to the rural village of Sint-Katelijne-Waver. Due to the proximity to food production and the variety of urban form, the area is well suited for the implementation of the toolkit for sustainable food localisation.

Food production is more intense in the rural hinterland and more waste is produced in the urban core due to higher population density. Different types of urban form need different food system solutions but closing the loop on the regional scale will contribute to the overall sustainability of the local food system.

Attachment 4: Project interventions

Attachment 5: Example implementation rural hinterland

Existing infrastructure is the backbone of the local food system and contributes to a closed regional loop. Existing regional transport infrastructure allows for simple add-ons supporting the local food system. Regarding rail infrastructure, passenger trains calling at all stations along the routes can be used for transport of food and waste. Likewise, waterborne transport along existing canals is an option. Small harbours adjacent to towns and villages along canals and rivers are excellent locations for local food hubs that handle transshipment. With the extension of the network of cycle highways, expected to happen in the near future, this infrastructure can be used by cargo bikes to distribute local food throughout the region. A sustainability label informs the consumer about the conditions in which the food was produced, processed and distributed. The label is based on the criteria for sustainable food localisation and signals its message with simple traffic light coding to the consumer.

Attachment 6: Example implementation regional loop

6. Conclusion

The impact of food systems on the climate is huge: food systems currently account for 29 per cent of global carbon emissions. The project addressed this challenge by investigating how food systems can be made more sustainable using the approach of food localisation. It looked at how food localisation can contribute to the sustainability of settlements and how a sustainable food system can be implemented. It applied an holistic approach, including food production, processing, distribution and disposal, and addressed the gaps in current research with the concept of closing the loop.

A thorough literature review has showed that local food systems benefit communities' and individuals' health and well-being, raise awareness and educate, reduce human impact on the environment and support local economies. The embeddedness also strengthens connections between urban and rural and brings people and food closer together. At the moment, food localisation only happens to a small extent. It is important to acknowledge that every country has an amount of farmland and can produce according to local conditions. These local conditions constrain food production, so food localisation is not a matter of "local food is best", but of accepting the limitations of the local food system while using it to obtain benefits for community, environment and economy, without necessarily striving for self-sufficiency.

A case study analysis confirmed the beneficial impact of food localisation but also uncovered a gap in the current approach. Productivity is generally low and disposal and distribution are undermining the sustainability of the local food system. To create a sustainable local food system, it is crucial to develop sustainable strategies on local and regional levels for distribution and disposal, as well as for production and processing. By addressing every part of the food system, a closed loop will be created.

The design principles were tested on four project sites in Flanders, Belgium, that represent different types of settlements and together form a region. In the core, the design is a compact solution for a gardening shed that can be transformed into a workshop space. In the fringe, several objects, guiding people to local food, are designed. In the periphery, a network of food distribution and disposal is designed around a transport hub. The rural hinterland has a similar network solution, but is distinguished by its tourism facilities. On the regional level,

existing infrastructure like railways and cycle highways are used to handle distribution and disposal of local food.

6.1 Contribution and transferability

By creating a closed loop concept for sustainable food localisation, the project contributes to the existing body of work on local food systems and sustainability. It offers an holistic and dynamic perspective, since all elements of the food systems are addressed, not as single components but as a system where every ingredient influences the whole.

In the project, sustainable food localisation is implemented in four types of urban form. The implementation is derived from a toolkit of design principles, specific to urban form and scale variables, but not to a site. Of course, site specific conditions have to be acknowledged so the toolkit can be implemented in the most ideal way. Nevertheless, the design solutions developed for the project sites are based on the toolkit and therefore widely applicable, since they represent solutions for a general problem, not a site-specific one.

Since a location is always positioned within a wider region, it is wise to use the resources that are produced throughout the region and create an integrated system of regional distribution. Benefits from food localisation on the local scale contribute to creating a closed loop food system on the regional scale as well.

The project proves that implementation of food localisation is straightforward. A clear set of criteria points out the most crucial elements that have to be present to create a sustainable local food system. The criteria can be used when planning a sustainable local food system or can be used as a tool for creating awareness about the food system with consumers. Furthermore, the toolkit of design principles builds on extending the use of existing infrastructure. By simply adding functions like food transport on passenger trains or by introducing adaptable solutions, for example local food hubs, the urban form and infrastructure do not have to be altered to achieve successful and sustainable food localisation.

The toolkit and the design solutions offer straightforward methods for implementing sustainable local food systems and can be used by the public as well as private sector for the planning and designing of sustainable strategies for food systems. Moreover, the concept of closing the loop reinforces the cycle thinking that is inherent to the field of sustainability.

An important issue to look at in further studies is how people's lifestyle and behaviour affects the local food system. Is there a need for a critical mass to make food localisation successful? Some elements of the food system might be harder to nudge in the direction towards sustainability than others. The part of the food system before it reaches the consumers (production, processing and distribution) might be easier to alter towards sustainable food localisation than the stage of disposal, that to a greater extent depends on the behaviour of individuals.

6.2 Final thoughts

If you eat, you are in. (Warhurst, 2012)

Food is a resource, vital for survival. In other words, everyone is affected by some kind of food system. Every country has an amount of farmland and produces food according to local conditions. The project uncovers both the benefits of food localisation on environmental, social and economic sustainability as well as a gap regarding distribution and disposal. It offers the closed loop concept as a new perspective on how to implement food localisation to obtain the most benefits for the local community and environment. Hence, the implementation of food localisation becomes an exemplar of strong sustainability since it sparks off a wide array of benefits for people and the environment. Ultimately, it creates a

closed loop system in which there is a reconnection of people with food, urban with rural and culture with cultivation.

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CRITERIA FOR SUSTAINABLE FOOD LOCALISATION


According to the literature, food localisation has a positive impact on environmental, social and economic sustainability. In order to create a sustainable local food system, the benefits found in the literature review were distilled into seven criteria. These criteria cover the whole food system, from production, processing, distribution to disposal and are tested on several case studies to assess how sustainable the local food system in question is.

POLY CULTURE 


- organic production
 - resilient agriculture
 - healthy soil
 - biodiversity
- production in transition to organic
- conventional production

PRODUCTIVITY 


- self-sustaining (1700 m² pp for 2300 cal*)
 - support local farmers and local economy
 - food security
- substantial part of diet (1700 m² pp < x < 850 m² pp)
- only supplement to import (x < 850 m² pp)

GROWING CONDITIONS 

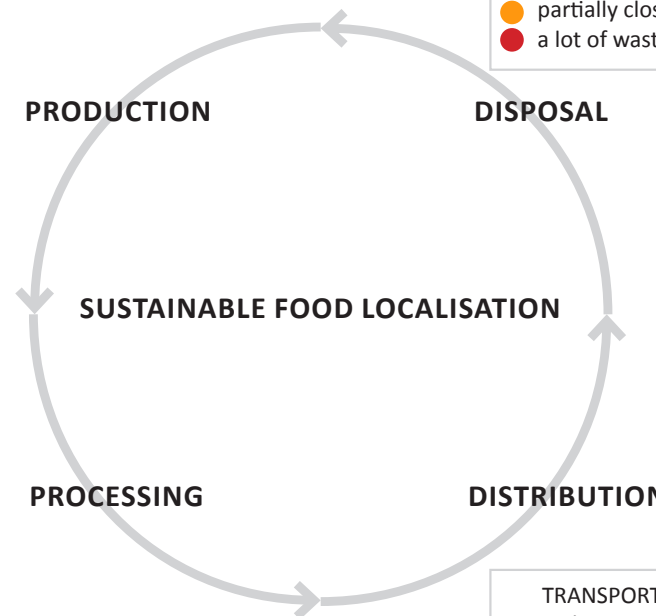
- seasonable and local species
 - biodiversity and resilience
 - healthy soil
 - low degree of machinery and fossil fuel use
- mix of local and non-local species
- non-local species


FRESHNESS 

- 100% fresh to consumer
 - naturalness
 - high nutritional value
 - reduced fossil fuel use for cooling, storage
- less than 5 days after harvest to consumer
- more than 5 days after harvest to consumer


RECYCLING 

- 100% closed loop
 - reduced waste handling costs (transport, disposal,...)
 - reduced impact on environment
- partially closed loop but still waste produced
- a lot of waste produced



TRANSPORT 

- carbon neutral (walking, biking)
 - reduced fossil fuel use
- organised home delivery by van
- individual car trips

COMMUNITY 

- farmer meets consumer
 - awareness and education
 - sense of place, local distinction
- farmer meets some consumers
- farmer doesn't meet consumer

How to read figure

CRITERIA

- best option
 - benefits of this options
 - ...
 - ...
- in-between option
- worst option

biggest impact on either

- health & well-being
- environment
- local economy
- connections

* productivity: to produce a diet including fruit, vegetables and grains (2300 calories per person), an area of 1700 m² is needed (One Block Off The Grid, 2011)

SKINNER CITY FARM
(US)

- Organic waste pick up from restaurants



- Focus on community empowerment and participation



INCREDIBLE EDIBLE
TODMORDEN (UK)

- Bringing food close to the consumer through “pick your own” method and events

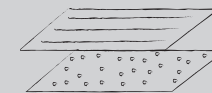


- Awareness and education campaign



STROUD COMMUNITY
AGRICULTURE (UK)

- Medium high productivity provides members with a substantial part of their diet

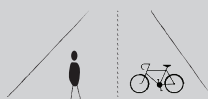


- High share of round trips by car to farm undermines sustainable distribution

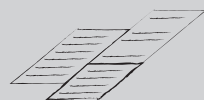


HET OPEN VELD
(BE)

- Farm on walking and biking distance from members



- Low productivity



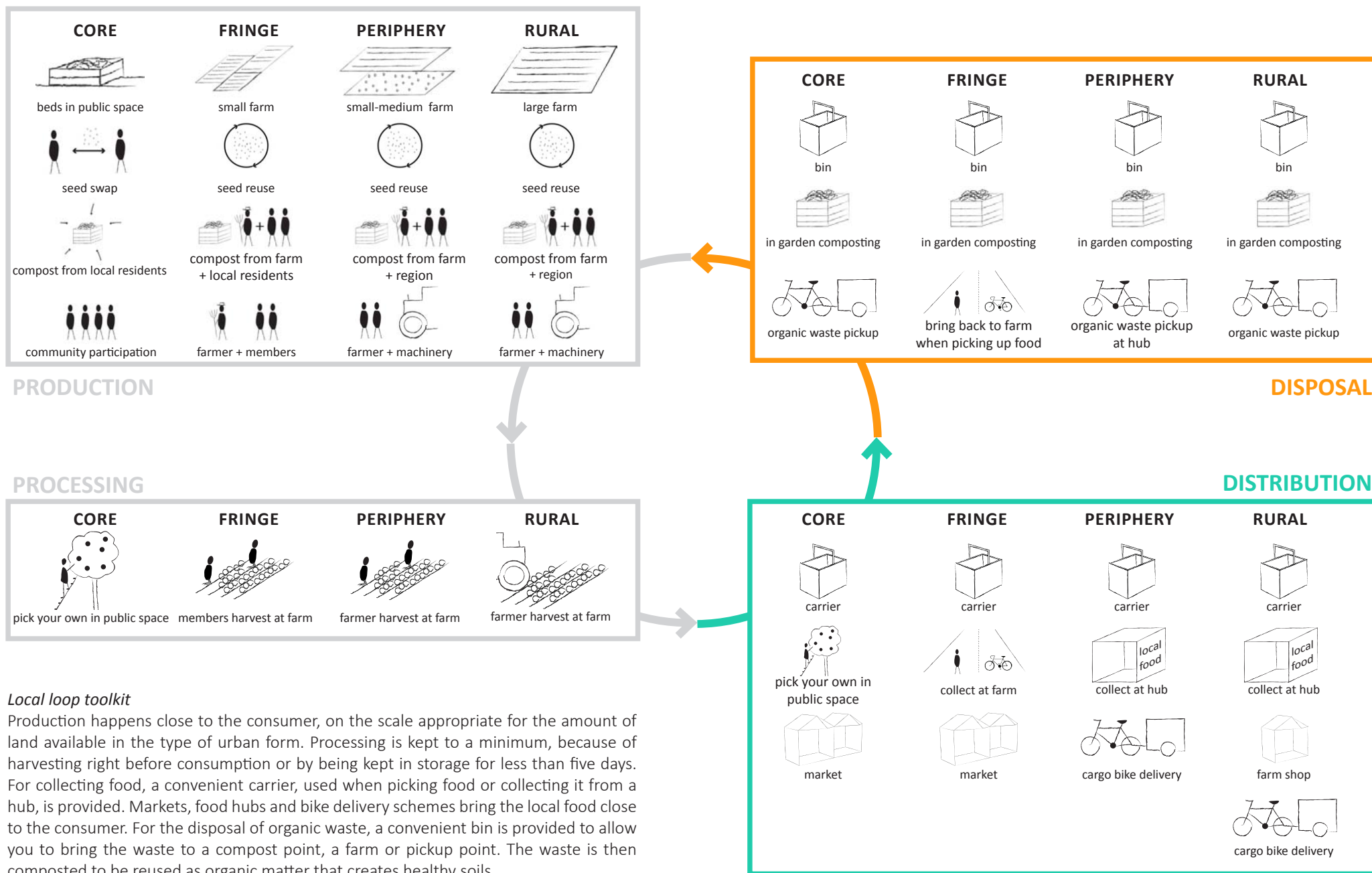
GEORG SCHMÄLZLE
(DE)

- Innovative cargo bike delivery scheme



- Less interaction between producer and consumer due to large scale



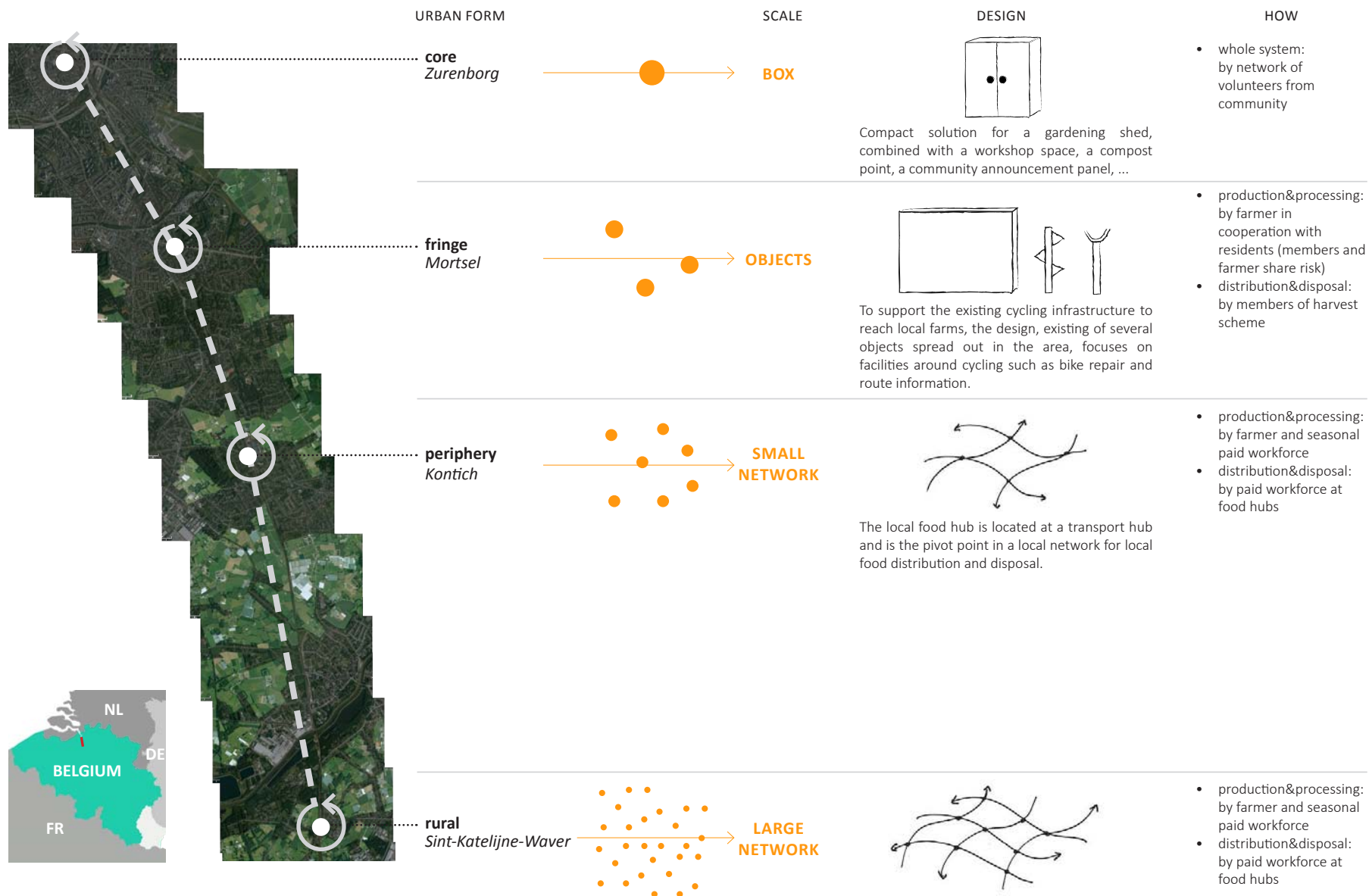


Local loop toolkit

Production happens close to the consumer, on the scale appropriate for the amount of land available in the type of urban form. Processing is kept to a minimum, because of harvesting right before consumption or by being kept in storage for less than five days. For collecting food, a convenient carrier, used when picking food or collecting it from a hub, is provided. Markets, food hubs and bike delivery schemes bring the local food close to the consumer. For the disposal of organic waste, a convenient bin is provided to allow you to bring the waste to a compost point, a farm or pickup point. The waste is then composted to be reused as organic matter that creates healthy soils.

PROJECT INTERVENTIONS

The area of project sites starts in the centre of Antwerp and continues approximately 25 km southwards, in the direction of the city of Mechelen. The four sites are situated along this stretch. The area is well known for its food production, mostly vegetables. Belorta, a food auction where 40 per cent of Belgian horticultural production is sold, is situated close to the fourth project site in Sint-Katelijne-Waver. A large share of the food sold at the auction is produced in the region, but is not available to the local consumer before it arrives in one of the local supermarkets. The area is comprised of different types of urban form, from the city centre of Antwerp to the rural village of Sint-Katelijne-Waver. Due to the proximity to food production and the variety of urban form, the area is well suited for the implementation of the toolkit for sustainable food localization.



Rural hinterland: Sint-Katelijne-Waver



Figure 1 Project site location

Population density
Sint-Katelijne-Waver in 2012:
563 inhabitants/km²
(Belgian Federal Government, 2012)

Population in 2013:
20 349 inhabitants
(Belgian Federal Government, 2012)

Station Sint-Katelijne-Waver:
908 commuters/day
number of commuters that board a
train per day (NMBS, 2009)

Statistics Sint-Katelijne-Waver

1 Site analysis

Urban form

The village of Sint-Katelijne-Waver is an excellent example of ribbon development. Along the ribbons, detached houses with gardens are mixed with farms and agricultural land.



Figure 4 Aerial view of Sint-Katelijne-Waver



Figure 2 and 3 Rural landscape in Sint-Katelijne-Waver

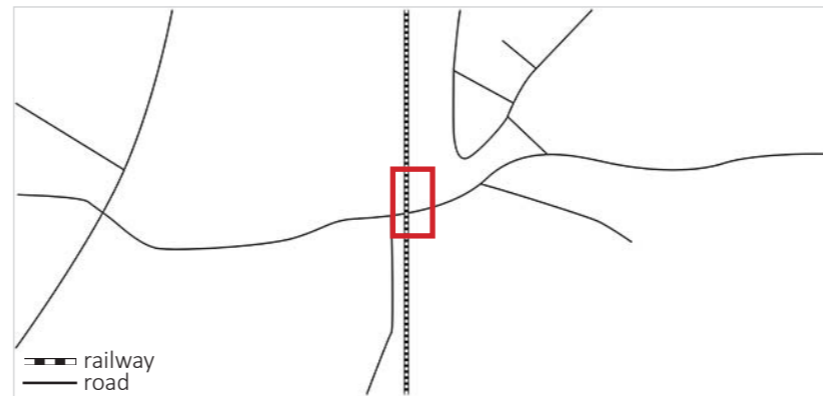


Figure 5 Road and rail infrastructure of Sint-Katelijne-Waver

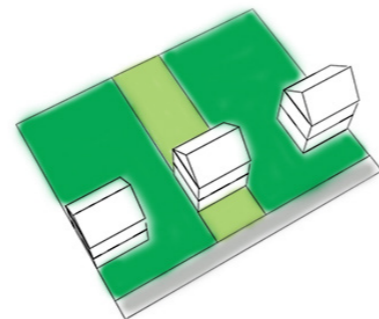


Figure 6 Large front and back yards

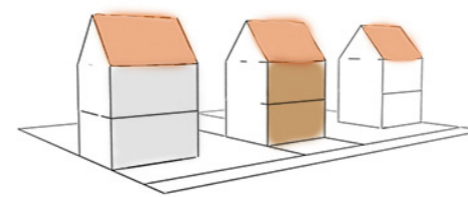


Figure 7 Detached houses

Local food system

Sint-Katelijne-Waver is at the heart of Belgian horticultural production. Local produce is sold at Belorta, the local food auction, which is the largest in Europe. 40 per cent of fruit and vegetables produced in Belgium is sold here to supermarket chains amongst others (Belorta, 2013). There is a horticultural bike route and a vegetable museum, celebrating the local heritage (Toerisme Sint-Katelijne-Waver, 2013). The area is well connected by train. The municipality collects organic waste weekly although many local residents compost organic waste in their garden.



Figure 8 Elements of the local food system

- production
- processing
- distribution (store/transport)
- disposal

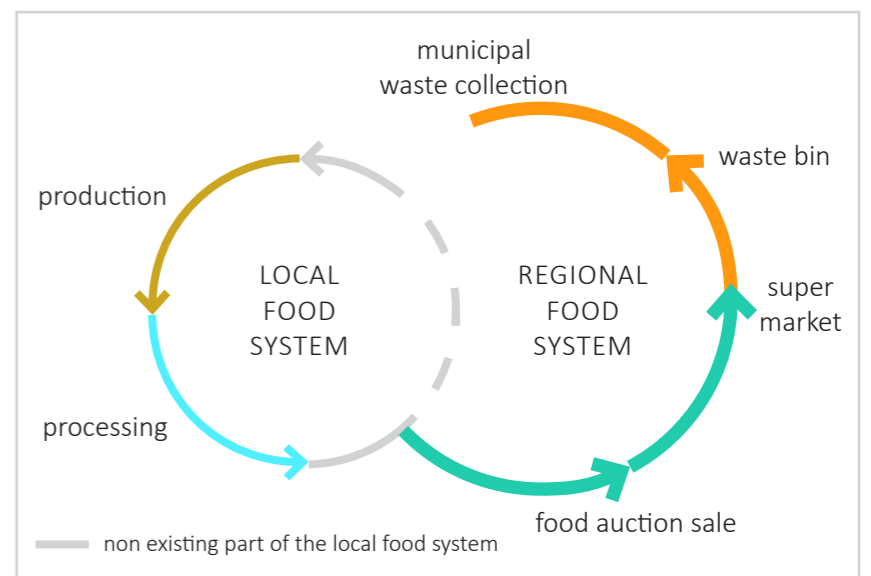


Figure 9 Current local food system in Sint-Katelijne-Waver

SWOT

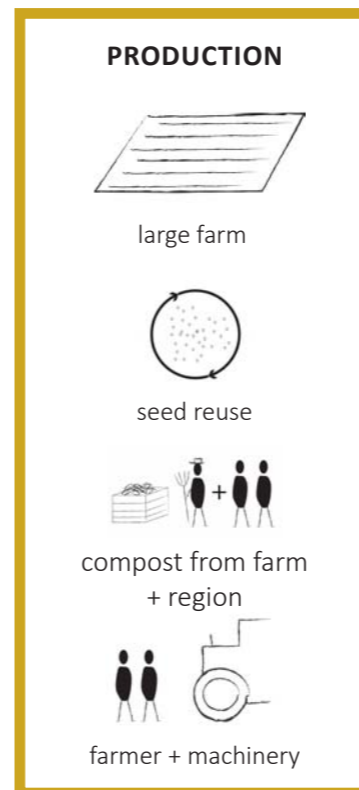
<p>STRENGTHS</p> <ul style="list-style-type: none"> frequently used railway station presence of food production planned extension of cycle highway horticultural heritage 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> locally produced food not directly to local consumer auto-dependency because of dispersed urban form train only public transport connection available
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> proximity allows for bike transport station as local food hub raise awareness and educate with horticultural tourism 	<p>THREATS</p> <ul style="list-style-type: none"> growing distance between producer and consumer car-based distribution of local food

Figure 10 SWOT analysis of Sint-Katelijne-Waver

2 Implementation of toolkit

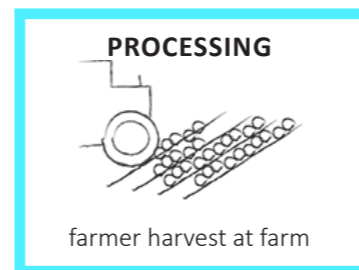
Production

Sint-Katelijne-Waver is located at the heart of Belgian fruit and vegetable production. On medium to large farms, local and seasonable vegetables are produced almost year round, outdoors and in greenhouses.



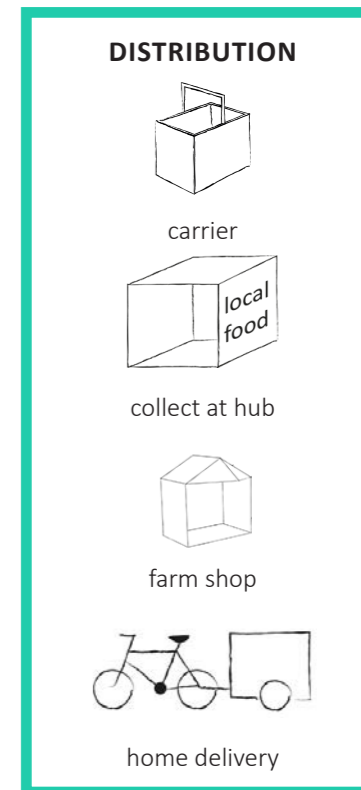
Processing

Harvest happens almost year round and the produce is aimed to be kept in storage at the farm no longer than one day.



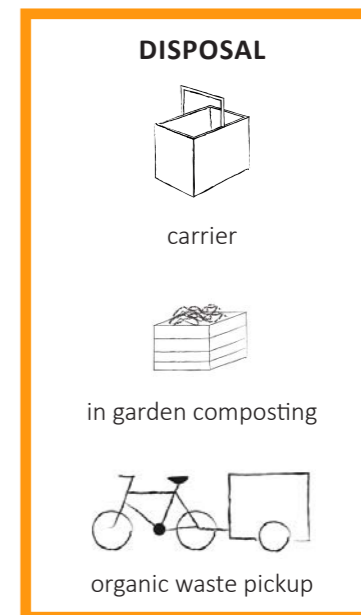
Distribution

Local food hubs are within easy reach of several farms because of the dispersed urban form. Food is distributed by bike between farms and local food hubs. One of the food hubs is located adjacent to the train station in Sint-Katelijne-Waver. The future extension of the cycle highway will pass here, it is a convenient location for commuters to pick up their fruit and vegetables on their way to or from work. Furthermore, food boxes can be delivered at home by bike for those who don't pass by a local food hub or for e.g. people with reduced mobility. To attract visitors, a horticultural walking and biking route that passes by farms and allows people to learn about local food, is further developed. Along the route, information about what is produced is given and several farms have farm shops where passers-by can taste and buy the local produce.



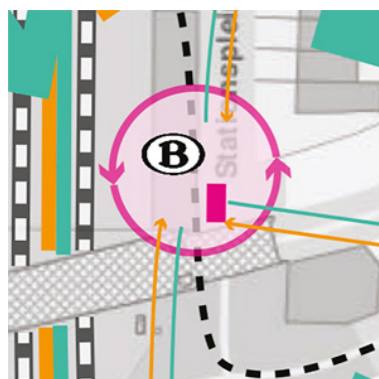
Disposal

Local residents predominantly live in detached houses with garden and have the opportunity to compost organic waste. Otherwise, organic waste is either picked up when a food box is delivered or dropped off at the local food hub.



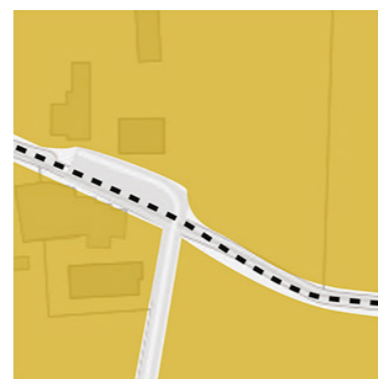
3 Design elements

Local food hub



The local food hub is located at the square in front of the station entrance. It can facilitate market stalls or can be used as a food pick up point. It is also the starting point for the horticultural tourism in the area.

Horticultural route



The horticultural route takes visitors past farms, farm shops and production land. Along the route, visitors can buy and learn about local produce. Information is provided on panels about what is growing on the land and how it will reach the local consumer. Bikes can be rented from a docking station at the station's food hub.

RURALHINTERLAND

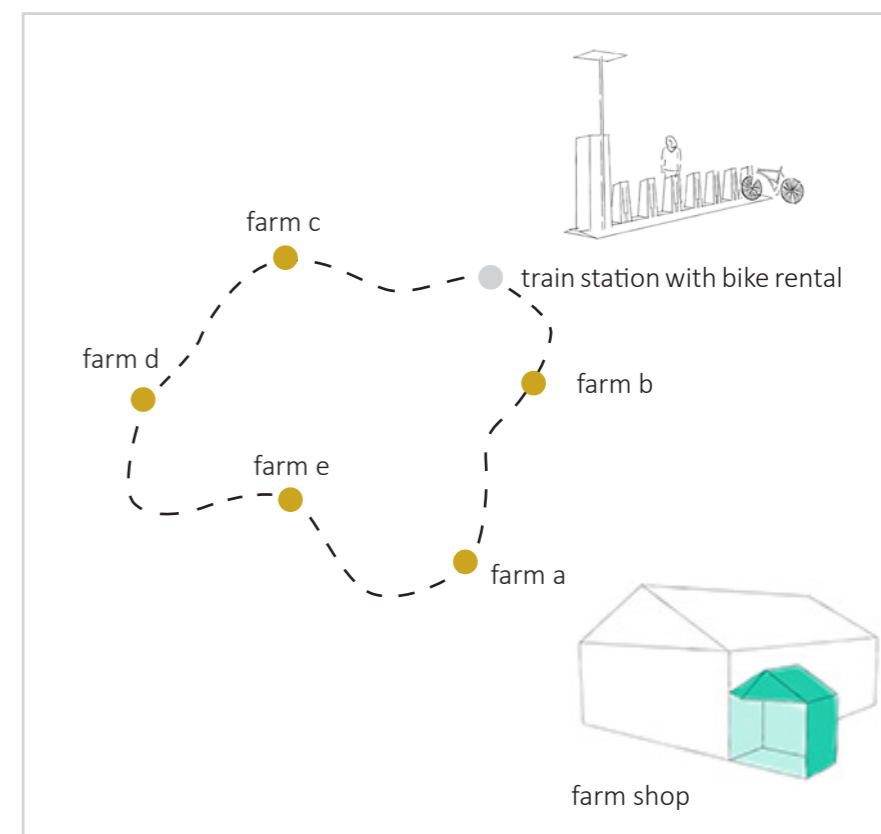


Figure 13 Horticultural route

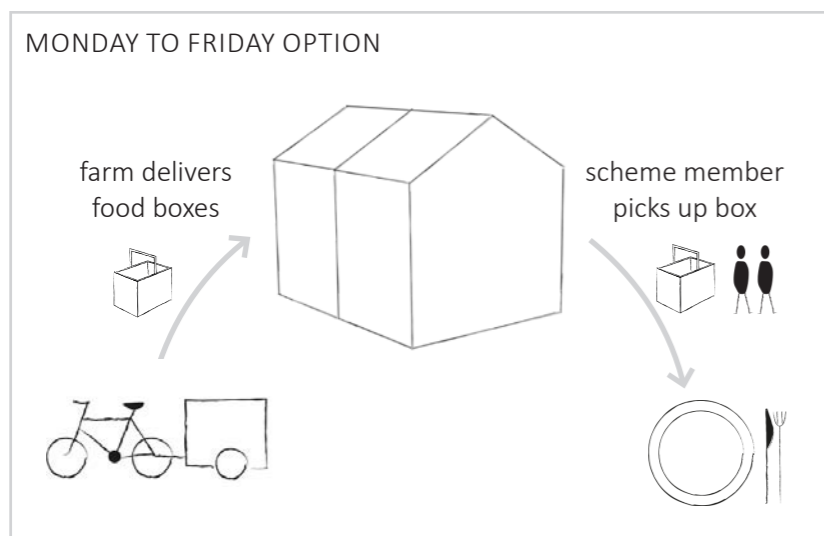


Figure 11 Food hub as box scheme pick-up point

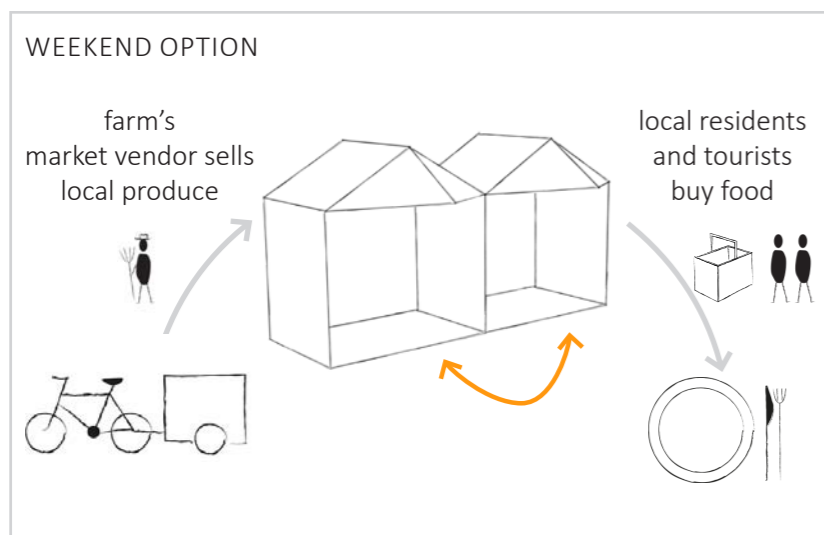


Figure 12 Food hub as local food market

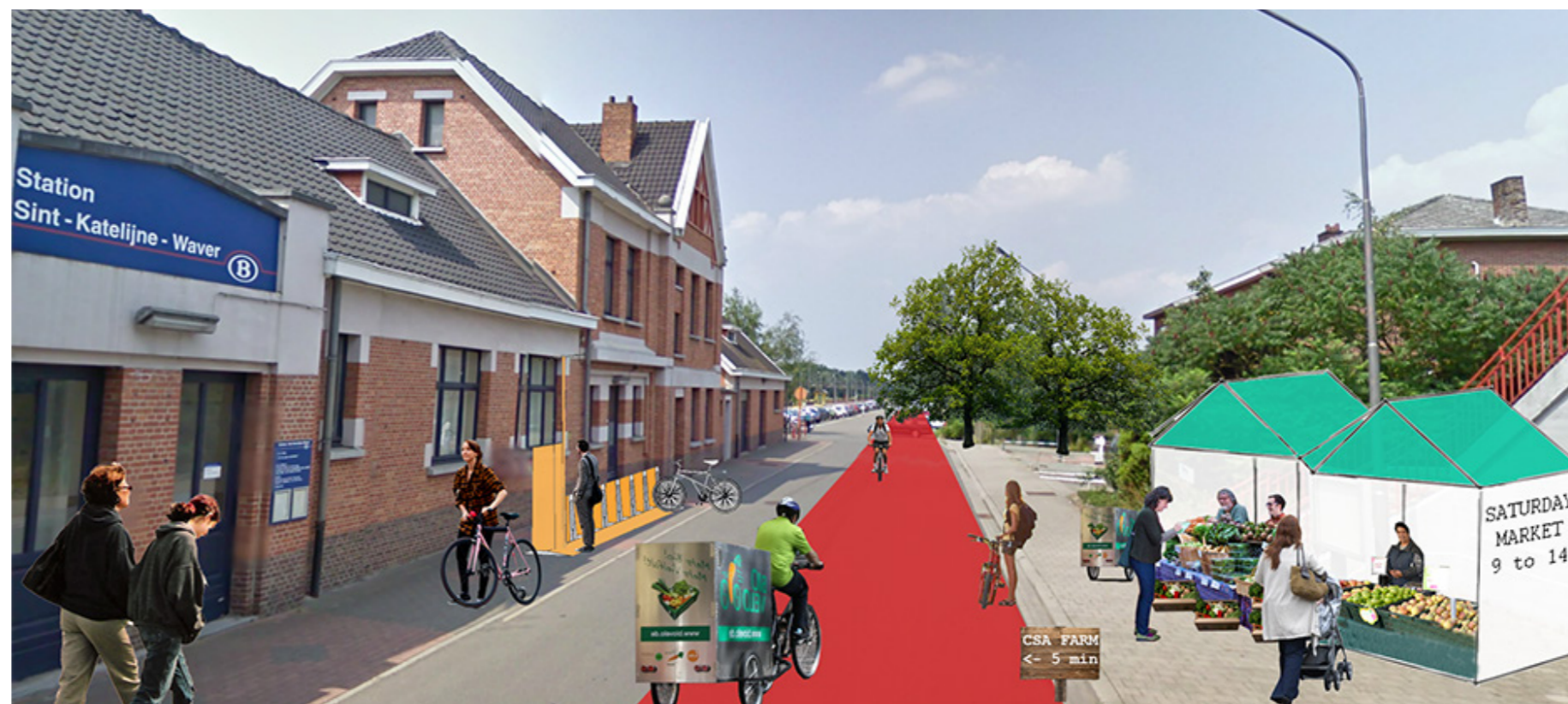
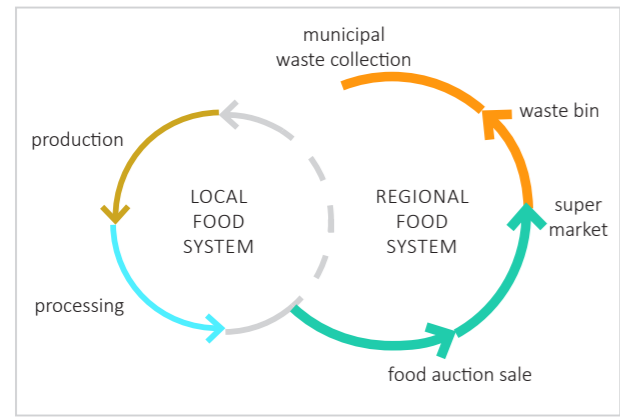
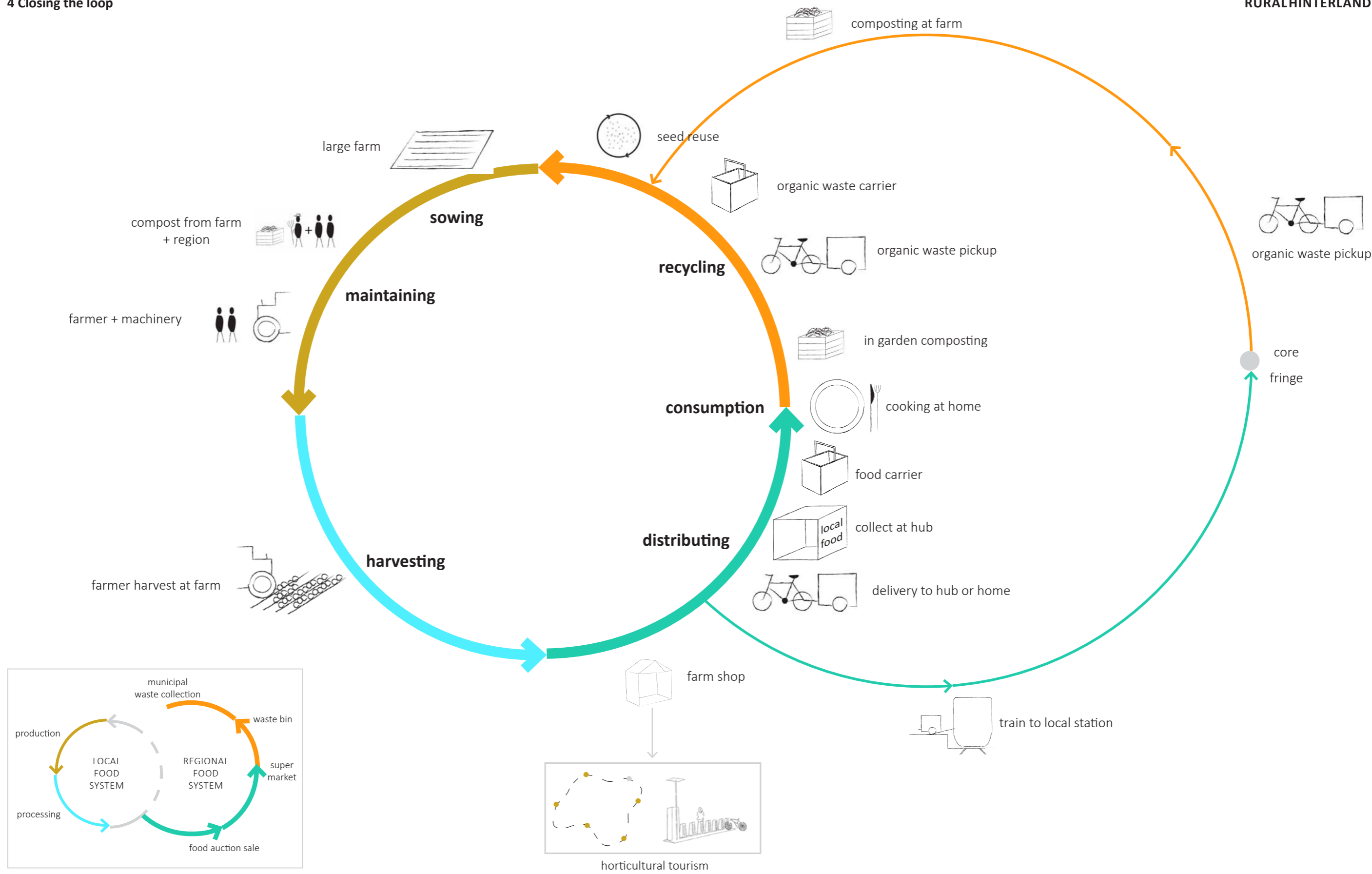


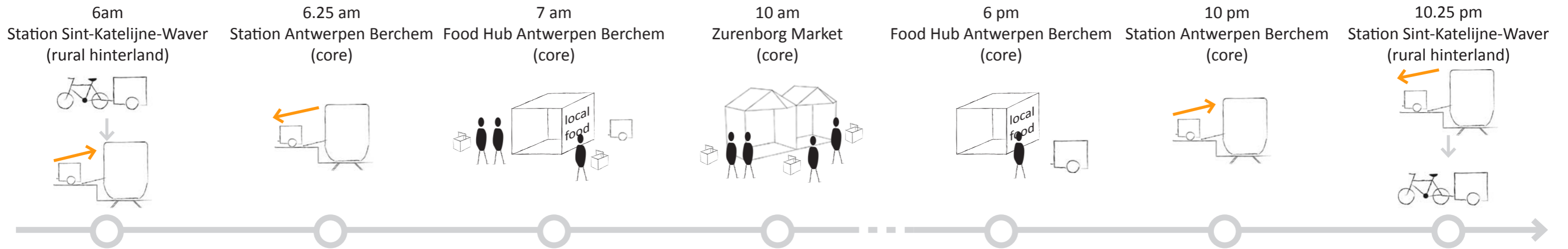
Figure 14 Food hub at Sint-Katelijne-Waver station

4 Closing the loop

RURAL HINTERLAND



Current local food system in Sint-Katelijne-Waver



Jan arrives at the station with a cargo trailer behind his bike, full of fresh fruit and vegetables harvested the day before at his father's farm. The first train to Antwerp arrives at the station on time and Jan slides the cargo bike trailer via a wheelchair ramp into the food compartment. The food compartment is also used for bike storage, but at this early hour, it is still empty.

Train manager Bert unloads the trailer with food onto the platform. There, it is picked up by Ann, who is working at the local food hub outside the station today. She uses the lift to get down to ground level and then pushes the trailer to the hub.

Ann is busy organizing the food boxes at the hub while the first customers arrive: a secretary picking up a fruit box for her office, a doctor collecting his weekly vegetables on his way home after a night shift,... Mark arrives with his bike and attaches the trailer with food destined for the market at Dageraadplaats in Zurenborg, 5 minutes away from the station.

The food that was loaded onto the train this morning in Sint-Katelijne-Waver is now almost gone: it is all sold to local residents at the weekly market. Mark loads the trailer with organic waste that is collected at the hub in Zurenborg and cycles back to the food hub at the train station.

Ann is working the evening shift, helping people that collect their boxes and preparing the trailer that Mark brought back to her for transport to the farm. She adds some boxes with organic waste to what's already in the trailer and then brings it to the right platform.

Train manager Jef slides the trailer with organic waste into the food compartment before checking if the platform is empty.

Jan's dad is waiting at the station for his trailer to arrive. When the train calls at the station, Jan's dad climbs into the food compartment to pull out the trailer. On the platform, he attaches it to his bike and cycles back with organic waste that will be composted and used as fertilizer on his land.



Exploration on the Integration of Urban and Productive Rural Hinterland——Based on the Oriental Farming Culture

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Synopsis

The paper summarizes the model of urban-rural linkages in Taihu Lake Basin of China in the ancient times. One targeted framework is proposed connecting urban and rural hinterland based on the oriental farming culture and it has been applied in Suzhou Taihu New City.

1. Introduction

Taihu Lake Basin, as the pinnacle of the oriental farming culture in China, is known as “land flowing with milk and honey”. After the evolution during the past two thousand years, the urban and productive rural hinterland of this region has accumulated a wealth of experience on economy, culture and urban construction. The experience has profound significance, especially when we are forced to face the current issues, such as food production and security, the ecological crisis, urban- rural conflict. For concreteness, what can be learned from the evolution in Taihu Lake Basin for food production and security? What is essential to guarantee food production and ensure urban spatial characteristics? Can these experiences be applied to China's new current urbanization? This paper attempts to answer these questions, and to explore the strategy for the integration of urban and productive rural hinterland.

In the following paragraphs, the paper analyzes and summarizes the problems of crack between urban and rural in the process of urbanization in this region. In the third part the paper, a review has been proposed about the regional production and living conditions since thousands of years ago in Taihu Lake Basin. Through the interpretation of national policy in the forth part, the paper proposes three ways in the fifth part, including the following methods: the regional space construction based on the security of natural ecological, the cultural gene conservation based on historical heritage and isomorphic urban space, the establishment of the experimental Urban-Rural Community based on the coordination of urban and rural areas. Finally, the paper attempts to summarize the experience gained in the planning and the construction.

2. Food crisis and rapid urbanization

For food production, the urbanization is a double-edged sword. To some extent, it promotes food production. Scholars have generally agreed that the process of urbanization can promote the transformation of traditional agriculture to modern agriculture, and improve output efficiency of the agricultural sector and so on. But the rapid urbanization also brings food production problems. In Taihu Lake Basin, the rapid urbanization has been leading to ecological substrate destruction, production squeezed, and reduction of the farmers' enthusiasm and other problems since 20 years ago.

2.1 Destruction of the ecological substrate

The urban construction causes a bad influence on natural ecosystems and socio-ecological system, and has a significant influence on the cultivation and development of agriculture. The overall Taihu Lake water system has been deteriorated, resulted in agricultural production crisis.

The greatest ecological problem in Taihu Lake Basin is the contradictory between the rapid progress of industrialization and urbanization and the inadequate supervision. Thousands of rural enterprises distributed around Taihu, mostly textiles, clothing, machinery, electronics and other processing industries. In the 1980s, Taihu Lake Basin, less than 0.4 percent of the country's land area, created about 1/8 of the GDP. The level of urbanization ranks first in the country, and that mode is known throughout the country as "Sunan model."

However, the rapid industrialization, industrial pollution, and sewage caused a serious pollution of Taihu Lake water system. In the 1980s, the pollution is still in a lower level (CHEN Y.W et al., 2003), but since 1980s, Taihu Lake water has been rapid deteriorated. "Blue Algae" in Taihu Lake is the most famous event in May and June 2007 when serious blue-green algae outbreak in Taihu Lake, resulting a serious shortage of drinking and life water in Wuxi (HUA Fenglin, 2012).



Image 1: Aerial View of A District Suzhou in 2003

Resource: Urban Plan and Design Institute of Southeast University



Image 2: Aerial View of A District Suzhou During 2003 to 2013

Resource: Urban Plan and Design Institute of Southeast University

2.2 Means of production is affected

During the period of the rapid urbanization, the infrastructure and production space is greatly compressed due to the loss of rural labor force, land resources, infrastructure, production space and other issues.

a) Land Resource

In the process of urbanization, a large amount of urban construction land is occupied. On the one hand, the population density is very high, and the land resources per capita are scarce,

but the development of the city requires a lot of land resources. The extension of urban space continues, with the increase of industrial area and satellite towns progressing. Large areas of the rural suburbs and farmland turned into urban land. Rural and farming areas are generally occupied. Even the agricultural production resources, such as rivers and lakes, are eliminated in order to meet the needs of rapid expansion of the city. On the other hand, the permanent demarcation of basic farmland cannot guarantee that the farmland will not be occupied (Image 1 & Image 2). Local governments usually requisition land at low prices and then push them to the market at higher prices, or to real estate developer, to get a huge profit. Meanwhile, through the replacement between the basic farmland and the general farmland, food production is driven back to the mountains or marshy areas and other less fertile land.

Based on the National Land Survey, in the "urbanization hot" period of 1996-2009, more than 130,000 square kilometers of farmland disappeared, which is more than a third of the German area. For example in Hai'an, a large number of rural and farmland rapidly disappeared for the city's rapid expansion since the 1990s (Table 1).

Table 1: Changes of arable land per capita in Hai'an since the 1990s

	2002	2004	2006	2008
<i>Cultivated area (ha)</i>	56143	55883	54665	54990
<i>Agricultural population (people)</i>	625469	725910	715503	433373
<i>Per capita arable land</i>	0.09	0.08	0.07	0.13

Resource: Urban plan and design institute of southeast university

b) Infrastructure

Infrastructures for agricultural production are ignored by the government. The Comprehensive transportation planning under rapid urbanization is basically designed for the urban area, ignoring the needs of rural production. The traditional planning and design concepts are lack of research on rural water supply and layout of electricity facility. These disadvantages bring rural hinterland lots of difficulties to the modernization of agriculture production.

c) Production space

What has been overlooked is that the impact of rapid urbanization has brought not only the destruction of the existing arable land, but the compression of the additional space needed for food production. We made a field investigation of three cities in the west of the Taihu Lake, Yixing, Liyang and Guangde in 2014, and found that the problems were generally complained by the farmers. Among these problems, agricultural machinery storage, grain drying, preliminary processing and storage space were serious.

2.3 Low enthusiasm of production

On the one hand, New city with modern municipal facilities, educational facilities, medical facilities, business services leads the community to collectively abandon rural life. Under the current cultural orientation, rural life means vulgar and shameful. Urban life has become the only benchmark for modern lifestyles. According to relevant statistics, in China, there are about 300 villages disappear every day. Invisible disappearance of rural village and the demolition event, such as the withdrawal of the village, are on a daily basis. The oriental rural lifestyles and values are being replaced.

On the other hand, for most farmers, agricultural income can not meet family expenses. Subject to the level of their labor resource, farmers can not benefit from the process of

urbanization. Suffering of Lower-value agricultural products, impossibility of mass production mode, the Taihu Lake Basin farmers are not able to get even pay and benefits in agricultural production—the income from working on the land for a year is even less than the earnings working in rural industry for a month. This leads to the decline in the quality of agricultural products. As the main objective, promoting agricultural production lead an excessive use of pesticides and fertilizers, affecting the safety of food. For example, in the investigation, the author found that many farmers sell most of the food but they never eat this kind of rice and poultry - they open up a dedicated land to plant rice for themselves. It is worth noting that this phenomenon is widespread in China. For example, on May 4, 2013, China Central Television exposed a news, the ginger growers in Weifang City, Shandong province, used a kind of pesticide called "Shennongdan" which is highly toxic in the domestic ginger planting time in order to increase production.

2.4 Summary: urban-rural dividing is the root cause

It is necessary that the root cause is that urban and productive hinterland do not effectively support each other in the current development context, so that there is no positive interaction—relationship between urban and rural hinterland is vague and separated. Over the years, this relationship has attracted the attention of governments and scholars at all levels. The government established a series of institutions and systems in urban and rural development policies and development concept, while scholars from different perspectives put forward many theories of urban and rural planning and development. Many of them are constructive. For example, in 1980, some scholars have proposed the concept of "urban-rural integration". Today this concept has been unified, the urban-rural integration related theory is gradually maturing.

However, the current reality is that the practice of those theories is rare. Rural areas are not able to be urbanized, and non-agricultural rural areas are not turned into urban district—there have been many "not-city-nor-rural" area (Chen Wen, 2003). In the current process of planning and construction of urban and rural areas, China is not in lack of urban-rural integration planning theory, but encountered an awkward situation: in the integration process of urban and rural hinterland, which point of view should be taken and what method should be used to make both symbiotically developing? In today's context, this problem can be expressed as that in the urban-rural integration process, how to ensure food safety, and how to highlight the characteristics of urban space both? The core issue of the problem lies in how to deal with rural issues in the expansion of the urbanization process.

Recalling the rapid urbanization during the construction period, there were at least two errors. Firstly, the eradication of rural areas is common. For some villages near the edge of the city, due to urban expansion needs, their land is expropriated. The developer or the village committee who proceed from the sale of land fund a new residential area and resettle farmers who lost their land. Due to the huge land revenue, this kind of "new countryside" construction is easily molded with capital adequacy. But problems as the placement of landless peasants will persist and may be repeated in future. This approach of regional issues is only a one-dimensional thinking from the perspective of the city, resulting in lots of disadvantages in rural areas and insufficient attention to local culture, causing unobvious urban characteristics and full-featured traditional village even disappeared (YUAN Le, CAO Xiaojing, MIN Yaqin, 2007). Secondly, some government protect the countryside in a type which we call "bonsai" type. Since the rural is surrounded by urban sprawl, although the administrative system has not changed, the villagers' employment, consumption, ideas, lifestyle have already been integrated with the city. And villages' collective land has become city' construction land, rural became essentially urban. This protection appears to be a complete retention of the original physical form, but completely ignores the agricultural production function in the rural hinterland.

Therefore, we believe that to solve the problem of food production in the territory, we need to fundamentally think about the integration of the relationship between urban and rural

hinterland. How can the urban and rural integration be implemented to keep both farmers' dominant position and to retain the geographical characteristics of local agricultural production? What kind of planning that could meet the food production needs in rural areas, and meet the needs of urbanization in the same time? In such a planning, what space design methods can be used to achieve and strengthen the city's geographical and cultural characteristics? All this series of questions become the difficult and hot issues of urban and rural planning in this territory.

3. Ancient wisdom from a land flowing with milk and honey

3.1 Connotation

The Yangtze River Delta, Yangtze Delta or YRD, also called Yangzi Jiang Delta, Changjiang Delta, River Chang Delta, Tai Lake Region or the Golden Triangle of the Yangtze, lies at the heart of the region traditionally called Jiangnan (literally, "south of the Yangtze River"). The area is only 10 meters above sea level called "the water flooding" (Image 3). This region, rich in rice, fish, grain production in the country, occupied an important position in history, has been called "Su lake cooked, the world enough", which means there are "silk village", "land of plenty". Historically, the name specifically refers to the Taihu Lake Basin, within its mild climate, rich in fish, shrimp, crab, water chestnut, lotus, reed, grain, cotton, aquatic products.



Image 3: Aerial View of the Villages(located at Xixi Wetlands)

Resource: Urban Plan and Design Institute of Southeast University

We focus on this area, because of the problems in this article concerns the most obvious. In the past two thousand years, the city and the countryside is not only rich but also in urban and rural spatial form, architectural features, integrated transportation and other aspects of the formation of a distinct regional characteristics, is famous and known as a style of so called "Jiangnan". In this region the small towns of Jiangnan water-country has an unique style of humanities special features.

3.2 Experience of urban construction

Why can the Taihu Lake Basin integrate two big characteristics("land of plenty" and "Jiangnan") together? Why it is possible to become the development foundation of "the land of plenty" with a appropriate layout of urban and rural areas? We selected Suzhou City as the most representative sample in this region, attempting to explain this phenomenon.

We believe that three reasons, involves the overall ecological background, the stable right to use the means of production, life and culture in urban and rural areas, form a whole homogeneous urban-rural model. For the urban planning and design, what we can mainly learn is the overall ecological background and the homogeneous urban and rural space.

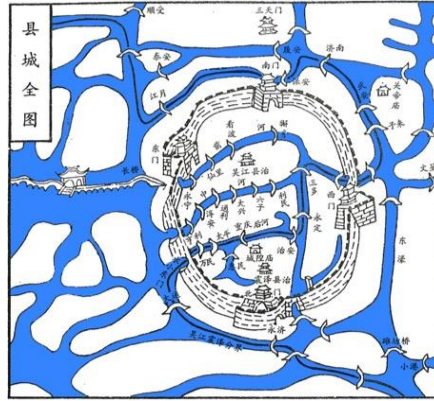


Figure 1: Map of Wujiang City (Qing dynasty)

Resource: Urban Plan and Design Institute of Southeast University

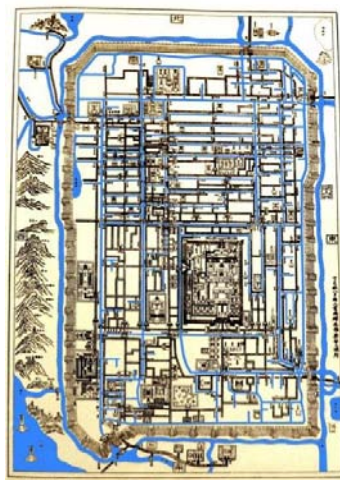


Figure 2: Map of Suzhou City (Song dynasty)

Resource: Urban Plan and Design Institute of Southeast University

a) The overall ecological background

Taihu Lake Basin is a region with variegated rivers. There are plain, lakes, villages and rivers in “Jiangnan”, forming a landscape of ancient town between the waters. After a long evolution, this piece of land has formed a whole ecological structure, from the city to the town, from the countryside to the wild land. Various of ecological elements has formed a fluently system. This system is relatively stable and able to withstand the volatility of fractional factorial in ecosystem. For instance, the heavy rain brought by typhoon rarely breaks out floods, thereby protect the stability of the local food production.

b) The homogeneity of urban and rural space

“A city surrounded by natural gardens and full of artificial gardens” has become a typical portrayal of the overall urban structure of Suzhou (Figure 1). With “Water system” as the center for urban planning, ancient Suzhou has gradually formed its urban layout of “double chessboard of water and land”, becoming the prominent representative of China’s Watertown

design patterns, and forming the waterside alley scenes representing the culture of southern Jiangsu Province.

Reviewing the traditional life in Jiangnan, there are two typical kinds of life, and two different kinds of living space. Public life is centered around the city water system and the water streets, relying on shipping and road transport along the river (Figure 2). While traditional elite life tends to seek a quiet residence in the city's downtown, building gardens, island forest, and pavilion that can meet the demand of its comprehensive living and recreational space.

A conclusion can be drawn that although living spaces have different characteristics, they both attached to the water system. And therefore, the public life and elite life can be unified in the water system. There is no essential difference between farmers and citizens.

3.3 *Summary: a stable model*

In this model, the city and the rural hinterland achieve the success together from two aspects: firstly, in terms of food production and food security, the Taihu Lake Basin not only meets the requirements of their own food, but also some the needs of other areas at the same time; secondly, the construction of urban characteristics in the process of urbanization does not sacrifice the food productive function, but take the food productive land into the whole construction process of local characteristics.

The civilization in ancient oriental land brings people a enlightenment: if urban and rural areas could be appropriately integrated in ecological background, regional residential culture, public facilities and so on, food production and urban space characteristics may be possible to get a symbiotic development.

4. The opportunities brought about by the new urbanization

The eighteenth national congress of the communist party of China put forward and expounded in detail the concept and content of the new urbanization. According to the report:

- The dual structure of urban and rural is the main obstacle of the integration of urban and rural development;
- The systems and mechanisms must be improved, let industry promote agriculture, let city lead the country, make a reciprocity of workers and peasants, to form new industrial relations between urban and rural areas, make farmers to equally participate in the modernization process, share the achievements of modernization;
- To speed up building a new type of agricultural management system and to give farmers more property rights, promote equal exchange of the urban and rural elements and the equilibrium configuration of public resources, perfect the system of the healthy development of urbanization.

The report has made clear the importance of promoting urbanization, the concept of new urbanization provides us with a strategic opportunity again (SHAN Zhuoran, HUANG Yaping, 2013).The rapid developing of China's social and economic makes it infinitely possible to refresh the current urbanization development theory and practice. The planning and design of Suzhou Taihu New City come s into being in such background and opportunities. As the leader of China's reform and opening up in Taihu Lake Basin, the development path of Suzhou has been high-profit. It is another manufacturing center, second only to Shanghai, and it has been urban development model of nation in urban landscape, history and culture, etc. The urban development of Suzhou is now facing three new development environments—the gradually promoting of the new urbanization, the forming of social

consensus in ecological civilization, the adjustment of economic and industrial structure. The development of Suzhou city urgently needs a third transformation—from dual structure between urban and rural areas to integration of them, from the suprematism of economic interests to the appreciation of ecological civilization.

5. A new model: Suzhou Taihu Lake New City

The planning is the second phase of Suzhou Taihu New City. The project is located in shore of Taihu Lake and south of the Seven Mountains. The main part of the base is about 17 KM², most of which still remains in traditional pastoral status. This status cannot be neglected, also cannot be erased in the planning. Southern base, for example, the rivers, lake, villages and the wild land, is intertwined, and the wide expanse of misty farmland formed an unique Jiangnan landscape, especially in the three villages of Donglin, Xinguang and Gushe (Figure 3). The landscape and the unique style are so fascinating that could be the traditional representativeness of the land flowing with milk and honey. In this new town planning project, three strategies have used.



Figure 3: the base of Suzhou Taihu Lake New City

Resource: Urban Plan and Design Institute of Southeast University

5.1 Regional space construction based on the security of natural ecology

5.1.1 Technical analysis

A series of analysis software is used to bring out the possibilities of deferent modes of construction in large scale is analyzed. The results of quantitative analysis showed that:

Firstly, the ecological source plays an important role in the overall ecological effects, respecting the original ecological elements are important parts of urban construction. The existing resources, such as lakes, rivers, wetlands and the Tsizi Mountain, is of great significance to appropriate thermal environment.

Secondly, Group development has remarkable effect on improving ecological effect of urban space environment. In the layout of group urban space, distribution of urban heat is no longer uniform. The green space between groups can significantly reduce the urban heat island effect. This kind of ecological green space need to as wide as at least 120 meters to achieve the obvious ecological effects.

Through the above analysis, the following conclusion can be made:

- In the region, to fully respect the existing ecological factors in the process of planning, especially the developed water system, could significantly reduce the ecological pressure made by high-density development;
- The ecological effect becomes fully effective only if the width of the green space between groups is guaranteed.



Figure 4: the Master Plan of Suzhou Taihu Lake New City

Resource: Urban Plan and Design Institute of Southeast University

5.1.2 Methods of Urban plan and design

According to the results of this study, the following methods were adopted in the construction of ecological security.

- a) Control of ecological source, ecological corridor, ecological protection and plaque.

We strengthened protection of ecological coastline wetland (Figure 4) and built a variety of ecological wetland reserve by protecting coast mixing plant forests and zones of multiple trees and shrubberies. For the Tsizi Mountain, it is planned to keep the original state as far as possible and to develop local advantageous tree species (Figure 5).

Mountains-lakes propylaeas are set to connect the mountains and the East Taihu Lake, combined with present situation of green space with water system, and thus formed three ecological corridors as the breathing spaces between city and the landscape. The width of Mountain-lake corridor was in control to a width not less than 150 meters in the newly developed area. Among the old town, where there has been a large amount of construction, the control should be in accordance with the actual situation, but not less than 60 meters (in ecological corridors of 60 meters above in width, the herbaceous plants and birds could have higher diversity and species. The migration and spread of plants and animals can be meet,

and the function of biodiversity conservation can be protected). Meanwhile, the spaces around these corridors were controlled as green areas of low density. The height was controlled in 16 meters, the volume rate 1.0 and the green space rate more than 45%.

b) Development groups surrounded by landscape

To continue the city tradition of "Garden city with real mountains and water out, City gardens with rockery and fake lakes in", the group planning was carried out combined with ecological analysis results. A natural barrier was formed. Through the natural water system and forests space, the ecological corridors could be preserved, and the needs of the development and construction could be also able to meet. The moderate development and the priority of ecological protection could be achieved.



Figure 5: Mountains-lakes propylaeas and the welds

Resource: Urban Plan and Design Institute of Southeast University

5.2 Cultural gene conservation based on historical heritage and isomorphic urban space

Most of the means of production that the villages deal with were of historical and cultural value. Some villages contained abundant cultural heritages and intangible cultural heritages. To deal with these means of production, except for ordinary protection ways, the combination with cultural genes was another way, which provided sustainable protection for rural productive function.

5.2.1 Historical inheritance in the existing town

Yuelai River traverses the base and Hengjing town is located on both sides of Yuelai River. There are a lot of historical and cultural heritages, but the current situation of Yuelai stream is not consistent with its cultural value (figure 8). The planning sorted out the status of internal water system and built a style of Hengjing town, thus formed a unique ancient town of Wu culture. In the meantime, along the Yuelai stream, expanding the old street pattern to the north east, a new block which aimed at experiencing traditional life formed (figure 9). Under the background of modern prosperity in the urban space, the Hengjing old street that would otherwise have become extinct is entirely possible to be radiant (figure 9). Attaching great importance to the cultural value, it was made naturally to be a part of the urban image of "small bridge, flowing water, peaceful cottage". In the end, the Hengjing town, as a traditional elements in the modern city, contrasted with modern architectural style, spread out an unique landscape characteristic that formed from the extension of local cultural elements.

5.2.2 Daily life spaces combined with culture

Water is the core element of Jiangnan culture. The system of Jiangnan water transportation has been declined along with the rise of new transportation modes such as cars, tracks and railways, but the original rivers, architectures, vegetations remain, and the original lifestyle and culture has not died out.

The relationship between public centers at all levels and the water network nodes which connects public centers shaped the characteristics of Jiangnan public centers with water as the theme (figure 11), so as to achieve the isomorphism of urban-rural spatial structure with the oriental farming culture.

Take the community center for example, the community center was unified to planning with gardens. Every community center was adjacent with water, forming a service node through which water was infused into the garden. Thus the water culture was infiltrated into people's daily life, making the Jiangnan culture felt by people in the daily activities.

5.3 *Establishment of the experimental Urban-Rural Community based on the coordination of urban and rural areas*

5.3.1 Construction of the experimental Urban-Rural Community

Community participation in tourism development has many benefits, such as improving the quality of life of residents, awakening the sense of community while strengthening authorization of community. For urban governance, the community would have more autonomy, and the private sector is accessible to participate in the governance of the city. This method can not only make up for the lack of government function, but also reduce the fiscal deficit. On the basis of the construction of infrastructure, we establish an urban-rural integration experiment community. It has been named—the Medium Wedge Method.

In the process of design, various types of approach were adopted, involved moderate hybrid of different types of dwelling, intervention of the business services, involvement of the innovation industry, involvement of open space and public services (Figure 6).

5.3.2 The elements of urban and rural system

Under the regional perspective, the city and countryside were handled as a system. The elements of urban and rural system were organized into a whole, reconstructing regional space pattern. We focused on innovatively processing the relationships of “city and water”, “city and wild”, “city and cropland”, “city and villages”, “city and town”.



Legend:

Moderate hybrid of different types of dwelling: 1

Intervention of the business services: 2

Involvement of the innovation industry: 3

Involvement of open space and public services: 4

Figure 6: part of the Master Plan of Suzhou Taihu Lake New City

Resource: Urban Plan and Design Institute of Southeast University

a) City and water

In the city combined of different forms of water, a variety of nodes formed. Based on the water, these nodes have many different functions. Just like in ancient Wujiang, some nodes was located for leisure, some for transportation. And there were also nodes with functions of production, such as breeding crabs. This model brought the people vivid lives as in ancient regions south of the Yangtze River.

b) City and wild

The wild in this study means the wetlands and wasteland, mainly refers to the land without construction, such as the natural area which has only ecological value. Some wetland was remained in the urban space, or remained unchanged between the Taihu Lake and the city. The wild would give breathing space to the city. The wild and urban would be a part of each other. Through this approach, a city formed, surrounded by a garden-the nature.

c) City and cropland

Cropland refers to the land around the village, including the vast field outside the scope of plan. Cropland was used as a new element integrated into the new city and it became a new functional factor in the urban landscape. The main function of the field would be not only for production, but also for leisure and education. In this new operating mode of the urban agriculture, cropland became a fundament of the new service and other functions (Image 4).



Image 4: the Master Plan of Suzhou Taihu Lake New City

Resource: Urban Plan and Design Institute of Southeast University

d) City and villages

Some villages (Donglindu, Xinguang, Gushe) were preserved and became an organic part of the city. These villages retained the original way of life, so it was possible for these villages to provide service for the city. Not only that, the city could also provide the farmers with the modern agricultural production service. In addition, the city could also provide the rural hinterland with education and medical facilities. It could just be these public services, which would construct a symbiotic development platform and integrate the city and villages.

e) City and town

In traditional society, towns were links between big cities and rural hinterland. However, in the new urbanization process, the town could also be a kind of heterogeneous urban form stuck in the modern city. There are a large number of historical and cultural heritage in Hengjing Town, so it could provide the new city with gene of cultural development. At the same time, Hengjing Town would become a key node through which the capital strength and technical force could be permeated into the rural hinterland. Therefore, in our planning, the town has been refreshed.

6. Summary

The research and project tried to summarize the model of integration between the urban and rural hinterland based on the oriental farming culture, and applied the experiences into new urbanization practice. We hope to reach a purpose which food production and the city characteristics can be symbiotic. Some conclusions have been verified.

- The practice was based on the protection of natural ecology, and adopted a way which was isomorphic to handle the urban and productive rural hinterland. This method aimed to ensure the stability of natural ecology and social ecology, and to stabilize the rural productive function. But owing to lack of material composition, these studies need extra time to complete more impeccable and convincing results.
- Under the guidance of the new urbanization, we insisted that to some extent the characteristics of urban spatial and the crisis of food production would be repaired in this Suzhou Taihu Lake New City, only if the practice is based on technical analysis of the natural ecological security, on the urban and rural spatial homogeneous cultural gene conservation, and on the integration of urban and rural harmonious community construction method.
- A kind of traditional humanistic spirit appeared in the process of the practice, this is an interesting and unexpected discovery.

In the new city, the traditional urban-rural binary relation would be broken. The whole area is no longer the traditional form of rural and urban form and would be a new type of urbanization. We hope that this is a meaningful exploration.

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Post-Earthquake Rural Ecological Agricultural Tourism Planning and Revitalization in Mianzhu City, Sichuan, China

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1. Introduction

The 2008 Sichuan earthquake occurred on Monday, May 12 in Sichuan province, China, which had made people suffered great loss in their lives and properties. There were 69,197 people killed and 374,176 injured, with 18,222 listed as missing (Andrew, J, Edward, W & Huang, Y, 2009). Most building was razed in worst-hit areas, which included Mianzhu city, the project city we discuss in this paper. Mianzhu city located in the northwest edge of Sichuan province, 83 kilometers away from Chengdu, the provincial capital of Sichuan. According to the topography, Mianzhu city is divided into three areas which include mountainous area, along the mountain area and platform area. More than 95% of the earthquake damage of Mianzhu concentrated in the villages in the mountain area and along the mountain area such as Jiulong, Hanwang and Qingping town. (Li, A., & Zhou, T. 2008) Roads and communication facilities had been completely destroyed; buildings had been razed to the ground-all the pains of the earthquake made the post-earthquake reconstruction brooked no delay.

How we find and determine the direction as the reaction to the post-earthquake revitalization in Mianzhu area requires discussion about the national policy in China in the 21st century, especially the promotion of ecological civilization in the reports of the seventeenth and eighteenth national congress of the communist party of china (CPC). Outstanding conflicts and problems have been highlighted along with the push of reform and opening-up policy and industrialization achievements of China. One serious problem with rapid development of China is about the ecology environment – worsening environmental pollution, inadequate natural source problem and so on have forced the government of China to find solutions to response to the new challenge. The promotion of ecological civilization is the outcome of China which has been a country during this special transition period.

The requirement of the transformation of rural area's production mode with the guidance of ecological civilization and new development opportunity been bought to this area on account of the special attention from the government after the occur of earthquake, have formed our planning of the kiwi base and the rural ecological agricultural tourism of Jiulong Town, which both of them have been constructed successfully and have shown good momentum of development in the future. Since the space is limited, we will concentrated on the planning of Qingquan groove, a crucial part of the tourist resort in Jiulong, without introduction of the whole project.

2. The construction of Ecological Civilization in China

Ecological civilization was first put forward by the general secretary Jintao Hu at the seventeenth CPC national congress, and had been written into the central file of CPC. The report summarized the main content of the ecological civilization under the chapter of 'new requirement for attaining the goal of building a moderately society in all respects' (Hu, J. 2007). 'Building a moderately society' is the goal formulated at the Sixteenth Congress, which is basically a comprehensive evaluation method could be used to measure the living standard of people in China (Ling, C., 2003), and has been seen as the most significant and

widespread national goal of China. This goal has been emphasized and developed on the Seventeenth Congress to ensure its attainment by 2020, and this is the first time that the CPC issues a call to put the construction of ecological civilization as a national strategic task with clearly mention. (Yu, M., 2013) According to the report records, the concept of ecological civilization could be summarized to enhance China to construct a society with an environment-friendly and energy- and resource-efficient structure of industries, pattern of growth and mode of consumption. Basically, the first proposal of construction of ecological civilization in China is more like an exploration and demonstration of China's determination – It is the time to face the ignoring problem result from the complicated ongoing social transformation period.

Under the call of the Seventeenth Congress of construction of ecological civilization spirit, according to incomplete statistics, there are 14 provinces such as zhejiang, shandong, guizhou, hainan, hebei have made a goal of becoming an 'Ecological Province' as well as 230 prefectural-level cities in total, such as yichun, guiyang, hangzhou, wuxi, foshan, takes 80.1% of the whole prefectural-level cities in China have made a goal of building 'Ecological City' in the future (Li, X & Liu, Y, 2011).

After 5 years later, the Eighteen Congress report specifically include a chapter named "Making Great Efforts to Promote Ecological Progress" to elaborate how to construct ecological civilization in China and emphasize its importance. There are four key items about ecological civilization have been described for detail and due to the space limitation, only partly contents which is closely connected with this article will be summarized here. The main points of ecological civilization in the Eighteen Congress include:

- a) Geographical Space. Improving development of China's geographical space since the ecological progress can be advanced with the premise of in geographical space.(Hu, J. 2012)
- b) Resource conservation. The report points out that resource conservation is an important way to protect the ecologic environment and we should use them efficiently and change the way we utilize them fundamentally (Hu, J. 2012).
- c) Ecosystem and environment protection. The aim of this item is to call for us to restore the ecosystem and increase the capacity for producing ecologic products (Hu, J. 2012).
- d) Enhance system building to promote ecological progress. System building is curial to protect the ecological environment and building the evaluation methods and reward and punishment mechanism will be adopt for the need of promoting ecological progress(Hu, J. 2012).

Besides, how to balance the urban and rural development, build a new socialist countryside and find the resolution to solve the agricultural, rural area and farmers issues have been concerned as the top priority work of China in recent ten years. In the Seventeenth Congress, there are several points in the report closely connected with rural agriculture as following:

- a) Keep strengthening the economic foundational position of agriculture and take a Chinese characteristic path of developing agriculture modernization (Hu, J. 2007).
- b) With the help of urban area, the development strategy that industry promoting agriculture need to be set up in rural area (Hu, J. 2007).
- c) Urban-rural integration development can be achieved by promoting industrializing agriculture (Hu, J. 2007).
- d) Industrialized operation of agriculture and training a new type of farmers who can utilize agricultural techniques and business management are should be both highly advocated and becoming the development trend of rural area in China(Hu, J. 2007).

All the policy above can be seen as strong support for the following projects in Mianzhu since both of them could not be planed and constructed without the government's advocation of the construction of ecological civilization and agricultural industry. With the policy support, more than 10 million RMB (about 1.7million USD) has been invested on each project by the Mianzhu government to develop agricultural industry and ecological tourist in this area.

3. The Kiwi Base Project study

3.1 The background of the project

The original kiwi base is less than 100 acres and situated at the junction of Jiulong town and Zundao town, which was constructed by Chinese Academy of Agricultural Sciences after the 2008 Great Earthquake, and worked as the test field of new varieties of kiwi planting. It turns out that the environment of the along mountain area of Mianzhu is excellent for kiwi planting, so when the Mianzhu Municipal Committee of the Rural Work Committee committed us to make the planning of this area in 2011, they expressed their goal of developing this area that they wish sufficient space for kiwi planning can be left, under this circumstance, and more and more companies and fruit processing enterprises can be attracted to this area to grow and product kiwi production with the subsidies granted for policy consideration. Also, the kiwi base could be part of the tourism resource to help this area become a place integrates agricultural industrial production with rural ecological agricultural tourism.

3.2 The planning concept

The main idea of this plan is to promote common prosperity by the use of ecological belt along the mountains of superior climate and ecological environment, science and technology demonstration. The whole planning area has superior geographical position, with Yuanyang Reservoir on the north, the mountain sight-seeing area on the west, the rural tourism area on the east and south. The pastoral area boasts abundant natural resources, beautiful environment and variable space. On humanity and folk customs, tourism planning has focused on creating farming culture and folk culture. The park is located in the center of tourism the corridor of New Year paintings - village settlement with western Sichuan features and pastoral area. So the park focused on creating a modern circular agriculture, standardized kiwi fruit production and the construction of Greenway connecting to the industrialization of agriculture and New Year pictures corridor, in order to enrich the agricultural industry and agricultural sightseeing tourism. (Figure1)

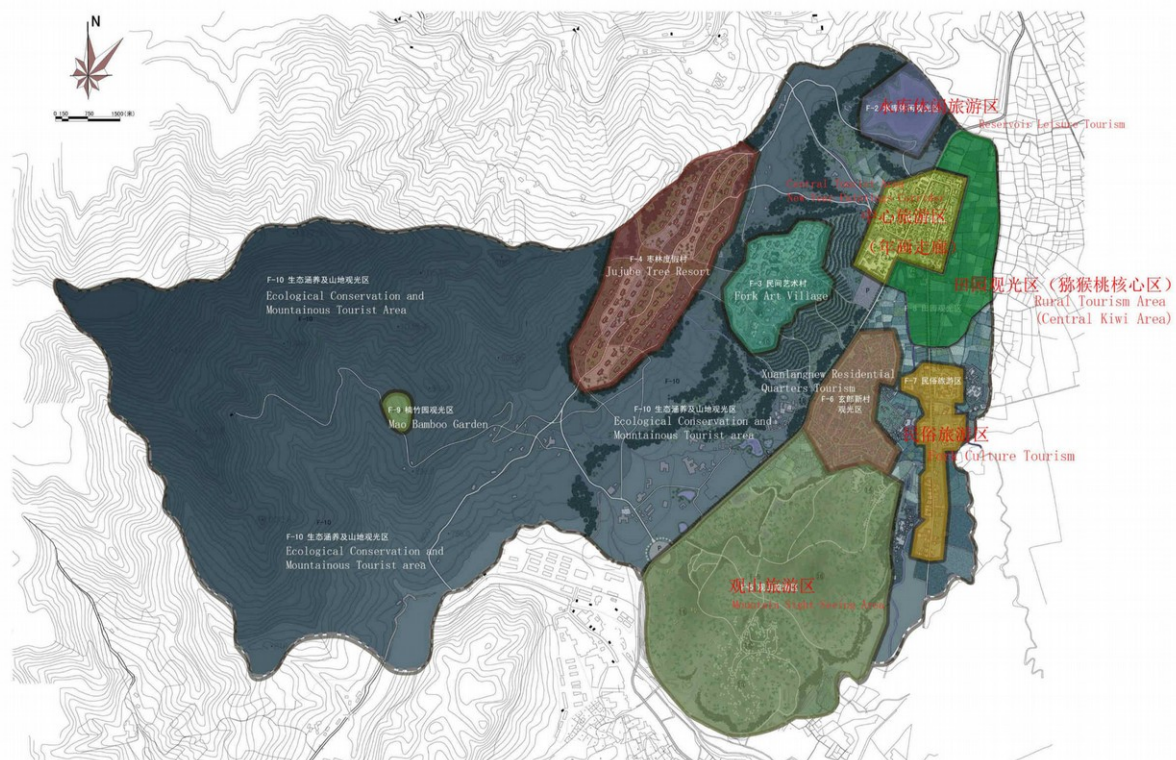


Figure1 Analysis of the area along the mountain (Source: by authors)

The Planning area is more than 1600 acres and we firstly expanded the kiwi planning area

from the original less than 100 acres area to more than 700 acres area according to the survey of the soil, precipitation and other natural factor which may affect the growth of kiwi. The new kiwi planting area covers Penghua, Huangjin, Baiyu, and Longquan four villages, located in Mianzhu tourism planning area along the mountain(*Figure 2*).



Figure 2 Location of the kiwi base (Source: by authors)

According to the terrain features and the planting area of the kiwi fruit, the area is divided into three main functional areas (*Figure 3*):

- a) Kiwi sightseeing area: The major industries of the area are Kiwifruit, rare flowers and nursery stock, reflecting pastoral scenery. Tourism development can be conducted based on enhanced basic agriculture and characteristic agriculture, which is conducive to the agricultural development of ecological tourism.
- b) Riparian landscape area: This area is mainly the Baishui River area, with more beautiful natural landscape, rich resources, tree lined area along the river, suitable for tourism development.
- c) Rural leisure resort: This area, including the area along the mountain and the town area, boasts a variety of terrains; there are two large reservoirs, a number of farmhouses, which can be developed as a leisure resort.

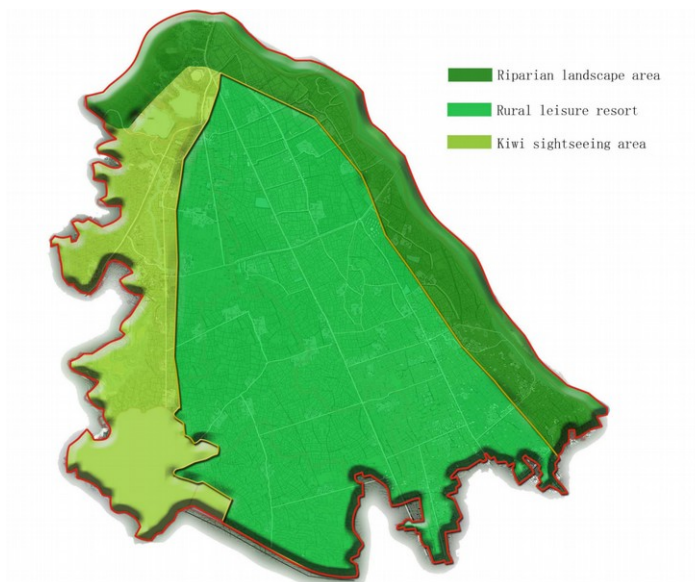


Figure 3 Three main functional areas (Source: by authors)



Figure 4 Site plan of the central kiwi areas (Source: by authors)

3.3 Eco agricultural engineering of high efficiency

Better ecological, economic and social benefits can be achieved through the highly efficient use of temperature, light and water, to vigorously promote the new technology of three-dimensional ecological agriculture with the application of a complete set of assembly, the stereo planting of the U.S. red maple and rare azalea, the interplanting of kiwi and nitrogen-fixing plants of bean class, Chinese chives and other vegetables, ryegrass and other herbage.

Ecological and agricultural projects in use of ecological quality recycling. To actively promote the application of new technologies, including biogas anaerobic fermentation and other biological treatment of environmental pollution and control of agricultural pollution, agricultural waste recycling technology, in order to protect the quality of the agricultural ecological environment.

Summary of water purification demonstration area planning. There are three wetland ponds of rare aquatic plant breeding in the demonstration zone, respectively the purification of water culturing pond near the main gate, the re-cleansing pond in kiwi fruit production area and the sewage purifying pond with biogas exudate. The water source enters the irrigation management center after the first two purifying ponds. The management center irrigates the area of rare flowers and trees in addition to the district of kiwi fruit production through the drip-irrigation water-saving irrigation system. Water source of the plant breeding area in the field is completely based on the modification of the original canal on the site. The water purification effect of plants is adopted for the second water purification in the rex rabbit breeding zone.

Agricultural technology planning of non-pollution ecological circulation includes (Table 1):

- a) Rare aquatic plants will be introduced in the area of water source, to purify water by plants.
- b) The water purified for the first time will enter the second plant purifying pond for second cleansing, to generate water for irrigation through the irrigation system.
- c) The kiwi area will interplant nitrogen-fixing plants, shade-tolerant flowers, vegetables, to make full use of land resource.
- d) Nitrogen-fixing plants will be used as fodder for rex rabbits for cost savings.
- e) Feces of rex rabbits and the fallen leaves of rare flowers and kiwi will be collected into biogas digesters for processing (Figure 5). Rex rabbits are a kind of fur animals originating in

France, both edible and decorative. Cultivation of rex rabbits can be constructed combined with wetland landscape, through which to gather sewage from rex rabbit cultivation and process sewage by biological self-cleaning, so as to achieve the goal of recycling and build a harmonious environment of park landscape, public space and the surroundings. There exist water platform, viewing pavilion and other facilities in the design of artificial wetland.
 f) Methane will enter the third plant purification pool for purification and release.

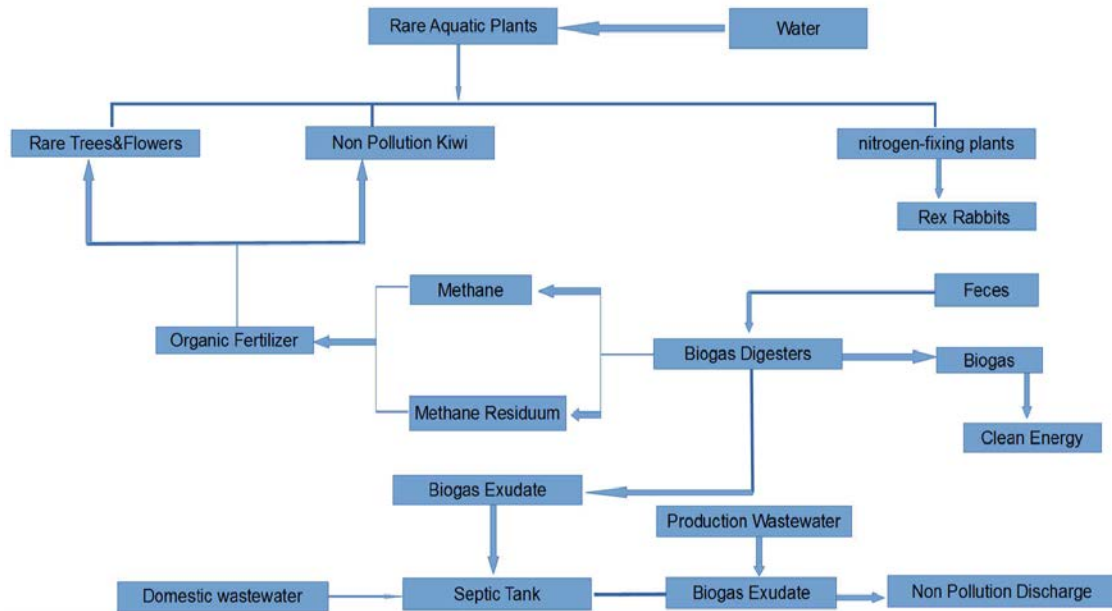


Table 1 Agricultural technology planning of non-pollution ecological circulation (Source: by authors)



Figure 5 the rex rabbits cooperative (Source: by authors)

3.4 The Planning and construction of Infrastructur

In core area, the planning of road layers are comprised of motorway, greenway and production way, which makes the core area connecting and constituting an integral road network (Figure 6).

Motorway: The motorway is the main way. The general cars, tractors, tricycles and rack trucks could run on motorway which links with the road.

Production way: There are formulated production ways and picking ways in working zone

with seep bricks laid, which not only reserve the water for the convenience of production, but also facilitates the production.

Greenway: The greenway, which is 3 meters wide, is made of colored asphalt. There are beautiful green belts along both sides, making tourists more convenient to appreciate the landscape of farmland.

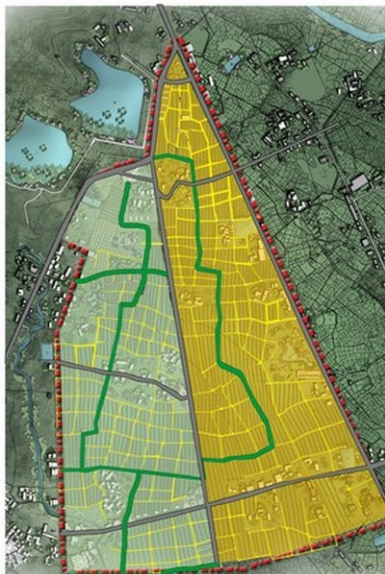


Figure 6 Planning of road layers
 (Source: by author)



Figure 7 Infrastructure distribution
 (Source: by author)

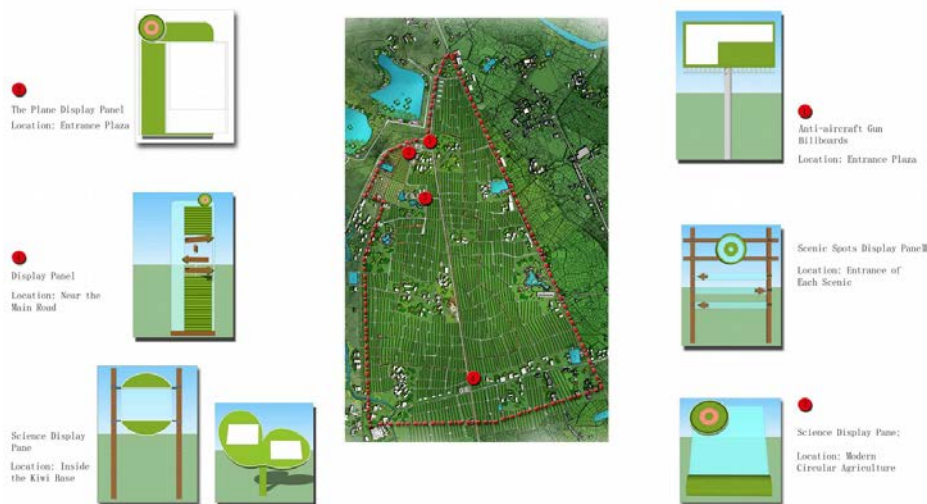


Figure 8 the sign distribution (Source: by author)

The bicycle greenways surround the whole park, providing comfortable space to bike for citizens, and satisfying the needs of recreational activities, such as sightseeing and daily walking for people. Some touring and walking ways are built in the form of wooden trestle, and employed with recycle materials naturally and ecologically. The whole bicycle ways could reach out for every scene in the whole park, and there are three bicycle stations. Except the planning of road layers, other infrastructure such as SOS shelter, leisure resort (Figure 7) and different kinds of signs and display panels (Figure 8) have all been carefully designed in order to provide a better tour experience for people.

3.5 The income growth of farmers

According to our survey and the data from Mianzhu Municipal Committee of the Rural Work Committee, the local farmers' income has increased significantly benefits from the transition from traditional agriculture to modern agriculture, and farmers in this area has become the major role in building the new countryside.

The ways of farmers to increase income:

- 1) Land lease
- 2) Working at the kiwi fruit industrial company, such as being a worker to take responsibilities for weeding, picking and distributing of kiwi fruit and so on.
- 3) Kiwi industrial company will rebate periodically according to the production profit to farmers on a regular basis
- 4) Opening a leisure resort , through the food and accommodation and other tourism industry to make profit.

Table 2 2005-2014 farmers' income around Kiwi base(Source: by Mianzhu Municipal Committee of the Rural Work Committee)

Year	Rural per capita net income (Yuan)	rural per capita net income (Doller) calculate by exchange rate(≈6.3)	Income Increase(Yuan)	Growth Rate Compared with the Previous year
2005	3973	630	359	9.93%
2006	4326	686	353	8.88%
2007	5018	796	692	16.00%
2008	4493	713	-525	-10.46%
2009	6212	986	474	8.30%
2010	7201	1143	989	15.90%
2011	8689	1379	1488	20.70%
2012	9937	1577	1248	14.40%
2013	11205	1778	1268	12.80%
2014	12501	1984	129	

4. Background of Qingquan groove planning

This is another project committed by the Mianzhu Municipal Committee of the Rural Work Committee in 2011. A large amount of secondary disaster after the 512 earthquake such as aftershock and debris flow have happened in this area, such as 812 Qingping Great Debris Flow (*Figure 9*). The planning was aimed at creating a 'terrace' landscape to to minimize the dangers of debris flows. This project located close to the kiwi base, and the Qingquan Groove (Clean Spring groove) is a long and narrow gorge, which flowed through by Horsetail River, and covers thousands of trees with abundant scenes.

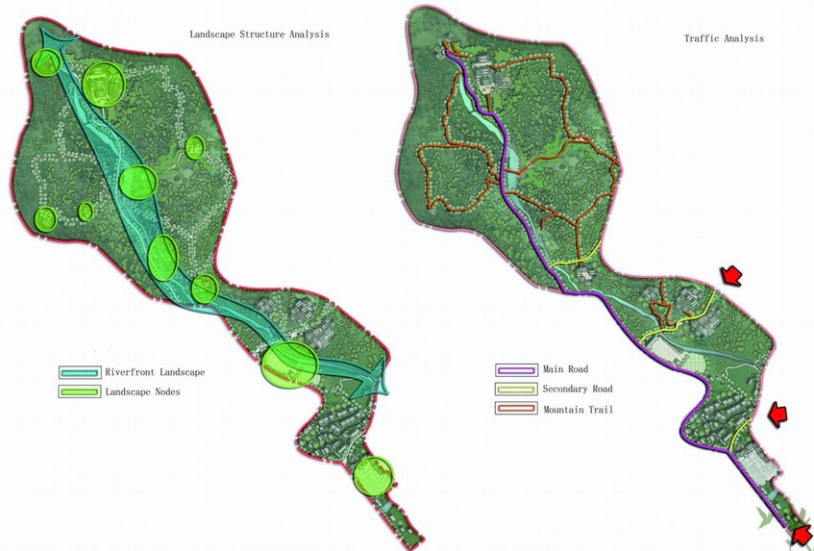


Figure 9 8.12 Qingping Great Debris Flow in mountain area of Mianzhu (Source: by author)
 Figure 10 Landscape structure and traffic analysis (Source: by author)

Since the disadvantage is that the landslide sometimes happens. The building of waking way must conform to the principle of keeping away from ramp, and protect the slope at the same time. Through planning, the current ways could become landscape employing the current sky way as main transportation route. In order to provide more abundant sightseeing experience for tourists, the mountain climbing ways and water ways need to be built. At the same time, the tourists should be kept away from motorway and the dangerous zones in which the landslides happen easily. On Horsetail River, along the bottom of the gorge, some constructions closely with water should be built, for the purpose of satisfying people's needs to play with the spring and enjoy a carefree and cozy summer (Figure 10, 11). We went back to the Qingquan groove at 30th June, 2015 (Figure 12). Even this mountain area had just been through a heavy rain evening and the water on the top of the mountain is turbid because of the slide soil from the mountain, however, the water in the lake along the foot of the mountain is still very clean, which could be seen as a proof that the new 'terrace' landscape is effective to control the debris flow.



Figure 11 Rendering picture of Qingquan (Source: by author)



Figure 12 Current situation in 2015 (Source: by author)

5. Conclusion

In spite of physical environment rebuilt, the local economic and social activity recovery is also important in the post-earthquake reconstruction process. Specifically, for remote mountainous villages, how to find solutions for depopulation and economic decline after the disaster while aiming to achieve sustainable development is a challenging task. Besides the

villages in post-earthquake area, there are thousands of villages in China now facing the same problem and challenge about the future development. China is an agricultural country and agriculture always takes the economic foundational position, which means, the developing problem of rural area can be seen as crucial national problem of China. Also, promoting the construction of ecological civilization progress is a long-term task, with the considering of current environment condition in China, it is such an essential step to the people's well-being and China's future. The good aspect is, with the national policy emphasis on the construction of ecological civilization and highly support of agricultural industrial, taking the path of developing rural ecological agricultural tourism like the example projects to adapt the transition of the society, especially the urban-rural transition, seems like one efficient and suitable choice.

Acknowledgements

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Building New Concepts on Old Traditions

Rainwater Harvesting as a Tool towards Sustainability of Water Resources

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1. Introduction

In the past six decades, Iran's urban population has increased from 30 percent to 70 percent of the whole. The growing urban population has increasing demands for water, food, and energy. Apart from the natural growth of the population and their growing demands, in line with global patterns, Iranian culture is also becoming more consumerist and wasteful.

Since ancient time bringing water from long distances was among the solutions to respond the growing demand of water of urban population. The engineered water systems to bring water to urban centers, however, has been constantly developing throughout the history, the main concept of water transfer remained unchanged. From Roman's aqueducts and Persian Qantas to modern systems of underground water pipe networks, all use the same concept to face the problem of water shortages in cities. While, the new water networks of the cities enjoy much advanced technologies for faster and easier water transfer through canals and pipelines over long distances, such increasing water demands are placing larger stress on Iran's natural resources and therefor, are causing some negative environmental impact. Moreover, as a consequence of emergence of modern urban water system, many of the traditional techniques of water management have lost their efficiency and therefore, their popularity. Due to the importance of the problem of water scarcity in Iran and to move towards a sustainable development, there is a certain need to rethink of our available water resources, and to change the conventional water management systems.

2. Objectives

The paper aims to identify the traditional practices of water management in northern Iran, and to find the right mix of "old" and "new" methods and techniques to reduce the growing threat of water scarcity within Iranian cities. One could argue that traditional practices are not able to solve all water-related issues of current cities; however, studying and learning from traditional methods and techniques together with recent technological capacities can lead to innovative ideas and smart techniques to face current water-related issues and to achieve sustainability of water resources. Among others, rainwater harvesting as one of the main techniques to collect and store water for agricultural purposes in northern Iran is studied. The term water harvesting is used to describe different small-scale water supply methods and techniques to collect and store the water coming through precipitation to be used later for various purposes. The study is an attempt to highlight the approach towards rainwater/stormwater to identify the role of rainwater as an asset or menace of the cities- - in the past and in today's urban environments.

3. Rainwater/stormwater within Iranian Cities throughout the History

As the life generating and life-sustaining element, water is and has always been the key to form a city. While availability of water would cause further development of cities, water scarcity was the reason of abandonment of human settlements. The abundant availability of water throughout the world in fertile river locations created the right conditions for nomadic people to form sedentary, agrarian communities, therewith becoming "cradles of civilization" (der Kley & Reijerkerk 2009, p.19).

Throughout the history, people living in various parts of the world have invented methods and techniques, based on their specific geographical and climatic conditions, to respond their

needs of water. Unlike many traditional practices, which were adapted to the environment and fitted into nature, the current underground urban water pipe networks lack the local identity and characteristics of places; rather they follow international standards and are implemented similarly everywhere. The advanced technologies of new water systems allow human societies to drill deep wells and transfer water over long distances; hence, they have lost the sustainable way of thinking to use their local available water resources.

Studying the history of urban water management in Iran reveals that not only surface water and groundwater but also precipitation was known as a precious source of water for Iranian cities, and collected rainwater was used for different domestic and agricultural purposes. Although vast areas of the country have very low amount of rain throughout the year, rainfall has always been considered an important source of water for communities. Based on the amount of rainfall and other local conditions, various rainwater-harvesting practices have been developed in different parts of the country. Among others roof-water collection and Ab-anbar are two main techniques to collect and store rainwater for domestic purposes; while farm ponds, terracing, micro-catchments and pot irrigations are examples of rainwater harvesting techniques to be used for agricultural activities.

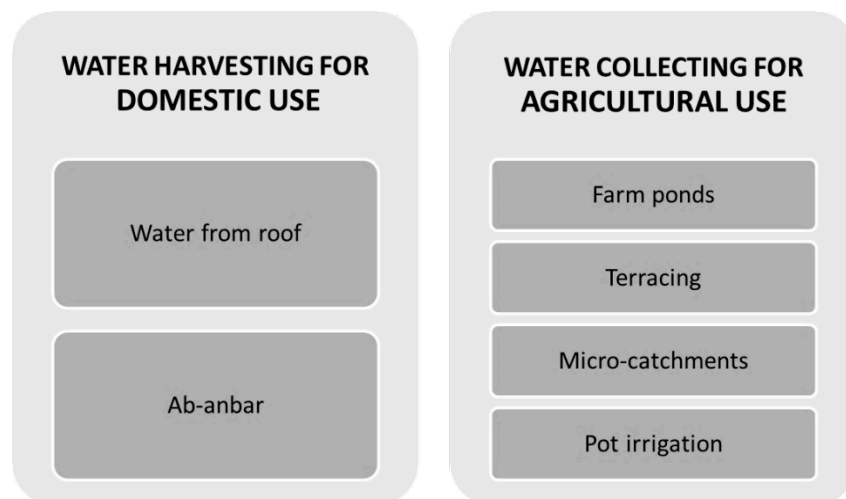


Figure 1: Traditional rainwater harvesting techniques in various climatic zones of Iran

As an outcome of rapid urbanization and growing population, the traditional techniques were not able to respond the increasing demands of Iran's urban population. The emergence of urban water systems within the cities was a solution to provide fast and easy access to clean water; however, it left some negative environmental impact.

Unlike traditional water management system, the modern urban water network is based on long-distance transfer of water/wastewater/stormwater, so that the cities can provide their required water from larger distances through recent technological advances. Since water could be transferred from farther distances, the traditional practices, which have been evolved based on local climatic conditions and geographical parameters, lost their popularity and became abandoned. Sanitation concerns and maintenance difficulties were also among the weaknesses of the traditional water infrastructure to cause less efficiency and acceptance of such practices. The centralized network of urban water system became popular, and similar networks were quickly developed in different cities in various parts of the country. While in the absence of decentralized local systems use of precipitation was mainly neglected, the main surface water bodies and ground water resources became the main sources of water; rainwater lost its value as a source of water. The process imposed so much pressure on Iran's natural water cycles, made people unconscious about their water

usage, unaware of their available resources, and it ultimately left huge environmental imprints.

Among the other trends, the growing use of automobiles in cities had huge effect on urban water management system, and in particular, stormwater management of the cities. As an outcome of the new lifestyle and increasing car-dependency in the last 50 years, the forms of the cities changed to create room for connecting roads and parking spaces to serve the automobiles. In addition to the morphological changes within the urban fabric, the dominance of the automobiles has negatively affected air and water quality. Increased imperviousness of the urban surfaces and decreased rainfall infiltration, along with increased withdrawals of fresh water resources reduced the level of groundwater recharge and caused the change in the hydrology of urban watershed. Consequently, reduced infiltration resulted in increasing surface urban runoff and urban flooding, especially in areas with higher annual rainfall. Cities started to consider stormwater as a problem rather than a valuable source of water and thus, in the absence of environmental concerns, “the goal of pollution control was fast conveyance of wastewater and urban runoff out of sight from the premises to the nearest body of water.” (Novotny *et al.* 2010, p.15)

As explained earlier, by development of urban water systems in the second half of the twentieth century, most of the old and traditional water harvesting systems, especially, rainwater-harvesting systems were abandoned and forgotten in many parts of the country. Therefore, rainwater has not only lost its values as a source of water, but also under the conventional approach of urban water management, stormwater is considered a problem causing pollution through urban runoff and urban floods through overflows. To deal with such problems cities are constantly developing their sewage systems to convey urban runoff as fast as possible out of the city. Recently, however, due to the unsustainability of current urban water systems and their extensive environmental impact there is a growing concern about the necessity of changing the conventional approach, and there is also the tendency to revival, modification and adaptation of traditional water management systems to respond the needs of the current urban life.

Furthermore, water scarcity and the growing rate of water consumption within the cities emphasize the importance of rain as a source of water to be reintroduced to the system. Despite the fact that Iran has limited sources of water, it is exhaustively exploiting and extensively polluting them, imposing so much pressure on its natural water cycles. There is a certain need to promote the use of rainwater as an easy and accessible source of water. The revival of traditional water harvesting systems in Iran can play an important role to provide the right mix which benefits the local solutions of the traditional approach and the advanced technologies of the current time. Reintroducing rainwater and used water as new sources of water will decrease the share of usage of surface and ground water within the system, will contribute to the sustainability of water resources, and will have many beneficial impacts on the health, living environment, economy, and social well-being of people.

4. Farm Pond: Traditional rainwater harvesting in Guilan Province

Iran is a semi-arid country with limited annual rainfall. According to Badripour (2004), Based on the data published by Water Resource Management Organization, the average annual rainfall of the country over a 35 year period is 249 mm, however, the variation of rainfall in different years are quite high. As mentioned earlier, rainfall varies both temporally and spatially, as the Caspian plain receives more than 1,000 mm of precipitation per year while some other parts (especially in the center) receive less than 50 mm of precipitation annually. Caspian plain, the northern green strip of Iran along the Caspian Sea, unlike the rest of the country, enjoys high annual rainfall. its climate is comparable with Mediterranean climate and because of its uniform distribution of precipitation throughout the year; there is no severe shortage of water. Despite such amount of rainfall in this region, the main sources of water of the northern cities include surface and ground water; rainwater is mainly neglected or

forgotten. Despite the long history of rainwater harvesting and storing, rain has lost its value as a source of water and asset for the cities, rather it is currently considered a problem. Due to the growing water crisis of the country, studying and learning from the traditional knowledge and techniques, which have been used in the past, can be useful to face the problem of water and to achieve sustainability of water resources. In Mays' words, "Many present day water problems could be solved using the traditional methods developed and used for hundreds of years. ... This has blinded many people of the forgotten sustainable ways of the ancients. So that in reality highly advanced methods are not required to solve many water problems, particularly in many of the poor and developing parts of the world. A large part of the future will be to live in concert with nature, not trying to defy nature (2010, pp.217, 218). Such approach might be even more successful in regions as Guilan with rapid pace of urban expansion and growing need of developing the urban water infrastructure. Besides, some of the traditional techniques of water management are still being used, and there is the tendency to preserve them and to emphasize their role in sustainable water management of the future.

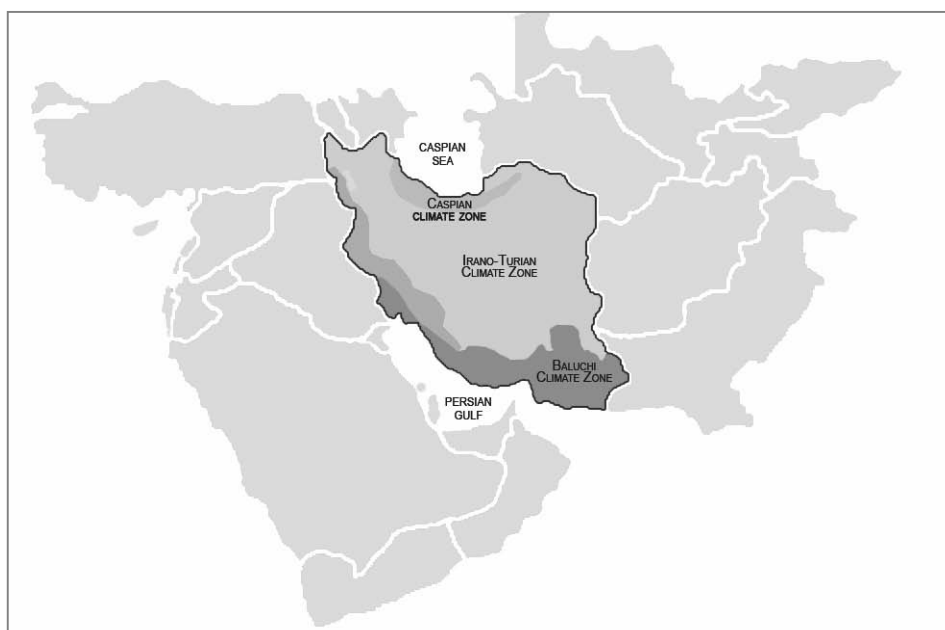


Figure 2: various climatic zones of Iran

Among many different traditional water practices, roof water collection and farm ponds are the main traditional techniques to harvest and use rainwater as a source of water for domestic and agricultural purposes, respectively. While roof water collection is mainly used in the scale of households, farm ponds were built to collect and store rainwater in the larger scale of the villages and towns.

As a beautiful green region with moderate climate and availability of water recourse and fertile soil, Guilan's economy was mainly based on agriculture. Due to the high amount of precipitation, rainwater was among the main sources to provide adequate amount of water for agricultural activities. Since the precipitation period was not always concurrent with cultivation season, collecting and storing rainwater was among the solutions to overcome the problem of water scarcity in cultivation seasons. Hence, farm ponds, known as *sal* in local dialect, was among the traditional practices to collect and store rainwater in rainy season for agricultural purposes.

Historical investigations reveal that almost all the cities and villages in Guilan province had one or more ponds to fulfill their needs of water. The ponds, however, could be different in terms of form, size and building methods; they were built based on the same concept to serve a similar function. Ghoddousi refers to farm ponds as "structures which are constructed

by small earthen walls on flat or hilly land to collect and store rainwater, surface runoff and flood flows (1999, p.292). In Banihabib's words, the rain and storm water running from the upper or neighboring catchments is collected and directed into these small reservoirs (1999, p.337).

Unlike southern Iran, the evaporation rate is not a concern in Guilan, and thus, among the various rainwater harvesting techniques, farm ponds, as uncovered open cisterns to collect rainwater became very popular and common among the locals. Apart from their original functions, farming ponds have been contributing to the quality of spaces in different ways: they were strong elements in rural and urban context to improve the aesthetic qualities and visual attractiveness of villages and the cities. Moreover, in warm seasons they were providing a suitable ground for leisure and recreational activities.

Rapid pace of urbanization, especially after revolution caused many changes in Iran's rural and urban context such as disappearance of many farm ponds. The emergence of modern irrigation systems and lack of proper maintenance are among the reasons of deterioration and later disappearance of many ponds in Guilan. In urban areas, there are many examples where the ponds were swallowed by expanding urban fabric to provide room for different urban functions to respond the needs of the growing population.



Figure 3: A farm pond (sal) in outskirts of Lahijan, Guilan

5. Building New Concepts on Old Traditions

One may argue that traditional practices are not able to solve all water-related issues of the current time; however, studying and learning from the past enlighten the path to the future. Achieving the right mix of "old" practices and "new" technological advances can be the key to move towards the sustainability of water resources.

Rehabilitating and modifying farm ponds and reintroducing them to the urban context can be one step to build new concepts based on old traditions to achieve the goals of sustainable water management systems. In other words, under such new paradigm of urban water system instead of large distance transfers of water/wastewater, on-site and local harvesting and treatment will form a decentralized cluster-based water system, in which ponds are the crucial elements. Moreover, instead of underground water/wastewater infrastructure, surface stormwater in form of natural drainage will be implemented to manage urban runoff as well as providing recreational amenities to the community and contributing to the aesthetic qualities of a given space.

5.1 Engaging old traditions to the new urban water management paradigm

Studying the traditional examples of water management techniques of different communities reveals that many current water-related issues can be solved and managed using the traditional methods. The strong connections and adaptations of the methods to the geographical, climatic, and even social characteristics of the context is the key of durability of them. However, within the modernization process many of them lost their value and effectiveness, and little by little became forgotten. Through an “Integrated Water Management System” in which water is considered as a decisive element from the very early stages of the design, cities can become part of the solution to deal with the problem of water. Under the new paradigm, in contrast to the conventional approach of urban design and planning, Instead of designing just a form, a functioning landscape must be designed in which water is a crucial factor. According to Novotny *et al.* (2010, p.186) the conventional approach which is based on fast conveyance systems should change to storage-oriented, slow-release systems characterized by storage in ponds, on flat roofs, in underground cisterns, ponds, lakes, etc.; infiltration into shallow aquifers; soft treatment (rain garden biofilters earth filters wetlands, ponds); slow conveyance in grassed swales (rain gardens) and natural or nature mimicking surface channels Fast conveyance has no social benefit except getting rid of water as quickly as possible. Hoyer *et al.* use the term “Water Sensitive Urban Design” as an interdisciplinary cooperation of water management, urban design, and landscape planning to consider all parts of the urban water cycle and combine the functionality of water management with principles of urban design. The objective of Water Sensitive Urban Design is to combine the demands of sustainable stormwater management with the demands of urban planning, and thus bringing the urban water cycle closer to a natural one (2011, p.14).

The availability of ponds in many towns and villages of the region, on one hand creates an opportunity to start and develop a natural drainage system to solve the problem of urban runoff and decrease the risk of urban flooding in the city. The pond as a natural landscape element will act as a decentralized stormwater management system to receive the excess water in case of heavy rain. The pond, as the main body of water will become a huge cistern to receive urban runoff from neighboring areas. On the other hand, it provides a water reservoir, in which the stored water can be recycled and reused for other purposes. For instance, treated stored water, can be used for urban agricultural activities, irrigation of the plants and fire sprinklers. Collecting rainwater locally and managing the urban runoff naturally would preserve the local ecosystem and reduce the environmental impact through increasing the infiltration process and recharging the aquifer.

5.2 Rethinking of available water resources

Despite some difficulties of the communities to access to the sources and respond to their needs of water, the local use of water was among the great benefits of using water in the past. The previous generations lived in a time when houses were not connected to a central water supply system, but rather were equipped individually with a storage container for water, in which water falling from the roof was collected. In the larger scale of villages and cities, the ponds were among the tools to collect and store rainwater. People didn't use as much water as we do today, and in this respect we can learn a lot from our ancestors about water saving practices.

Due to the importance of the problem of water scarcity in many areas of the world and to move towards a sustainable development, there is a certain need to rethink of available water resources. To reduce the stress on surface and underground water resources, other sources of water must be introduced to the urban water system of the country. As explained earlier, decentralized water systems and the practices of rainwater harvesting and building cisterns and storage tanks to collect and store the water is not an alien concept in Iran, and particularly in Guilan region. On the contrary, one would argue that such practices were common in the past; while currently, they are almost forgotten and/or are not largely being

used. Recently, however, there is a growing awareness about the importance of stormwater as a valuable source of water which can be stored, treated and reused for potable and non-potable uses instead of larger withdrawal and long transfer of raw surface water or extraction of groundwater.

5.3 Improving the quality of urban environment

Restoration of farm ponds in rural and urban settlements of Guilan will not only introduces rainwater as a new source of water to the urban water system but also provides social amenities and contribute to the higher quality of urban environment and life of the communities. The ponds would also act as decorative elements which improve the quality of urban waterscapes through design of different public places such as urban parks and recreational areas, water arts and fountains in city plazas, water festivals and alike.

6. Concluding remarks

The current water management system of cities must change to meet the goals of a sustainable development. Water management system in the new era must be considered as an integrated part of urban design. After the long period of absence of rain as a source of water the real values of rainwater from many different aspects are being rediscovered again. In this regard, rainwater and urban runoff, as an ecological asset and an aesthetic value rather than problems will play crucial roles not only in water management systems of the city but also in enhancement of the visual pleasure and attractiveness of a given space.

Restoration of farm pond which were damaged by urbanization should be a key component of green development. As a traditional technique which has been practiced in the region for centuries, farm pond will reintroduce water to urban spaces and reveal its real values and capacities to people. In addition to storage of excess flows, farm ponds would have other uses such as wildlife habitat, parks, green spaces and recreational areas. Ultimately, connecting water management with making good places would contribute to the higher living standards of people in cities, and it would also address the problems of water scarcity, flooding and pollution.

7. Acknowledgments

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Family Farms, Local Economy and Food Security: Case of Romsy Ranch, Ibadan, Nigeria

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ABSTRACT

Family farms, whatever their scale, are contributors to food security and drivers of the local food economy. Romsy Ranch contributes to the local food security and local economy by sustainably creating direct access to fresh farm produce, contributing value to the food chain based on local food production, from farm to fork. A local food economy applies to “ food products that are grown, processed, packaged, and distributed within a defined geographical area, though in practice the terms varies across regions” (Mayors Innovation project, 2014:3). Romsy Ranch is a family owned ranch that commenced in August 2013 at Offatedo Town, off Iwo road, Ibadan in the Lagelu Local Government Area, Oyo State, Nigeria. This paper discusses the contribution of Romsy Ranch, Ibadan, Nigeria to feeding families, local community development and improving food security. The paper deploys New Ruralism concept to understand the contribution of family farms to the local economy. Family farms in Nigeria provide fresh food to the local communities and people around the vicinity and sometimes local markets and informal food enterprises or retailers depend on family farms for supply of produce like fresh vegetables, fruits and other food items.

INTRODUCTION

The family and the farm are linked, they co-evolve and combine economic, environmental, social and cultural functions (FAO, 2013). More than 90 percent of farms are run by an individual or a family and they rely primarily on family labour (FAO, 2014). Family farms are needed to ensure global food security, to reduce hunger, care for and protect the natural environment and end poverty, undernourishment and malnutrition. The year 2014 was declared International Year of Family Farming (FAO, 2014) and the International Steering Committee for

the International Year of Family Farming developed the following conceptual definition of family farming:

Family Farming (which includes all family-based agricultural activities) is a means of organizing agricultural, forestry, fisheries, pastoral and aquaculture production which is managed and operated by a family and predominantly reliant on family labour, including both women's and men's. The family and the farm are linked, co-evolve and combine economic, environmental, social and cultural functions (FAO, 2013).

Most family farms in Nigeria are located in rural-urban peripheries or boundaries of major cities or in secondary towns bordering major cities or rural communities where there is still virgin untouched land. "Family farms represent the dominant form of agriculture in most countries. They range in size from tiny, subsistence holdings to large-scale, commercial enterprises, and they produce a vast range of food and cash crops in all kinds of agro-ecological conditions" (SOFA, 2014:8). "Small farms have been a historic bedrock of cultures...and they can be a crucial part of more efficient, ecologically rational agricultural systems that sustain dignified livelihoods in the future" (Weis, 2007:9). Roughly 800m of the 842m who suffer from chronic undernourishment live in developing countries (Weis, 2007:11). This paper discusses the contribution of Romsy Ranch, Ibadan, Nigeria to feeding families, local community development and improving food security. The paper deploys New Ruralism concept to understand the contribution of family farms to the local economy.

WHY FAMILY FARMS?

Family farms are needed to ensure global food security, to care for and protect the natural environment and to end poverty, undernourishment and malnutrition (FAO, 2014). Nothing comes closer to the sustainable food production paradigm than family farming (SOFA, 2014). Family farms are very diverse in terms of size, access to markets and household characteristics, so they have different needs from an innovation system. Their livelihoods are often complex, combining multiple natural-resource-based activities, such as raising crops and animals, fishing, and collecting forest products, as well as off-farm activities, including agricultural and non-agricultural enterprises and employment. Family farms depend on family members for management decisions and most of their workforce, so innovation involves gender and intergenerational considerations. There are more than 570 million farms in the world and

the world must rely on family farms to grow the food it needs and to do so sustainably (FAO, 2014).

SOFA (2014:vi) asserts “about 842 million people remain chronically hungry because they cannot afford to eat adequately, despite the fact that the world is no longer short of food. In a disconcerting paradox, more than 70 percent of the world’s food-insecure people live in rural areas in developing countries. Many of them are low-paid farm labourers or subsistence producers who may have difficulty in meeting their families’ food needs. As we look towards 2050, we have the additional challenge of feeding a population that is eating more – and sometimes better and healthier diets – and that is expected to surpass the 9 billion mark”.

The United Nations 2014 the International Year of Family Farming provided an occasion to highlight the role that family farmers – a sector that includes small and medium-scale farmers, indigenous peoples, traditional communities, fishers, pastoralists, forest dwellers, food gatherers and many others – play in food security and sustainable development (SOFA, 2014). “Family farms are key to ensuring long-term global food security. To feed a growing population and eradicate poverty and hunger, family farms must be encouraged to innovate more and become more productive while also preserving natural resources and the environment” (SOFA, 2014:3). Weis (2007:174) asserts “...Small farmers must see themselves and have their livelihoods widely understood as an important part of building more socially just systems of production and sustaining healthy rural communities into the future”. He argues for “developing an optimistic understanding of how the battle for the future of farming could lead towards more ecologically rational and socially just systems of food production” (Weis, 2007:163). Seemingly this can be achieved by embedding New Ruralism principles in everyday practice of food security and agricultural endeavours.

NEW RURALISM, NEW URBANISM: A CONTINUUM

The New Urbanism movement founded in 1993 has begun to morph into a new progeny New Ruralism: an extension of New Urbanism into areas that are not urban (Stratton, 2009). While the new movement for New Ruralism is led by Sibella Kraus of Sustainable Agriculture Education and the University of California at Berkeley’s Agriculture at the Metropolitan Edge program. New Ruralism envisions architects, planners, and developers working together with farmers and policymakers, paying close attention to foodsheds (local food production and

distribution systems that are intended to produce healthy, abundant food without the use of fossil fuels or the exchange of money, and to foster the development of community) (Baldauf, 2009). New Ruralism is based on improving city design by bringing country living back into the city and there's been a big push to encourage urban planners and architects to incorporate farmland into their design plans (Baldauf, 2009). To give a contextual understanding of New Ruralism it is pertinent to first give an insight to New Urbanism and its principles.

New Urbanism

New Urbanism is a movement to reduce sprawl and improve social well-being through changes in the built environment that produce compact, socially diverse, and pedestrian-oriented settlements. Proponents of the movement have suggested it offers a model of sustainable development (Congress for the New Urbanism, 2008).

While sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987:245), Sustainable Urbanism emphasizes that the “personal appeal and societal benefits of neighbourhood living-meeting daily needs on foot-are greatest in neighbourhoods that integrate 5 attributes: definition, compactness, completeness, connectedness and biophilia” (Farr, 2008:42). New Urbanism focuses on promoting walkable, neighborhood-based development as an alternative to sprawl. This is achieved by having zoning laws that allow for mixed used development and high density, with an assortment of private, public, and commercial buildings within walking distance (Stratton, 2009). New Urbanism encompasses a comprehensive design strategy that works for the full continuum of development, from rural wilderness to dense downtown and many New Urbanists follow the SmartCode, an integrated land development ordinance (Stratton, 2009).

New Ruralism

New Ruralism, on the other hand, is seemingly reviving simplicity, back to basics, reconnecting with the land in a new and dynamic fashion with a strong focus on sustainability. Kraus (2006: 27) posits “New Ruralism as a corollary of New Urbanism with a related framework of principles, policies, and practices, and with the following as its preliminary vision statement:

New Ruralism is the preservation and enhancement of urban edge rural areas as places that are indispensable to the economic, environmental, and cultural vitality of cities and metropolitan regions.

New Ruralism is a response for those rural areas on the urban edge that are most at risk for the encroachment of suburbanization, environmental degradation, and industrialization (Kraus, 2006). New Ruralism combines two current trends: smart growth (organizing cities around compact neighborhoods) and sustainable agriculture (cultivating food in a way that promotes environmental health and socio-economic equality) (Wartzman, 2007). New Ruralism is the preservation and enhancement of rural areas as places that are indispensable to the economic, environmental, and cultural vitality of cities and metropolitan regions (Kraus, 2006). Whereas New Urbanism seeks to bring back the traditional neighborhood feel, New Ruralists hope to re-connect with the land itself. “This idea has been traced to an 1898 book by Ebenezer Howard, *To-Morrow: A Peaceful Path to Real Reform*, in which the author called for a merging of urban and rural environments into a third alternative called the Garden City – a combination of town and country life” (Stratton, 2009:3).

New Ruralism (The general concept defined loosely as balancing growth by minimizing development and maximizing land available for sustainable agriculture and green space has been variously called New Ruralism, Agricultural Urbanism and Green Urbanism) a philosophy known by different labels but with the core idea of re-connecting with the land while encouraging smart growth (Stratton, 2009:1). “There is a vaccine against sprawl, a way to ward off the encroachment of those who see the land as an accessory and not a commodity, and it is New Ruralism” (Stratton, 2009:7).

Baldauf (2009) opined New Ruralism reminds us that cities do not exist in isolation and can be made richer by celebrating the connection to their food sheds, providing a layer of potential programming, diversity, and connections. This layer is full of opportunities for education and enjoyment of sustainable principles and community building, which lead to healthier cities and individuals. Bringing agricultural pursuits closer to the city builds a region’s identity and the consumption of the products of that region supports the local economy. At issue is “the preservation and enhancement of urban-edge rural areas as places that are indispensable to the economic, environmental and cultural vitality of cities and metropolitan regions”. The New Ruralism framework proposes “a cooperative effort between the New Urbanism, Sustainable Agriculture, and Farmland Preservation movements. Its eventual goal is to establish permanent

agriculture preserves as sources of fresh food for urban regions, and as places to nurture connections with the land, preserve rural life, and contain and sustain cities” (Moffat, 2006:72).

Kraus (2006: 28) notes “New Ruralism draws from past models. Some obvious examples are the agrarian context for the ‘Garden City’ and the self-sufficiency elements of eco-villages. New Ruralism also incorporates current initiatives, such as sustainable city charters, local food policy councils, the agricultural land trust movement, and mechanisms to preserve and enhance regional agriculture and its natural resource base. New Ruralism can harness marketplace forces such as demand for rural lifestyle, countryside view, and food with ‘terroir’ (a taste of place)”.

The Continuum

The New Urbanism New Ruralism continuum build on each other and have overlapping principles of sustainability, effective and efficient use of land, conservation and smart growth. New Ruralism attempts to draw attention to the rural side of urban-rural interdependencies. Kraus (2006) reasons urban residents are increasingly overfed and undernourished, disconnected from rural and natural surroundings. “New Ruralism proponents are environmentalists whose main goal is to sustain rural areas compared to architectures in the New Urbanism (also called smart growth) who seek for sustaining urban areas. Consequently the main commitment of the New Ruralists is conserving agro-ecosystems in comparison with ‘developing cities’ in the view of the New Urbanists” (Azadi et al, 2012:2225). New Ruralists follow an agricultural-based development approach that promotes small-medium farming (Kraus, 2006) and acknowledges rural lifestyle while New Urbanist give priority to large industrial-based sectors and encourages the urban lifestyle (Azadi et al, 2012).

New Ruralism is “a framework for creating a bridge between Sustainable Agriculture and New Urbanism. Sustainable agriculture can help bring cities down to earth, to a deeper commitment to the ecology and economy of the surrounding countryside on which they depend. “As a place-based and systems-based framework, the New Ruralism nurtures the symbiotic relationship between urban and rural areas” (Kraus, 2006:27).

New Ruralism is built on twenty years of reform - in food, agriculture, and land use planning (Kraus, 2006). Kraus (2006:27) also notes “at the same time, New Urbanism projects and Smart Growth initiatives have demonstrated the possibilities of creating healthier, more livable urban

centers. Communities large and small are utilizing smart growth tools to create mixed use, pedestrian-friendly and transit-oriented developments; to encourage infill, revitalize downtowns, institute ‘green’ building policies, and better balance the growth of jobs and housing. New Urbanism acknowledges farmland and nature to be as “important to the metropolis as the garden is the house”. Both schools of New Ruralism-New Urbanism continuum agree that the expansion of built-up areas threaten agro-ecosystems but each school has its own priorities (Azadi et al, 2012) (table 1).

Table 1: Comparison of New Ruralism and New Urbanism

Element	New-Ruralism	New-Urbanism
Philosophical roots	Participatorism	Post-modernism
Proponents	Environmentalists	Architectures
Goal	Sustaining rural areas	Sustaining urban areas
Main commitment to	Agro-ecosystems	Cities
Development	Agricultural-based	Industrial-based
Promotes	Small-medium size farms	Industrial agriculture
Encourages	Rural lifestyle	Urban lifestyle
Extending	Low density peripherals	High-density centres
Society	Produce less, consume less	Produce more, consume more
Gardening	House is built a garden	Garden is built in the house
Main target group	Farmers (active producers)	Urban residents (passive consumers)
Main foods served	Slow-foods	Fast-foods
Food sort	Organic, fresh, tasty, low processed	Non-organic, stale, tasteless, high processed
Migration orientation	Urban-rural	Rural-urban
Tourism-based	Nature-made	Human-made
Travel	Pedestrian/biking-based	Automobile-based

Source: Azadi et al 2012:2225)

Principles of New Ruralism

Major principles of New Ruralism include sustainability, specificity and unique identity of the rural place; agricultural designation or local food belts/rural food basket designation or capability to produce locally grown food that is healthy, fresh and flavorful; unique land use

conducive for agro-ecological development, conservation, passive recreation and agritourism potential; dedicated farmers, direct marketing and distinct urban-rural linkage. Connectivity, linkage to environmental services, good habitat management, preservation of biodiversity and infrastructures are germane to New Ruralism.

Kraus (2006:28) notes “New Ruralism provides a starting point for some preliminary principles. Four fundamental principles characterize New Ruralism namely the:

1. Rural area needs an identity rooted in the agricultural, ecological, geographical, or cultural attributes to be preserved. This could be the tradition of raising cattle or growing a certain crop, or the presence of an ecologically-sensitive marshland in the area. This identity would contribute to a broader regional sense of place, through local farm products, rural activities, iconic landscape, and opportunities for public experience. Dedicated current farmers and identified aspiring farmers; crops and livestock distinctive to the place; and processing and marketing infrastructure.
2. Primary use of the land dedicated to farming should be small to medium-scale agriculture integrated with areas for wildlife and habitat management. The goal is to eventually establish permanent agriculture preserves as sources of fresh food for urban regions (Moffat, 2006). Designations as agricultural preserves or ‘appellations’ or ‘local food belts’. Conducive agronomic conditions and agricultural history would be primary factors determining the location of such agricultural preserves
3. Maintaining a public environment that is accessible to residents and visitors alike from all segments of society. This puts an emphasis on the public value of the land rather than the worth it may have for private landowners who want to build secluded mansions as their country estates. This identity would contribute to a broader regional sense of place, through local farm products, rural activities, iconic landscape, and opportunities for public experience.
4. High-density mixed land use in the areas where development occurs. Availability of affordable housing on farms or in nearby communities for farm employees and regulations supportive of value-added enterprises and agritourism operations”.

POLICY CONTEXT

Administratively, Nigeria consists of 36 states, a federal capital territory-Abuja, and 774 local government areas (LGAs). In Nigeria urban agriculture is a survival strategy for many urban dwellers (Olomola, 1998). In a country of about 170 million people urban agriculture supplements family incomes of most urban dwellers who are engaged in it. About 57% of Nigerian households are severely food insecure and this varies by agro-ecological zones, sectors and occupational groups (IITA, 2004). The problem of poverty, hunger and malnutrition is rife if not endemic among Nigeria's urban or rural areas. Akinyele (2009:10) notes "Nigeria is still characterized by high reliance on food imports. Malnutrition is widespread in the entire country and rural areas are especially vulnerable to chronic food shortages, unbalanced nutrition, erratic food supply, poor quality foods, high food costs, and even total lack of food. This phenomenon cuts across all age groups and categories of individuals in the rural areas".

The Nigerian government has approved several policies and undertaken a number of initiatives to improve food and nutrition security in Nigeria (i.e. National Plan of Action for Food and Nutrition, Primary Health Care Approach, Catchments Area Planning and Action, Gender Informed Nutrition and Agriculture, and National Special Program on Food Security.)

Food and Nutrition Policy: The Food and Nutrition Policy for Nigeria articulate the fact that food and nutrition are an integral part of the overall national objective of improving the socioeconomic wellbeing of the people. The overall goal is to improve the nutritional status of all Nigerians, particularly of the most vulnerable groups. The National Plan of Action for Food and Nutrition aimed at addressing the basic, underlying, and immediate causes of malnutrition while promoting partnerships among all stakeholders working together to achieve results.

NEEDS: National Economic Empowerment Development (NEEDS 2), as the poverty reduction strategy of the government which included nutrition as a cross-cutting issue. Available data from the 2003 National Demographic Health Survey (NDHS) shows that more than half of the Nigerian population, especially women and children, live in severe social deprivation, and many households are food insecure (Akinyele, 2010).

NSPFS: The National Special Program for Food Security (NSPFS) is an initiative of the Federal Government of Nigeria and the Food and Agricultural Organization for poverty reduction in line with the thrust of the National Economic Empowerment Strategy. NSPFS focuses on the transfer and application of low-cost technologies to improve agricultural productivity and sustain agricultural systems. The program's broad objective is to contribute to sustainable

improvements in national food security through a rapid increase in productivity; to foster food production on an economically and environmentally sustainable basis; to reduce yearly variability in agricultural production; and to improve the people's access to food (SPFS, 2003).

Vision 2020: The vision of the Food and Nutrition sub sector of the Human Capital development is: "To achieve sustainable food and nutrition security for all Nigerians by the year 2020 while the food and nutrition program and activities will contribute to the realization and attainment of the NV20:2020" (FRN, 2010a &b).

Transformation Agenda: The Federal Government of Nigeria has launched the Agricultural Transformation Agenda (ATA) to attract private sector investment in agriculture, reduce post-harvest losses, add value to local agricultural produce, develop rural infrastructure and enhance access of farmers and other value chain actors to financial services and markets. The ATA sets out to create over 3.5 million jobs along the value chains of the priority agricultural commodities of rice, sorghum, cassava, horticulture, cotton, cocoa, oil palm, livestock, fisheries, etc. for Nigeria's teeming youths and women, in particular (FRN (2013:iii).

The FRN (2013:3) Agricultural Transformation Agenda's overall sector goal of the proposed Program is to contribute to employment generation and shared wealth creation along the commodity value chains, as well as food and nutrition security. Its specific objective is to increase, on a sustainable basis, the income of smallholder farmers and rural entrepreneurs that are engaged in the production, processing, storage and marketing of the selected commodity value chains. Three program components:

- Infrastructure development
- Commodity value chain development
- Program management

LOCAL ECONOMY

Lagelu Local Government Council is one of the 33 Local Government Councils in Oyo State with its headquarter at Iyana-Offa which is in the eastern part of Ibadan, the capital of Oyo state. It shares boundary with Iwo local Government in the North and Egbeda local Government in the West. It is also bounded in the south by Ibadan North East Local Government and Akinyele Governments to the East (Figure 1). Lagelu Local Government (Figure 2) covers a total area of 416 km² and consists of 14 wards of over 80 towns and 567 small and big villages while 55% of these settlements are rural in nature.

Figure 1: Local Governments in Ibadan

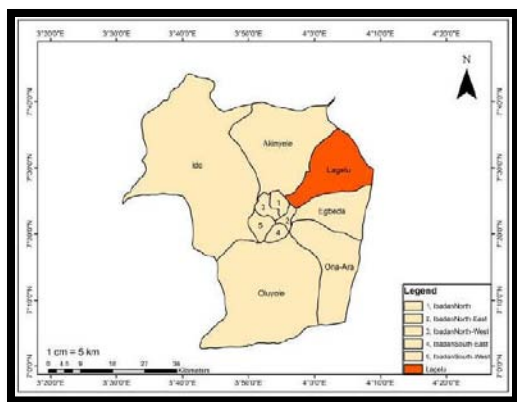
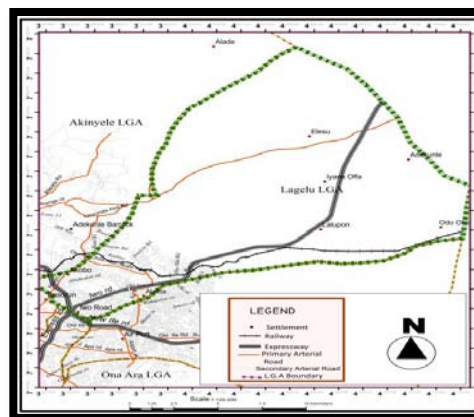


Figure 2: Lagelu Local Government Map



The Local Government Area has a population of 89,164 people (1991 census) and has risen to 145,957 during 2006 census. The urbanized part of the Local Government Area is the most populated and these include Academy Iwo Road, Monatan, Iyana-Church, Ajagboju/General Gas, Akobo/Estate, Alegongo and Odogbo. Lagelu Local Government Area has no industrial estate, however, very few industrial establishments located within the Local Government Area. include Leyland Acedem, Gas Cylinder company and Gasland. Small scale industries such as pure water, book printing and binding, blocking making are common features in the area. Offatedo is part of the ruralized communities (Photo 1) in the local government area and has an estimated population of about 5500 (Census figures). The Community has an Oba (King) the Olofa of Offa.

The most common type of farming in the area is the subsistence farming. The implements used are hoes and cutlass with the family members or group supplying the labour. The major products are cassava, maize, vegetables and yam. However, some small scale agricultural farms such as poultry farms are scattered all over the area. The Local Government Area supplies the city of Ibadan and the surrounding area with vegetables on a daily basis. Cassava (gari), yams, forest products like cocoa and some locally manufactured products like native soap are produced in the area. Major markets include Alegongo, Baale , Oyedeji, Sagbe, Offa/Olodo and Olorunda. The ruralized parts serve as a food link to other parts of the local government area and beyond.



ROMSKY RANCH

Romsky Ranch (Figure 3) is located in OffaTedo Town, Off Iwo road, Ibadan, Lagelu Local Government Area of Oyo State. The farm (site plan, Figure 4; photo 1) spans about 10 hectares (25 acres). The Ranch is equipped with a modern farm house (2 rooms) and two other thatched house, which serve as residences on the Ranch (Photo 2). There is a fully functional borehole facility with 8,000 Liter overhead storage tank capacity, both for water consumption and future irrigation plans during the dry season; a generating plant with 5 KVA capacity; and a Grinder (Mill). Farm maintenance is through weeding and occasional application of herbicides for weed control.

Figure 3: Romsky Ranch Location

Figure 4: Romsky Ranch Site Plan

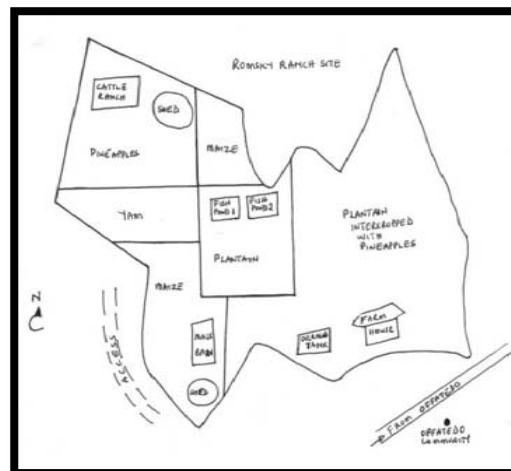
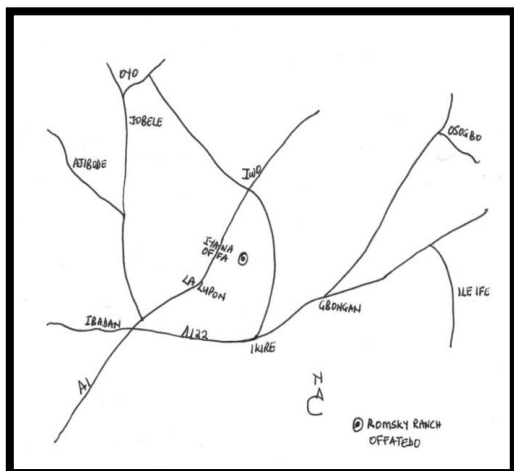


Photo 1: View of the Romsky Ranch Land



Photo 2: Farm hard infrastructure



Farm Vision

The vision of Romsky Ranch is to improve food security sustainably within the cities mentioned above (Lagos and Ibadan) by creating direct access to fresh farm produce at affordable prices. Accessing food grown locally is sustainable and the food value chain is based on local food production, from farm to fork.

Farm input

Romsky Ranch is a family owned cultivation that commenced in August 2013. Initial planting were 5,000 Plantain suckers (Cadava), intercropped with the 45,000 Pineapples (Smooth Cayene). The farm expanded to 85,000 Pineapple suckers, 13,500 Plantain suckers (Photo 3).

Maize planting during the rainy season (about 2-5 tons capacity) and a plan to transplant close to 600 Oil palm seedlings (Tenera) by August 2015. Two separate 3,000 fingerlings (catfish) capacity fishpond is under construction (Photo 4).

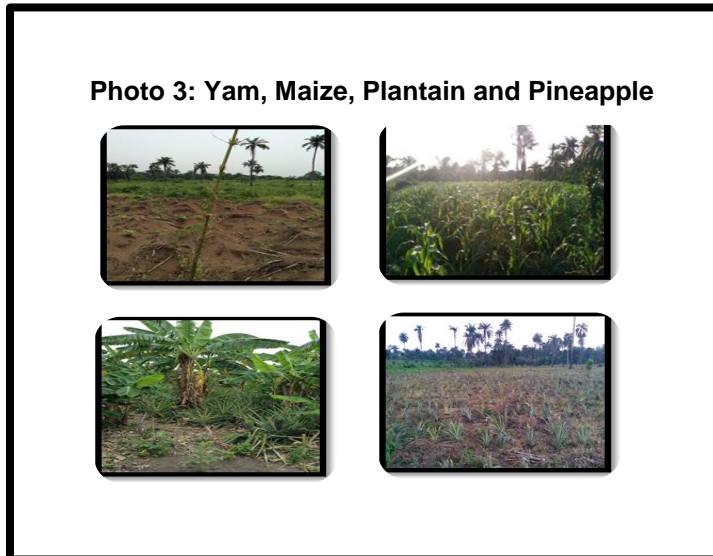


Photo 4: Fish pond under construction



Farm Labour and expenses

Labour in the farm is predominantly done manually. The labour source varies. Apart from the cattle herders, who are Fulani (nomadic pastoralists) from the northern part of Nigeria, local labour is erratic and labour has to be sourced from neighbouring countries like Togo and they reside on the farm. Men are used on the farm especially during rainy season. Due to special interest, the farm owner and his family are involved in harvesting and selecting ripe pineapples while the workers move these pineapples to the truck for onward transportation to buyers.

About 10 men are employed to weed one hectare for duration of 8 hours at about ₦1200 (US\$ 6) per day. The cost of fertilizers (NPK and UREA fertilizers) is about ₦6,000 (US\$ 30)

(NOTORE) and 4 bags are used per one hectare.

Transportation costs also vary. Transporting one ton of pineapples from Offatedo to Lagos costs about ₦5,000 (US\$25) per ton. There is expense on electricity for now but the cost of fuelling the generator to pump water for irrigation when required from the borehole is about ₦6400 (US\$ 32) for 40 litres of diesel (₦160/litre < US\$1).

Internal transportation, that running transport costs within the local area and town (Ibadan) costs ₦2425 (US\$ 12.125) weekly for 25 litres (₦97/litre < US\$1). This is the cost expended to fuel a Toyota T100 Pickup used farm purposes. The cost of fuel is unpredictable it could skyrocket during fuel scarcity and could go up to about ₦200/litre (US\$1) or more.

Irrigation

The dredging of the borehole including geophysical study and pump was about ₦375,000.00 (US\$ 1875). Irrigation equipment and materials have been purchased but not yet installed. Cost of irrigation materials, spray type/rotational, is estimated at ₦250,000 (US\$ 1250) per hectare. Irrigation hoses were purchased in Lagos, Sprinklers was purchased in South Africa to test run. Diuron costs ₦1500 (US\$ 7.5) per liter.

Farm Cultivation

Initial Plantation – Year 1(2013)

- a) 6,000 Plantain suckers were intercropped with the 65,000 Pineapples.
- b) Planted/Cultivated Area = 2.5 hectares

2nd Plantation – Year 2 (2014)

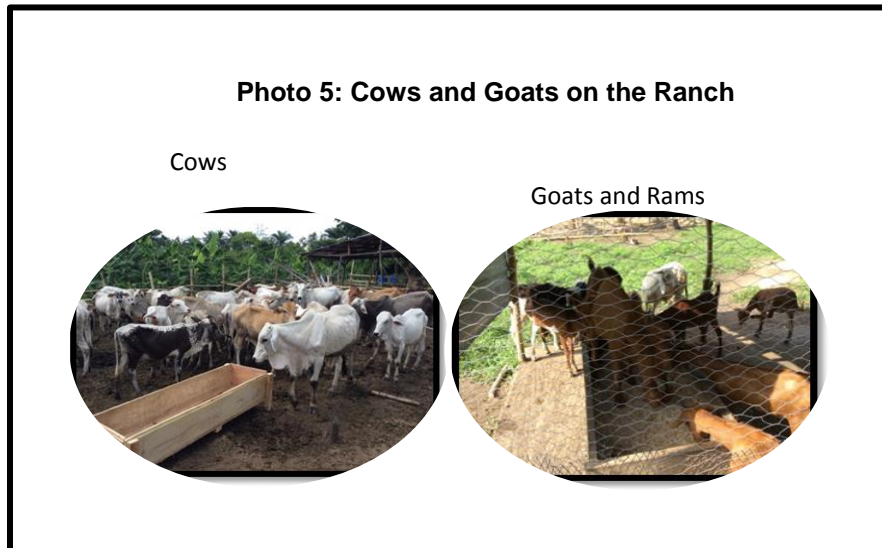
- a) 7,000 Plantain suckers.
- b) Planted/Cultivated Area = 2.5hectares.

3rd Plantation – Year 2 (2015)

- a) 500 Plantain suckers were intercropped with the 20,000 Pineapples.
- b) Planted/Cultivated Area = 1.5 hectare
- c) 750 yams planted on the ridges in April/May 2015 using the manual labour.

Cattle Farm

Initially 48 cattle heads (Photo 5) were raised for 8 months but due to poor mismanagement by the Fulani handler and increasing mortality had to sell off due to huge mortality. Six rams and six goats were also raised alongside the cattle on the ranch.



Farm Output/Harvest

- Cost of harvesting - 1Ha = 40 tons = ₦96000 (US\$480) per Ha. (Rate is at ₦6000 (US\$ 30) per pick-up load (2.5 tons). Labour required for harvesting is about 6 men per pick-up load of 2.5 tons at ₦1200 (US\$6) per day. One hectare is approximately 40 tons, about 16 men (labour) at ₦1200 (US\$6) per day.
- Ploughing: Labour for ploughing one hectare of land is about ₦12000 (US\$ 60) using a tractor, including operator's allowance.
- Cleaning or mowing: Labour for cleaning, clearing and mowing one hectare is 10 men at ₦1200 per day (₦12000 (US\$60)).
- Ridge making: labour costs and number of labour not applicable.
- Spraying: the labour for spraying chemicals per one hectare is about ₦6000 (US\$ 30). The farm utilises 4 litres of chemicals per one hectare at a rate of ₦1500 (US\$7.5) per person and the farm engages 4 people per hectare. The cost increases to ₦8000 (US\$ 40) per hectare after planting.
- Weeding: the labour required for weeding includes:
 - 1st stage: ₦15000 (US\$ 75)per hectare
 - 2nd stage: ₦12000 (US\$60)per hectare
 - 3rd stage: ₦12000 (US\$60)per hectare

Produce from the farm when harvested are targeted to feed families within (including road side food entrepreneurs and retailers) and beyond the local food shed extending even across Local Governments and State boundaries (Oyo and Lagos States). Also hotels and schools within the environs would be target for produce supplies.

Below are the details of farm output (Photo 6) to date:

YEAR One: Harvest of Plantain in 2014 (September to December)

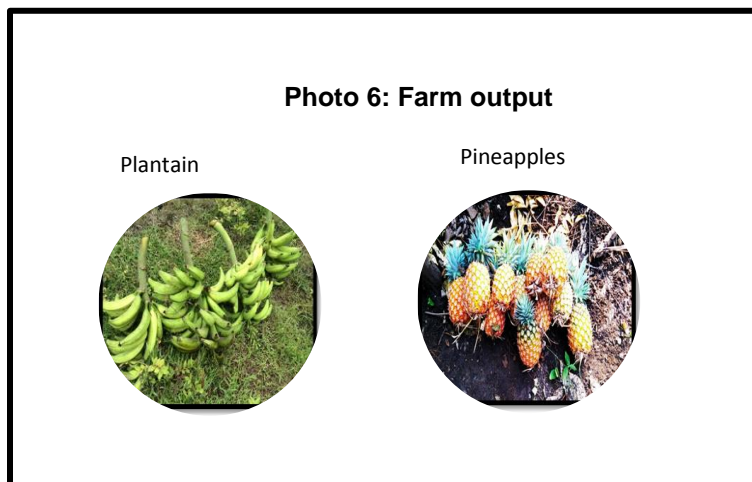
1. Amount Sold = ₦747,000.00 (US\$ 3735)
2. Transport cost to Lagos = ₦100,000.00 (US\$500)
3. Commission paid – ₦50,000.00 (US\$250)

Income realised was about ₦597, 000.00 (US\$2985)

YEAR Two: 2015

- 7 dozens of plantain (84) on a weekly basis for the past 2 months.
- Total harvest (Year 2015 so far) = 56 dozens = 672 pineapples
- Sale: @ Average of ₦1,200 per dozen = ₦67,200.00

Note: US\$1=₦200



Other natural spinoffs from the farm are vegetables like Jute leaves (Ewedu) and Water leaf (Gbure) are harvested and given to different families and sometimes due to huge volume taken to the market to sell.

Local Women

For harvesting, women within the community are often hired on a daily basis so as to augment their income. The women are all married in their mid-30's. Some are even nursing mothers while some are involved in informal petty trading, some are unemployed and idle most of the time. These women are often more productive if well supervised. The women are used for plantain and maize harvesting and maize shelling. Other farmers in the area plant maize, plantain, okro (Okra) and vegetables. There is a bit of poultry farming and cattle raising in the area as well.

Future Plan

There is a future plan to set up mini farm markets in neighborhoods for easier access by residents of the city. In addition Romsy Ranch will provide women (Informal roadside food retailers) access to surplus produce at reasonable discounts, thereby earning extra income to improve their quality of life. Also there is a plan to:

- Maintain a 15,000 stands of plantain
- Increase Pineapples to 100,000 minimum
- Oil palm plantation to be established
- Plant Maize on a rotational basis
- Re-introduce cattle during the dry season
- Raise 10,000 cat fish fingerlings in natural ponds.

DISCUSSION

Romsy Ranch has most of the features of New Ruralism. It is located in a local food shed that is virtually 'virgin, pristine land' or natural habitat where the land use is primarily agricultural incorporating pastoral activities/cattle and goats raising and the primary land that still has wildlife animals occasionally captured and sold as Bush meat (exotic meat). The land has palm trees on it and these trees have been there for several decades and have become source of livelihood for palm wine 'Ògùrò/Emu' (indigenous beer) tappers (fresh, undiluted palm wine is derived from the trees). The palm trees are also source for making 'Àdín Àgbon' (Shea butter- Palm Kennels), Red palm oil (Epo pupa). This tree is usually referred to as Money tree (Igi owó).

Applying the four key principles of New Ruralism, Romsy Ranch's identity is rooted in the agricultural, ecological, spatial location and/or local cultural attributes that should be preserved. Raising cattle and growing certain crops on the ranch would contribute to a broader regional

sense of place, through fresh local farm products, rural activities, and creating opportunities for public experience. The primary use of the land for small scale family farming helps preserve the habitat and also the wildlife in the area and promote the area as a local food belt. With proper plan and planning, rural communities in the vicinity of Offatedo could develop comprehensive (that includes conservation) plans that will integrate all farming activities, developments and incorporate agritourism or food tourism operations that embed food fest/local food flavours, educational components (teaching and learning for school children) and a Farmer Field School. Romsy Ranch seemingly is a strategic location and innovative farm model for such activities and New Ruralism-reconnecting people, farmers, land owners, local administrators, traditional leaders and developers with the land in a sustainable way- in the Local Government Area. Family farms like the Romsy Ranch are central to addressing hunger, poverty, malnutrition in the rural and sub-regional areas and in preserving the natural environment against degradation. A Farmer Field School (FFS) is a community-based learning system in which a group of farmers studies a problem together in the field. A hands-on approach is used, with a trained facilitator – who may be an extension agent or a graduate from an FFS – leading the group through a curriculum that farmers have often chosen themselves. FFS are usually part of a government-, donor- or NGO-financed programme and sometimes work through producers' organizations (SOFA, 2014:66).

Family farms are very close to nature as seen in the case of Romsy Ranch, which is located on a virtually virgin land, as a result it is in close harmony with nature and a good practice for research and development and a teaching laboratory for young farmers especially the youth and women. There is a need to “strengthen links between family farming and local markets to increase local food security; and equitable access to essential services including education, health, clean water and sanitation. At the same time, support to family farmers must underpin their role in promoting development in rural communities. Beyond increasing local food availability, family farmers play a vital role in creating jobs, generating income and stimulating and diversifying local economies” (SOFA, 2014:vii).

WAY FORWARD

Family farms must be supported to innovate in ways that promote sustainable intensification of production and improvements in rural livelihoods (SOFA, 2014). Romsy Ranch presents with three fundamental and interconnected constituents namely scale-ability, security and sustainability:

- **Scale-ability:** family farms like Romsy Ranch contribute to the local food economy if not at the central of the local food economy. They serve the sub-regions as well. In terms of scale-ability they extend beyond the local food belt and are part of the local food cluster. Small, medium or large scale, family farms are contributors the 5As of food security and local economy. Livelihoods are impacted positively and families have better access to fresh produce and work opportunities for women and unemployed youth.
- **Security:** protecting small family farmers and producers, as well as food entrepreneurs and informal food retailers because they are at the core of the food value chain (the production, aggregation, distribution, consumption and disposal). The production of fresh food from this local food belt aims at improving food, nutrition and livelihood security; and reducing hunger, malnutrition and food poverty in the community and its environs.
- **Sustainability:** the location of family farms like Romsy Ranch is also a factor to land preservation, food value chain and agro-ecological sustainability. The Romsy Ranch brings about experience between family, farms and preserving the cultural heritage of Offatedo and its environs. Romsy Ranch can foster connectivity between this seemingly isolated rural community with other communities and sub-regional settlements within and beyond the Local Government Area. The harvest from Romsy Ranch is already been distributed beyond the Local Government Area. Planners could play a facilitative role in organizing the residents of communities around Offatedo in a participatory way to promote the preservation and conservation of the rich, virgin lands and deep green ecology and encourage sustainable development around the local food belt.

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Towards New Urban Networks for Linking the Urban Food Production-Preparation-Consumption Chain

Dr. Rob Roggema¹²³ and Jeffrey Spangenberg⁴⁵⁶

Abstract

With the disconnection between the production, distribution, preparation and consumption of food the market has alienated itself from all the participants. This feeling of estrangement and inconvenience seems to be substituted by several emerging trends especially significant in urban context. The fortress walls of the spatial separation of functions are showing indeed some cracks. These changes are manifested in an explosive increase in mobile food service, especially the rise of street food business. These flexible and mobile, new concepts in the food services have changed the food landscape dramatically. These two typical urban developments seem desperately in seeking new connections. Some even do claim to have found new solid ground to shortcut the existing food chain. This existing chain 'from resource to mouth' is in this paper compared with a new model of integrated networked regional planning of the food chains. This new model actually follows the new roadmaps set out by trendy chefs, local entrepreneurs, concerned citizens or local alderman. In order to construct this new network model, information is required. Who are these change makers? What drives them? How do they manage their business, and where do they obtain their resources, deliver their goods and leave their waste? Where are they located and how are they embedded in the networks of chains? Can we see new strategies of change, for instance towards circular economies? And maybe the ultimate quest, does it make a difference in terms of cost, quality, efficiency, experience and most of all in terms of sustainability?

Keywords: urban agriculture, urban design, street food, food production-preparation-consumption, integrated urban food chain, circular economy, foodservice, rural-urban fringe, entrepreneurship

1. Introduction

Primarily due to economies of scale and globalization the food chains have become extremely long, complex and opaque. In recent years there is trend in which consumers, retailers, craftsmen and producers are making a serious effort to change the status quo for number of different reasons, which are either business driven (price, efficiency, marketing, strategy), or less economy driven (sustainability, local economy, customer experience, circular economy, etc.). With the disconnection between the production, distribution, preparation and consumption of food the market has alienated itself from all the participants. This feeling of estrangement and inconvenience seems to be substituted by several emerging trends especially significant in urban context. The fortress walls of the spatial

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separation of functions are showing indeed some cracks. These changes are manifested in an explosive increase in mobile food service, especially the rise of street food business. These flexible and mobile, new concepts in the food services have changed the food landscape dramatically, not only in terms of need and demand, delivering more choice, ready to go concepts and a new food experience, but they also seem to represent a new generation of food entrepreneurs who really like to make in change in the social, cultural and environmental aspects of food. Accordingly they put a stronger emphasis on fresh, local and diverse food. In that sense they coincide with emerging trends in urban agriculture. These two typical urban developments seem desperately in seeking new connections. Some even do claim to have found new solid ground to shortcut the existing food chain. This existing chain 'from resource to mouth' is in this paper compared with a new model of integrated networked regional planning of the food chains. This new model actually follows the new roadmaps set out by trendy chefs, local entrepreneurs, concerned citizens or local alderman. In order to construct this new network model, information is required. Who are these change makers? What drives them? How do they manage their business, and where do they obtain their resources, deliver their goods and leave their waste? Where are they located and how are they embedded in the networks of chains? Can we see new strategies of change, for instance towards circular economies? And maybe the ultimate quest, does it make a difference in terms of cost, quality, efficiency, experience and most of all in terms of sustainability?

2. The Problem

Theoretical concepts such as urban metabolism and the practice of urban food production seem to be wide apart. One reason for this is a difference in the scale they seem to be working on and the lack of spatial planning as integrating platform at a scale that is applicable for both practical projects and sustainable theories. The hypothesis of the research is therefore that if we could spatially link resources, projects, waste flows and consumers at the level at which reuse of flows is best possible, the efficiency of the urban metabolism will be enhanced. Therefore it is necessary to define the interlinking scale, which is not too large to lose interest of individuals and local groups, but is also big enough to close cycles in a profitable way. In this article the city-region scale is proposed as the spatial platform for sourcing resources, produce food, process and transport, sell and consume and reuse streams of waste/materials, nutrients, water and energy.

The methodology for this research consisted of several steps. It started with a proposition for a research agenda. The main subjects in this agenda are an investigation of the logical, realistic and effective size of the city region, an investigation of the relationships between the actors and the dimensions of their flows, research into the benefits of an alternative model and investigation how the planning process for a productive city-region is best undertaken. The second step in the research was to get grip on the City Region scale, define its size and apply these insights to the Amsterdam region. The next step was to analyse the types of actors that are involved in the food chain and their relations in terms of existing flows. In step four future flows are defined, in terms of networks between current emerging actors, such as urban agriculture collectives and street vendors, after which the insights in this alternative model are applied to a part of the region, the Tuinen van West, including examples of typical actors in this area. Finally, the spatial demands of these actors in the new network model are discussed and conclusions are drawn.

3. The 'production-preparation-consumption' chain

Currently, many urban farming projects are (by definition) small-scale enterprises, often driven by non-profit social entrepreneurs and/or social collectives. In that sense these initiatives are not economically driven, hence they lack the stimuli to exchange resources and

products to make profit. People primarily indulge in developing their (collective) gardens, but exchange of the products with others is merely 'collateral', with some exceptions (in the Netherlands: Marqt, Landmarkt, La Place and DeliXL). Some knowledge is exchanged (for instance in the Stedennetwerk Stadslandbouw, Eetbaar Amsterdam, Farming the City, Urban Farming, and Urban Agriculture LinkedIn Groups), but the exchange of resources and products appears to be very limited. On the other side, the theory on local/circular economy, urban metabolism and cradle-to-cradle approaches is rapidly increasing. This marks a divide in a world of cherishable local practices and a world of ambitious sustainability concepts. The question in this paper is if these two worlds really are separated. And if so, how they can be linked. The circular economy (WEF, 2014; Preston, 2012; Wijkman and Skånberg, 2015, Ellen MacArthur Foundation, 2013), cradle-to-cradle (Braungart and McDonough, 2002; Braungart, McDonough, Bollinger, 2007), and urban metabolism (Ferrão and Fernández, 2013; Kennedy, Pincetl, Bunje, 2011; Barles, 2010; Niza, Rosado, Ferrão, 2009; Gandy, 2004) all theories that aim to use resources more efficient, recycle and re-use waste flows, and close the cycles. Urban metabolism is seen as the future framework for strategic decision-making in spatial planning and the society (Hajer and Dassen, 2014). This is not only important from a sustainability point of producing less waste it is also an important economical factor when waste flows and material are valuable as new resources. However, the majority of literature is still theoretical, with minor links to practical applications.

The concrete, bottom-up and lower scale trends of Urban Agriculture is mostly disconnected with the abstract, theoretical principles of urban metabolism. The urban environment is the only link between the two that seems to be undisputed. Another more compelling reason to look at the urban food chain lies in the fact that over 50% of the global population currently lives in cities (UNFPA, 2007), which is expected to increase to 66% in 2050 (UN, 2014), or even higher in some areas. The question how the urban population arranges its food is a complicated question. However, agricultural structuralists claim to be able to feed the global population, even if it reaches nine billion people. The agricultural system they propose is a continuation of the current system, with large-scale production, efficiency, and distribution of food at world scale. The question is whether this production ideology is sustainable. It has numerous negative impacts, on food safety, food security, the environment, fossil fuel depletion etcetera. The existing food flows around the world demonstrate painfully the absurdity of food travel, for example grain (figure 1).

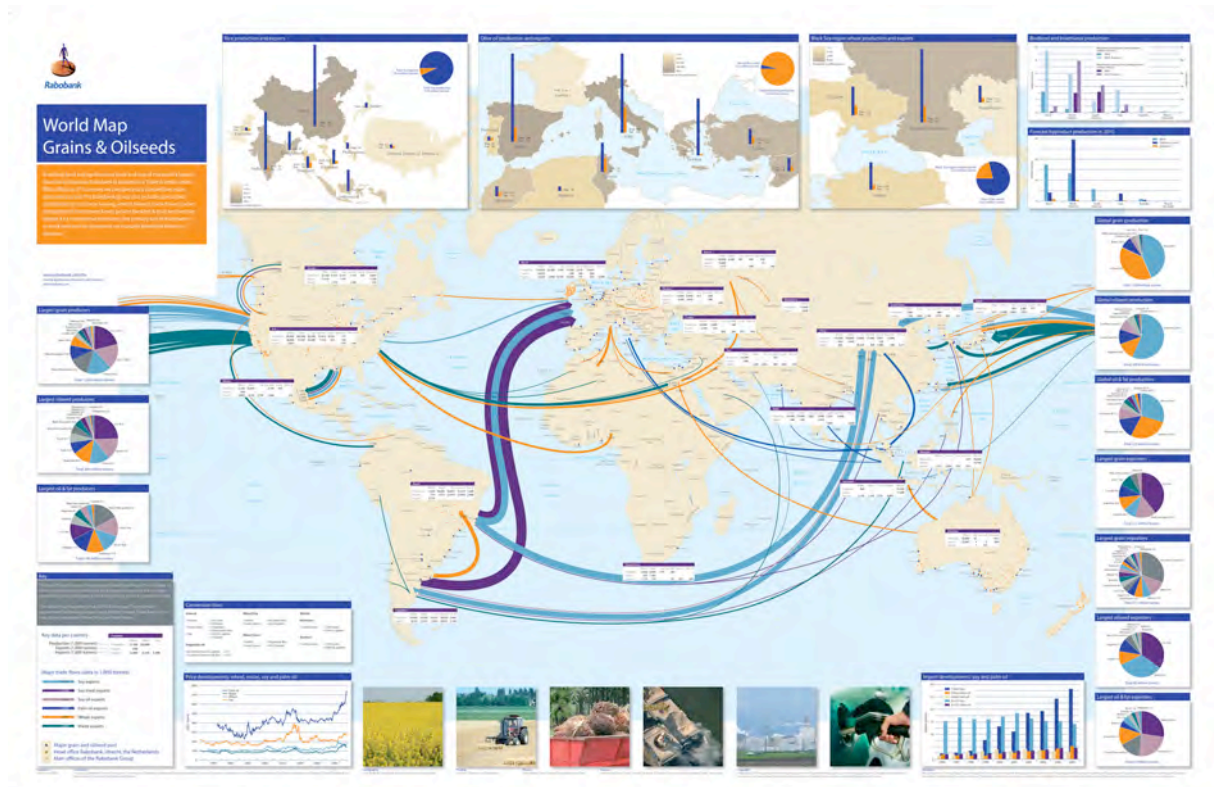


Figure 1. Flows of grain around the world

For the Netherlands, research at national level shows that the Dutch consumption requires a surface of three times the country hence most of the consumption products come from other countries and continents (De Blois et al., 2014). Most of the meat in the Netherlands is produced for export reasons and leaves the country. On the contrary, the fish that is consumed by Dutch people comes for the main part from other countries (De Blois et al., 2014; Hajer and Dassen, 2014, figure 2). These statistics resonate with the conclusions drawn in the LEI-report how the Netherlands could feed its inhabitants without in or export. In this case the diet has to change dramatically, with complete absence of meat (pork), the limited amount of grain used to feed the population and the prominent role of chicken, eggs and potatoes in the diet (Terluin et al., 2013).

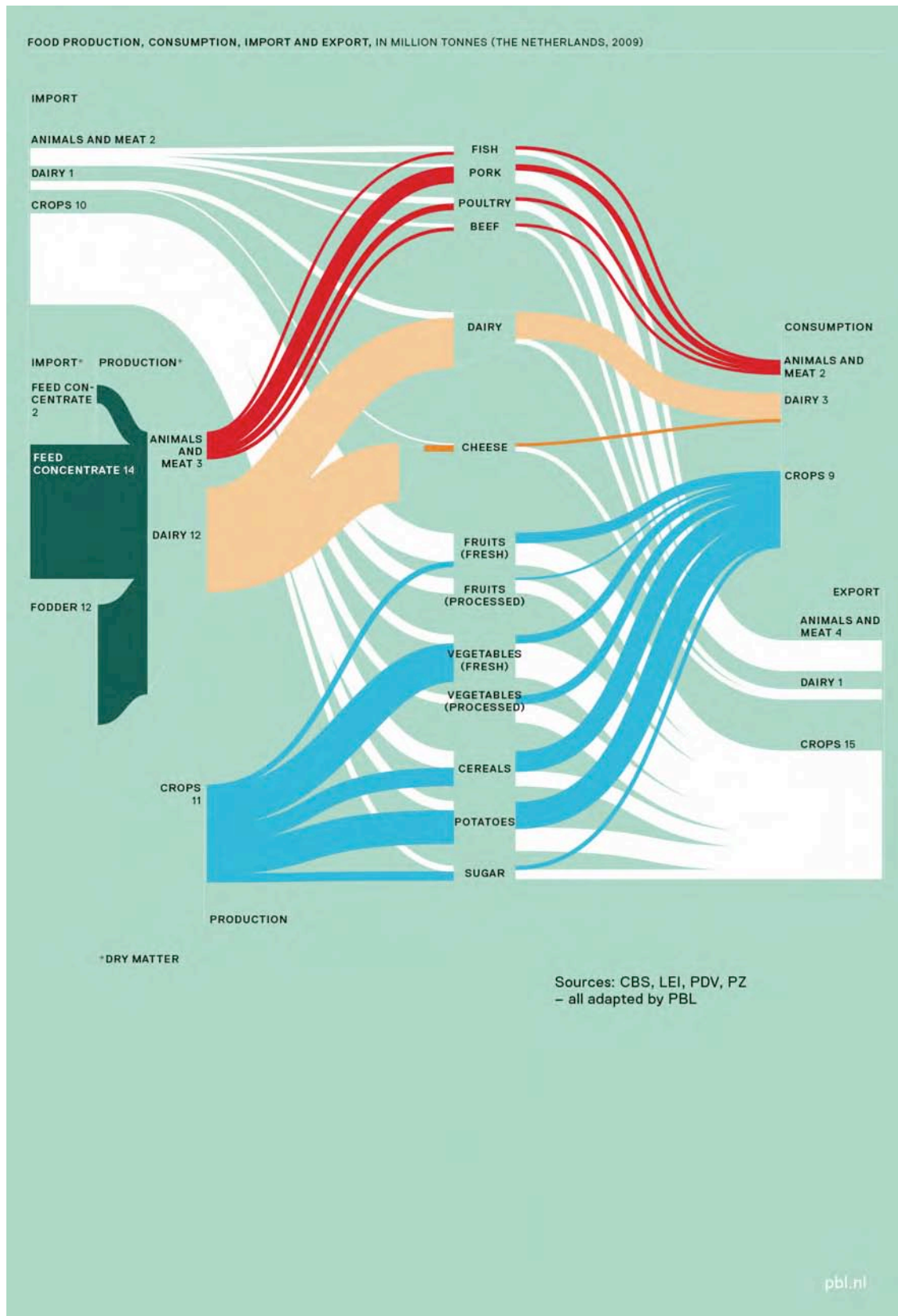


Figure 2. Import, export, production and consumption in the current food system of the Netherlands (Hajer and Dassen, 2014)

The analysis of the Dutch Food Chain (De Blois et al., 2014; figure 3) shows that 65.000 farmers produce for 6500 food manufacturers (processors), who deliver their products to 1500 suppliers. These suppliers deliver the products to only five purchasing companies, who

deliver their goods to 25 supermarket concepts and 4400 supermarkets. The seven million shoppers buy their daily food there to feed the total of 16.5 million inhabitants. This chain shows an uneven power distribution, concentrating nearly all the power with five buying agencies, which decide about the distribution of the goods over the supermarkets. Secondly, a very thin line at the top of figure 4 shows the very few direct links between farmers and shoppers.

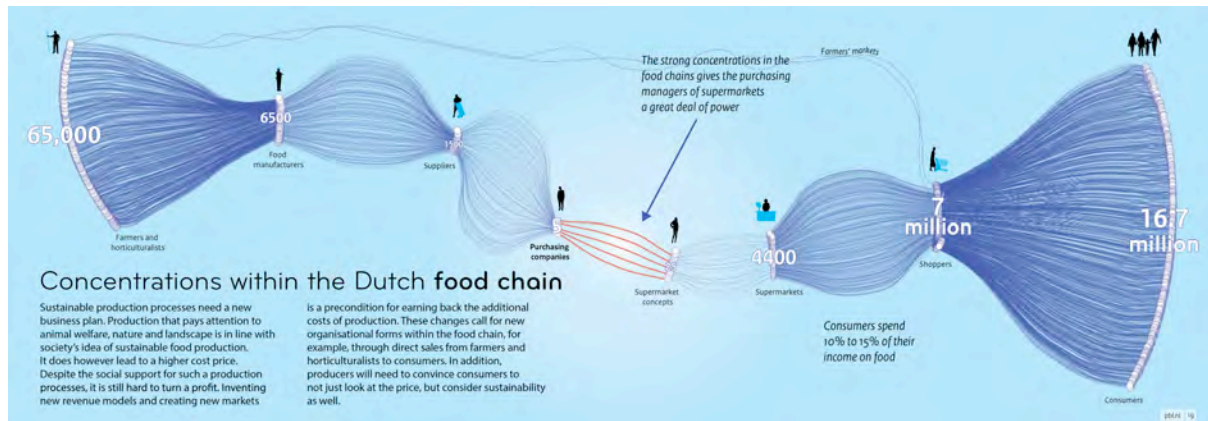


Figure 3. The Dutch food chain in numbers (De Blois et al., 2014;

http://www.pbl.nl/sites/default/files/cms/afbeeldingen/009i_ovg12_en.png)

The research illustrates the length of the chains and the disrupted power balances in them. Therefore, many scholars pledge for a model in which the food chains are shortened, or even minimised to the urban regional level (Aubry and Kebir, 2013; The New York Academy of Sciences, 2009; Santini and Gomez y Paloma, 2013). The benefits of this alternative model for the food chains are multiple. Not only in terms of better insights in the quality and origin of food, less transportation miles and less environmental impacts, but also in social and cultural terms.

However, at which scale the food chains can be closed is complicated and differs for every product, crop, cultivation and market. Several food-planning scales are currently in use (table 1).

1. The City Region food system encompasses the complex network of actors, processes and relationships to do with food production, processing, marketing, and consumption that exist in a given geographical region that includes a more or less concentrated urban center and its surrounding peri-urban and rural hinterland; a regional landscape across which flows of people, goods and ecosystem services are managed (FAO and RUAFA, 2015).
2. Food system planning is seen as an urban system (Pothukuchi and Kaufman, 1999; 2000), but on the other hand the local scale is not the only scale to look at the food system (Born and Purcell, 2006), as the system is scalable, and can be analysed at higher scales, even global.
3. Urban Agriculture is defined as: "an industry located within (intra-urban) or on the fringe (peri-urban) of a town, an urban center, a city or metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, reusing mainly human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area" (Mougeot, 1999).
4. Urban farming is the growing, processing, and distribution of food or livestock within and around urban centers with the goal of generating income (Thoreau, 2010; Poulsen and Spiker, 2014).
5. Street food is ready-to-eat food or drink sold in a street or other public place, such as a market or fair, by a hawker or vendor, often from a portable food booth, food cart or food truck (Simopoulos and Bhat, 2000)

6. A street vendor is a person who offers goods or services for sale to the public without having a permanently built structure but with a temporary static structure or mobile stall (or head-load). Street vendors could be stationary and occupy space on the pavements or other public/private areas, or could be mobile, and move from place to place carrying their wares on push carts or in cycles or baskets on their heads, or could sell their wares in moving buses (MHUPA, 2004; Sundaram, 2008).
7. Community garden/consumer collectives: A community garden is any piece of land gardened by a group of people, utilizing either individual or shared plots on private or public land. The land may produce fruit, vegetables, and/or ornamentals. Community gardens may be found in neighborhoods, schools, connected to institutions such as hospitals, and on residential housing grounds (University of California, undated)

Type	Definition	Scale
City Region	A more or less concentrated urban center and its surrounding peri-urban and rural hinterland.	Regional landscape
Food System Planning	Planning of the food system at the urban or the local scale. The system is scalable.	Urban-region
Urban Agriculture	Agriculture within (intra-urban) or on the fringe (peri-urban) of a town, an urban center, a city or metropolis.	Urban and peri-urban
Urban Farming	Farming within and around urban centers.	Urban centres
Street Food	Food sold in a street or other public place.	Street, public/ private space
Street Vendor	Person selling food on the pavements or other public/private areas, or mobile.	Pavement, public area
Community Garden	Shared productive land in neighborhoods, schools, connected to institutions such as hospitals, and on residential housing grounds.	Piece of land in neighbourhood

Table 1. Types of urban food production and their typical scale

In the near future networks (see for instance developments such as Air-bnb (www.airbnb.com), Uber (www.uber.com), With Local (www.withlocals.com), Thuisafgehaald (www.thuisafgehaald.nl), social media, Internet) and connectivity become more important than locality. This implies that networks and the quality (value) of products will determine the price more than distance and the cost of resources. Therefore, it will become beneficial to deliver high value over short distances. For the planning of the food chain, networks can form the linking pin between the conceptual theories of metabolism and the practice of local food producers, vendors and consumers.

4. Towards a research agenda for a city regional food system

The interlinking scale of the city-region is suitable to connect theory and practice, but in spatial planning the manifestation at this scale is novel. Therefore a research agenda is required to shine lights on the future dimensions in terms of the flows, spatial configurations, and design. The city-region scale forms the spatial platform for the sourcing of resources, the production of food, processing and transportation, distributed sale of the products by street vendors and other food entrepreneurs, the consumption and the reuse of waste/materials, nutrients, water and energy flows. At this scale a planning approach should emphasise:

1. The city region is the area defined by the radius of the existing city times two. This implies the total area of the city region is four times the area of the city. At this level the entire food chain should/could be closed.
2. The actors in the food chain must be connected at the appropriate level. Analysis of the locations (and these can change over time), the required and offered products, the resources, the producers and consumers, the waste products and waste streams of end users, and consumers
3. This integrated system of producers, traders and consumers, including their resource flows, compared with the existing flows, which are recruited from far away, should perform better.
4. The planning of this city region is best approached with a dynamic interactive design process.

4.1 Elaborations of City Region Size

The total area of a current city is πr^2 . If we take the radius of this current city and extend the city region all around it with a similar radius, the area of the city region is $\pi(2r)^2$, which is four times the area of the existing city. If we project this ratio to Amsterdam, the city-region emerges, within which the majority of food production, distribution, processing and consumption should take place (figure 4). In this image the average radius from the city centre (Dam square) to the current urban boundary is around six km. The city region is then defined by extending urban boundary with the same distance.



Figure 4. Projection of the city-region Amsterdam

4.2. Spatial conditions

When the Tuinen van West projects (www.tuinenvanwest.info, Innovatieprogramma Stadslandbouw Tuinen van West, 2010), the Meervaart urban design (Roggema, 2015) and De Hallen food court (Building Business, 2014; FoodHallen Amsterdam, undated), which are all located in Amsterdam, are analyzed, typical, but diverse, spatial conditions can be formulated (table 2).

Actor	Size	Requirements
Producers	50x100m.	Place to recycle water, energy, nutrients, waste
Markets	30x70m.	Central in neighborhood
Restaurants	10x20m.	Location
Street Vendors	2x5m.	Food truck, booth, garage
Consumer collectives	20x30m.	Central in community, collective shed, variety of crops, space to recycle water, energy, nutrients, waste
Flows		
Water	2x2m., 4x5m.	Water tank, pond
Seeds/seedlings	10x5m.	Storage, shed/nursery
Energy	10x20m.	Biogas, windmill or solar panels
Nutrients	2x3m.	Composting

Food-distribution	2,5x [∞] , 7,5x [∞]	Bike lane, street
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Table 2. Approximate sizes and spatial requirements food actors

Once the existing actors are known and located, the spatial conditions of the actors (table 2) give insights in the potential suitable locations in the city. On a map the current and future producers, consumers and street vendors, can be located once the spatial requirements are combined with the spatial capacity in the city in order to locate and identify the best possible fits between actors and urban context. When this maps is subsequently extended with the size of the flows between the actors, the whole model of food production with closing cycles on a (sub-) regional city scale can be constructed. Future research should be conducted to create this model.

4.3 Type of Actors

Within this city region many visible and invisible actors are active and all of them are producing, using or processing resources and products, and waste. At a systemic level the actors are all connected. Currently many of these actors recruit their resources and products from outside the city region, local producers are isolated within and metabolism concepts theoretically use the urban scale as the platform for their deliberations. In order to connect these issues firstly the flows connections and relationships must be identified, including the resourcing, production transportation, processing and consumption of flows related to food. The system arising from this is shown in figure 5.

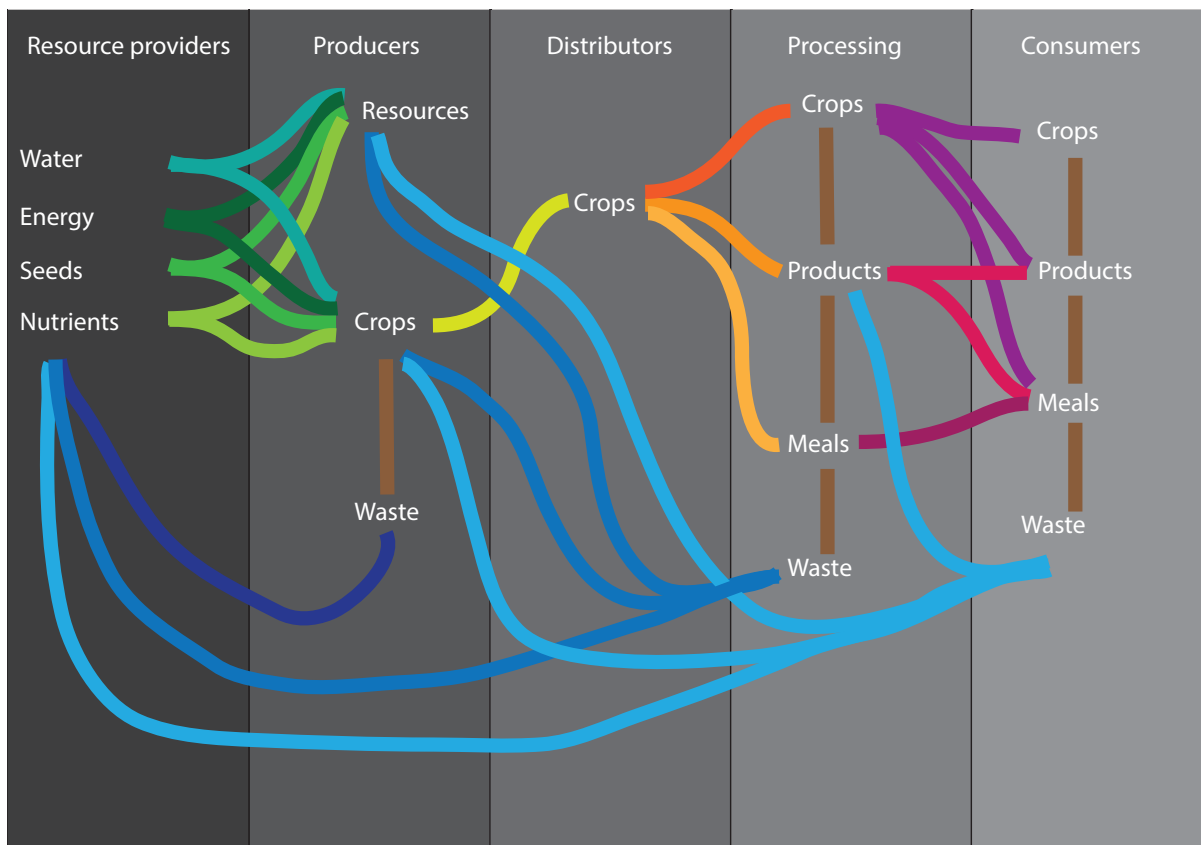


Figure 5. Actors and their exemplary connectivity of flows

In this figure the resources of clean water, renewable energy, seeds and nutrients are, ideally from within the city region, provided to the producers. They need these resources and deliver products, such as vegetables, herbs, fruit, fish, meat. The producers deliver their products, which are distributed and processed by the producers themselves or distribution-

entrepreneurs. Consumers, specialised processing companies or the producers themselves take care of processing the produce in the form of processed food or meals. Finally, these products are sold to consumers or vendors, such as street vendors, markets or restaurants. The next step in concretising this abstract connectivity scheme can be conducted when the actors including their demands and deliveries are scrutinized.

In this diagram the resource provider is a person or institution that provides the resources to the producers. The resources are water, energy, nutrients and seeds or seedlings. The producer is the person or enterprise, such as a farmer or land-owner, that produces crops, such as vegetables, fruits, herbs, but also, cattle or fish. The distributor is the organization that takes care of the transportation of the crops to processing enterprise or directly to markets or consumers. The producer and distributor can be the same entity. The processor is the person or enterprise that uses the crops to add value and sells them. Processing of crops into products, such as jam, sausages, bread and many others takes place in process industries, or at home, while the processing of crops into meals occurs in restaurants or in street food booths. The consumer is the person or group of persons that is consuming the crops, meals or products. Consumption takes place at home, in restaurants or at street food booths. Consumers, processors and producers each have waste flows, which ideally are recycled back into the system.

4.4 Analysis of current flows

When the conceptual diagram of food flows (figure 5) is translated in a concretized systemic analysis of existing, classic flows at regional scale (figure 6), it is clear the cycles are not circular. The scheme shows the gaps in the circle: the resources are coming from outside the system (by plane or ship via airports or harbours, and from regional supplies such as power plants and water companies. On the other hand the waste flows, coming from producers, restaurants and markets, and consumers, are treated centrally at regional scale in water treatment plants and waste incinerators, and are not recycled and re-used as resources.

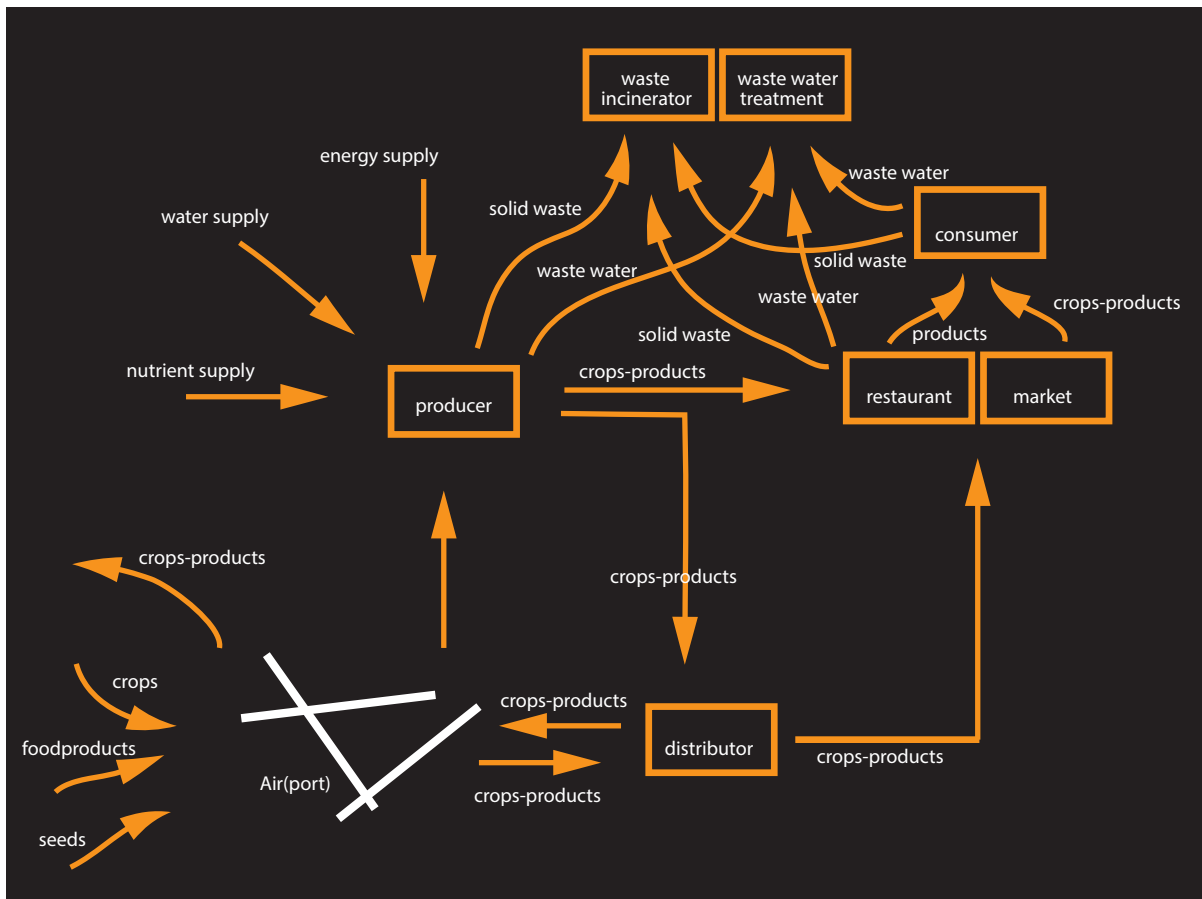


Figure 6. Current network of flows

Crops, food-products and seeds are imported via harbor or airport, in the region of Amsterdam the main ports are Schiphol Airport and Rotterdam harbor, and delivered directly to producers or via a distributor to restaurants and markets. The producers of food crops receive their nutrients, water and energy from regional companies, such as Waternet or PWN Waterleidingbedrijf Noord-Holland (water), Nuon, E-On, Qurrent, Greenchoice, Oxxio and others (energy), and Mesthandel CG Kroon (nutrients). The producers deliver crops and products to restaurants and markets (Albert Cuyp, Dappermarkt, Ten Cate markt) and to the distributors (e.g. Vroegop-Windig, Dawn Amsterdam) who deliver these to restaurants and markets. The producers discharge their waste to the water treatment plant (RWZI Amsterdam West) and the waste incinerator (Afval Energie Bedrijf Amsterdam). The consumer obtains its products from restaurants or markets, or directly from the producer and produces waste flows that are treated in the water treatment and waste incinerator. The current system operating in practice leaks. It leaks carbon in the generation of energy, using fossil resources, it leaks carbon during transportation bringing the products to the Amsterdam region and in distributing these over the region, and it leaks wastewater and solid waste during processing and preparation of food. A substantial amount of resources, crops and products originates from all over the world.

4.5 Future thinking about networks

Historically our discourse in thinking about food chains is linear dominated. Goods or resources went into a system, were processed and transformed in something else, and subsequently left the system without feedback loop. This is a centralised type of system. Recently the thinking about these chains changes and are seen as a network of functions, relationships, producers and consumers, in which every actor could change roles.

Functionalities of these systems are distributed over the network, reason why these type of network is called a distributed network (Biggs, Ryan, Wiseman, 2010; Biggs, Ryan, Wiseman, 2008, Roggema, Stremke, 2012). Distributed systems are characterised by multiple and mutual interactions and nodes, and the closing of cycles at a local scale.

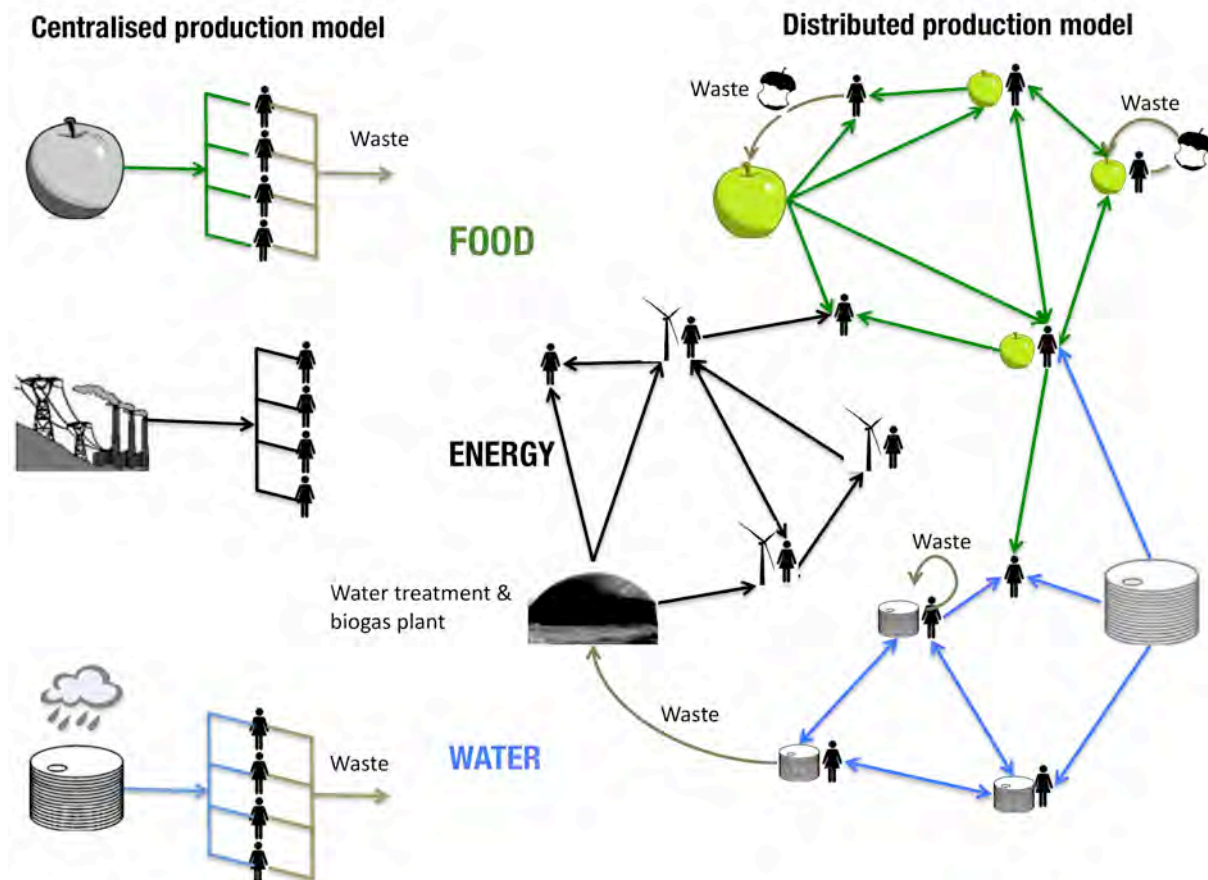


Figure 7. Centralised vs. distributed systems (VEIL, <http://www.ecoinnovationlab.com/website/wp-content/attachments/dist-sys-model.png>)

Research has applied distributed network thinking to distributed water systems (Biggs, Ryan, Wiseman, Larsen, 2008; Mays, 2000; The Johnson Foundation at Wingspread, 2014), and distributed energy systems (McCormick, Falk, Viswanathan, 2008; Alane and Saari, 2006; Esmaili, Xu, Nichols, 2005), but so far it only touches marginally on the food topic.

When the principle of distributed network is applied to food production at the city region scale, the main actors are the producers, consumers, markets, restaurants and street vendors (figure 8). Producers and consumers provide in their own resources of water, energy, nutrients, seeds, and recycle their waste. Each of the actors is connected with every other actor. The connection represents the flows to and from each actor.

The producers, such as Fruittuin van West and De Boterbloem, use their own generated water, energy, seeds and nutrients, and their recycled waste, in their own production process and deliver products and crops to markets, restaurants and street vendors, or even directly to consumers. The markets, such as Boerenmarkt Haarlemmerplein and Mercatormarkt receive their products from producers and deliver products and crops to restaurants, street vendors and consumers. Street vendors (e.g. Boer Geert, Vleesch noch Visch, Tho Vietnamese Loempia's) and restaurants (e.g. Het Rijk van de Keizer, Ivo's Kitchen) receive their crops and products from producers and, some, from consumer collectives (e.g. Reimerswaalbuurt 1 and 2, Wijsgerenbuurt, De Dovenetel, De Kok, de Kweker, zijn Vrouw en hun Buurman, Hanno Klein tuin, De Groene Vaart; Lems en Van der Veen, 2011) and deliver their products as meals to consumers. Consumers or consumer collectives use their own generated energy, nutrients, water and seeds, and their recycled waste to grow crops, which they

consume themselves and deliver to restaurants and street vendors. The restaurants, street vendors and markets produce waste, which is delivered back to the producers in the form of nutrients and fertilizer.

This alternative model for a food chain includes distributed systems for energy, waste, nutrients and water and closes the cycles at the lowest possible scale. The system as a whole could well function at the scale of (a part of) the city region, for instance the western side of Amsterdam. The next step in the research will be to quantify the flows in this model and see whether this model can lead to a closed system.

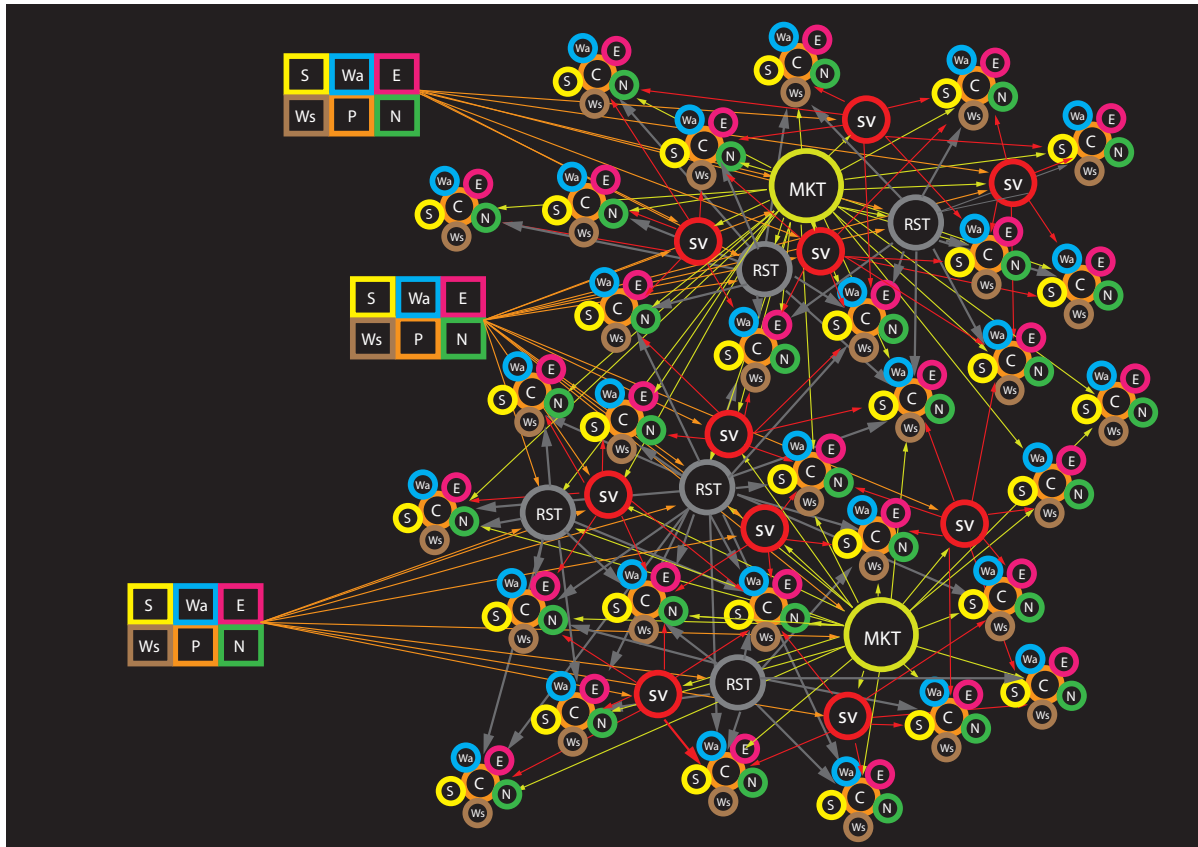


Figure 7. Potential future network of flows between producers, consumers and sellers

In this model (figure 7):

P = Producer, arranging its own S (Seeds), Wa (Water), E (Energy), N (Nutrients), Ws (Waste treatment)

C = Consumer or Consumer collective, arranging its own S (Seeds), Wa (Water), E (Energy), N (Nutrients), Ws (Waste treatment)

The sellers are: MKT = Market

RST = Restaurant

SV = Street Vendor

In figure 7 the producing capacity of Consumer collectives is left out of the scheme because of readability. The next step is to identify the actors on the map and relate them to each other. The actors, subdivided in producers, collective vegetable gardens, school gardens restaurants and consumers, are shown on the map of Tuinen van West, Amsterdam (figure 8), including their relationships (supply, provision, purchasing).

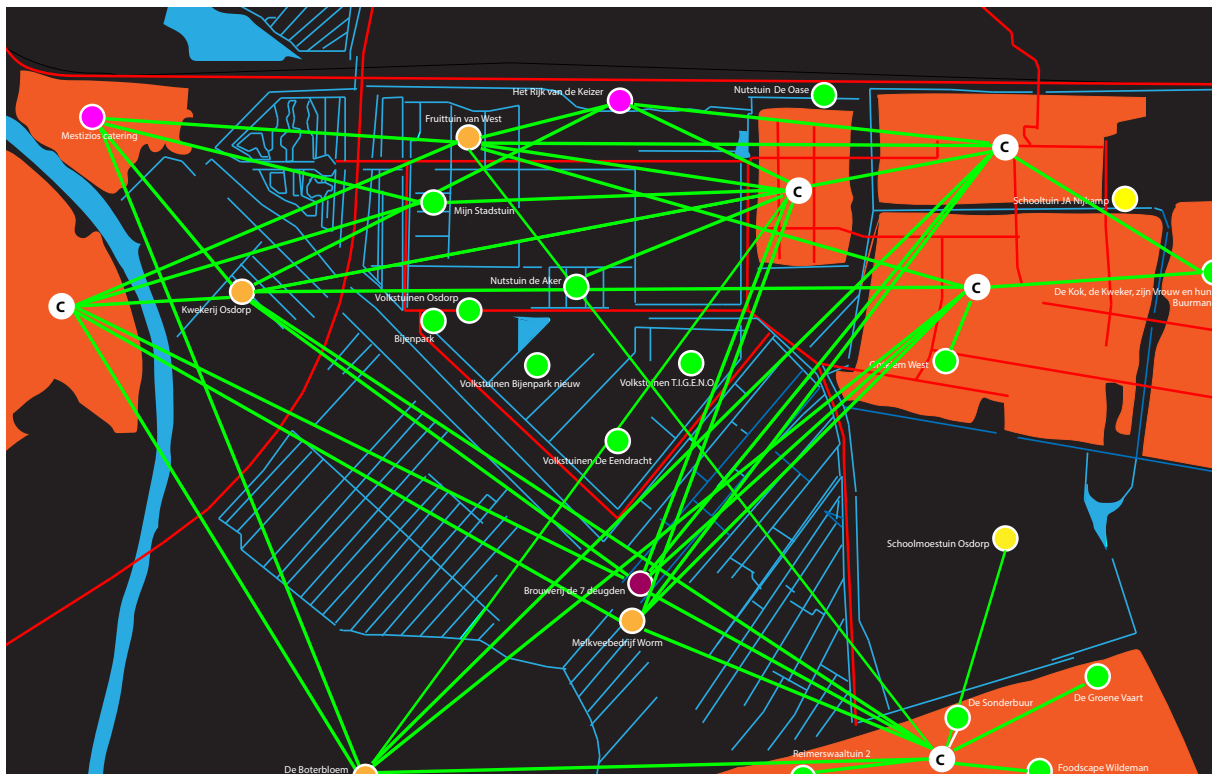


Figure 8. *Connections between producers, consumers and processors in the Tuinen van West, Amsterdam*

5. Lessons learned

A different way of organizing the food chain has learned a few things:

- a. Cities tend to continue their business as usual practices, and seem to underestimate the potential benefits of a distributed food system, equal to the recent developments in distributed energy generation in so-called smart-grids.
- b. The role of consumers as participants in the food producing process, for instance as entrepreneurs or food growers is yet undiscovered, but a chanceful opportunity to grow more food in urban environments but also to involve residents in the production process, making them aware of the existing problems and chances
- c. Cities should start their spatial thinking about food production from the local level upwards instead of assuming the global food system is the standard along which they should organize their food supply
- d. The street food vendors play a crucial role in bringing together the local production of food, which they need for their business, the preparation of food, what they do for a business, and the consumption of food, which they provide by their business
- e. Also they mark a change in how the community systemically relates to food, as they experience the production and preparation more directly. The street food vendors are the frontrunners in making this experience manifest.
- f. The scale at which this new distributed system of food production operates is not yet clear. However, the sub-urban scale seems the place where many elements of this system comes together. The local production, the local market, the entrepreneurs, the providers of resources, the freshness of products and the easy local transportation all play a crucial role and are all located conveniently at the scale of the urban subcentre at the fringe of large cities and metropolises.
- g. The planning profession should embrace the thinking in distributed food systems as it is by definition an approach in which local and regional planners could contribute. The localization of producers or resources, distributors, the growers of food, the

entrepreneurs and the consumers requires spatial planning, not only in a logistic manner but also in the perspective of giving urban transition zones the spatial quality they deserve. Beyond direct land-use planning, planners could also investigate the sizes and volumes of the diverse flows in these systems and identify the most optimal locations for different components in relation with each other. Thirdly planners are concerned with the planning of infrastructure accommodating the flows to flow. Finally, the planners' profession is necessary allowing and stimulating these food growing activities and initiatives at urban, sub-urban and urban fringe levels for instance by regulation, in which incentives are given to localize the production and use of resources for the purpose of growing food.

- h. Each city could apply the principles elaborated in this article. Given the local specific circumstances the distributed system and the flows of resources, produce and waste will be different. However, for every city the application of a model as proposed in this article will minimize food-miles, provide healthier and fresh food and give local entrepreneurs the chance for economic sustainability.

6. Conclusion and discussion

In this article a new model of distributed and integrated network for food production and distribution is presented. In comparison with the existing way the food chain works, the benefits of this new model is a better tuned exchange of flows, less transportation, especially at global level, production and consumption within one sub-region, easier control and securing of food, and closer involvement of people.

In practice it may still be difficult to shift to this new model, as food production is part of the global market, and price competition is fierce, but on the other hand people in cities no longer take their food for granted and want to know who, where, what and with which resources their food is produced. The distributed network model offers these insights.

The current research on this new model is scarce and a research agenda as formulated in this paper is necessary to gain deeper insights in the benefits of this model. Therefore specific research should be conducted to investigate:

1. The optimal size at which the distributed network model operates best
2. The size and connections of the flows of water, energy, seeds and nutrients, and waste, including their spatial conditions
3. The differences with the existing food chains
4. The optimal process of (spatial) planning and distribution of food producers, processers and consumers.

The first next step is to make an inventory of the concrete actors, including the sizes of their respective resources and products.

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Towards a resilient food network for the Rotterdam - The Hague Metropolitan Region (MRDH)

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Synopsis

New trends and techniques to produce food will produce major changes in the Dutch food network in the next decades. This research visualizes the network of the Rotterdam – The Hague Metropolitan Region (MRDH) by mapping current food hubs. The resulting overview is compared with the Food Strategies drawn up by the cities of Rotterdam and The Hague. Important issues remain unaddressed in these strategies and opportunities in the MRDH are not yet seized. With our recommendations we would like to inspire the recently founded MRDH authority to set an agenda for a Regional Food Strategy.

1. Introduction

Introduction

The call for more transparency in our food network, more regional and organically produced food, combined with new food trends and a growing world population, will generate major changes in the food network of the the Netherlands in the next decades. New production technologies are introduced, markets change and all these changes will ask for an adaptation of our food distribution network. By analysing the current food network, recent developments and trends this paper aims to inspire the Dutch MRDH region to set an agenda for a Regional Food Strategy.

Demarcation

Food supply has a strong spatial dimension, both in production and processing as in distribution and consumption. The metropolitan food region is a promising area to focus on. Recent researches of food networks in the Netherlands focus either on the national or global scale or on local initiatives and their influence on their surroundings. The same goes for policy that has been developed in the Netherlands so far. The scale is either local (municipalities like The Hague and Rotterdam) or national / global (national government). The intermediate scale of a food region is highly interesting since at this scale both the local and the global influences come together. This regional scale might offer a better overview and makes it possible to effectively establish a connection between urban and rural areas. Moreover, municipalities are often considered too small to deal with global players, such as exist in the food industry.

Motivation

The MRDH is a young administration, which has become operative in January 2015. One of its main goals is to improve conditions for establishing businesses. As for now, it still needs to prove itself as an institute that can help to contribute to the spatial en socio-economical development of the region. Food might be a crucial instrument in the development of the

MRDH, since it links large sectors in its economy and spatial configuration with many local urban initiatives and goals; the harbors of Rotterdam and the greenhouses of the Westland can meet local initiatives like 'Rotterdamse oogst' and the 'Fenix Food Factory'.

Research question

This research aims to inspire the MRDH to set an agenda for a Regional Food Strategy which might, in return, help the MRDH to reach its development goals. How can we help to set such an agenda?

In this paper, we will attempt to answer the following subquestions :

- which are the current policies regarding food supply? (chapter 2)
- how is the current food network structured? (chapter 3)
- which major trends in the food network can be distinguished? (chapter 4)
- In the light of the metropolitan metabolism, what would be a good starting point for a Regional Food Strategy in the MRDH? (chapter 5)

Method

In chapter 2 the existing Food Strategies of Rotterdam and The Hague will be analyzed and compared to the vision of the Scientific Council for Government Policy (WRR) as described in their report "Towards a food policy" (WRR, 2014). The current food network in the MRDH will be described and visualized by mapping current food hubs of the food network, in chapter 3. This analysis will be followed by a description of recent trends and developments in the food network (chapter 4). The paper concludes with recommendations to the MRDH region and especially the MRDH authority, regarding the urban-rural metabolism of the metropolitan region and the importance of an integrated food strategy.

2. Current food strategies

As in other countries, local and national governmental institutions in the Netherlands, begin to recognize the opportunities that food chains can offer as a means to achieve many different policy goals, ranging from health issues and economic growth to generating sustainable development and attractive landscapes. The strength of food as a topic is that it appeals to everyone (City of Vancouver, 2013). Food is an integral means.

The national context

As the Netherlands form an important transport and trans-shipment hub, food is of a huge importance to the Dutch economy (PBL, IABR 2014). The Rotterdam harbor in particular forms an important trans-shipment hub for food transport to the hinterland of Europe. Underlining its significance, the Dutch government has declared Food and Agriculture as one of the so-called 'top sectors' of the economy. The sectoral approach however (agriculture, public health, economy etc.) impedes an integrated approach towards the food supply chain.

The WRR outlines, in the report mentioned above, the opportunities for a Dutch food policy and the strategic considerations that have to be made to meet the challenges in the coming decades. The main challenges are Ecological sustainability, Public health and Robustness or resilience of the food supply system. In order to face these challenges they make two important recommendations: Focus on the resilience of the food network and shift the orientation from an agricultural policy towards a food policy (WRR, 2014). Especially in the

larger cities in the Netherlands, issues concerning public health (obesitas, diabetes type 2), food transparency, food security and food safety arise and possibilities are being explored to reduce food kilometers by stimulating local production. Internationally, cities like Toronto and Vancouver have paved the way for other municipalities to write their own policies regarding food. Rotterdam and The Hague, the two main municipalities in the MRDH region, have both written their own food strategy. To be effective, a policy should at least address the three topics that have been described by the WRR; ecological sustainable, public health and robustness of the food supply system. Let's take a look at the two food strategies and compare them with a city outside of the MRDH, Amsterdam.

	Amsterdam	Rotterdam	The Hague
STATUS	'Voedsel en Amsterdam' / Food and Amsterdam (vision, 2013) drawn up by ANMEC, Amsterdam Economic Board, Program team Healthy Weight Economic Affairs and the Environmental Planning authority	'Food & the city - stimulating urban agriculture in Rotterdam' (strategic document, 2012)	'(H)eerlijk Haags' (start proposal for urban food strategy, 2013)
FOCUS			
health	o	o	o
social participation	o		o (non explicit)
sustainability	o	o	o (non explicit)
economy	o	o	
education	o		o
spatial quality		o	o
RELATION TO OTHER POLICY	Food is included as a theme in the Structural concept plan 2014	Program Sustainability (up to 2014) Representation of contribution of urban agriculture to policy goals of the municipality of Rotterdam	Document has no binding status since it has not been approved by the board of the municipality
TOP	Wide program with lots of projects and a strong emphasis on education	Emphasis on the relation with the surrounding landscape Benchmark against international examples	Clear delineation of responsibilities: initiatives have to be initiated by citizens, but the municipality also gives a precise description of their own actions.
MISS	Weak connection with spatial quality	Too much focus on urban agriculture, everything else is explained by using this theme	Economic interest is mentioned but isn't specified

Figure 1. Comparison of food strategies of the three largest cities in the Netherlands (image by VerseStad.nl)

Rotterdam

Rotterdam was the first Dutch city to publish its own strategy, called Food & the City in 2012. As mentioned, the harbor is a major trans-shipment hub and as such, Rotterdam is an important player in the global food network. Furthermore the closeby situated Westland produces vegetables that are distributed and auctioned off in the region and then transported all over the world. Rotterdam does focus in its strategy on ecological sustainability, but merely by describing projects that have been initiated by inhabitants and as a means to add green to the city.

Public health is indicated as a major point of interest but the robustness of the food network as a whole is no part of the strategy. As the subtitle indicates, "Stimulating urban agriculture

in and around Rotterdam”, the document mainly focuses on stimulating urban agriculture projects in the city. The Rotterdam strategy does focus on the Westland but leaves out the harbor with its fruit and juices cluster. This is a narrow view on the entire food network spectrum. What stands out in this strategy is the emphasis on the spatial impact of a food network, as well as the recognition of the influence of developments in the food system on spatial quality, an aspect of the food network that often remains underexposed. The report was written in 2012 but there is no evidence that the intended actions described in the report have been undertaken since. A good exception is the forming of a Food Council in 2013 (Rotterdam, 2013). The Rotterdam Food Council consists of actors in the food production-consumption chain and municipalities around Rotterdam. Despite the good initiative, results of its establishment haven't been shared with the public yet.



Figure 2. *Uit je eigen stad (from your own town), Rotterdam. A food production initiative that delivers fresh products to their own restaurant and to others in town. (Image by M. Nefs)*

The Hague

The governmental center of the Netherlands published its strategy on food in the beginning of 2013. Unfortunately the document hasn't been approved by the board of the municipality and has thus no binding status. In the strategy the municipality is very clear when it comes to responsibilities. Local inhabitants and entrepreneurs should take action and the municipality will facilitate. The report describes how the municipality would facilitate initiatives, as well as specific goals to strive for and the budget that is to be reserved to achieve them. This strategy focuses on providing information either by promoting a healthier, greener and more livable city or in the form of educational programs. A clear example is a program that stimulates food production at schools. Although hidden between other sustainable projects, urban agriculture initiatives are presented on a digital map. The Hague also focuses on ecological sustainability and public health in the food strategy. As in Rotterdam we can conclude that there is no real attention paid to the robustness of the food supply system.

The next step

The food strategies of the two main cities in the MRDH region show that food is on the agenda of the municipalities. Or at least it has been in 2012-2013 when many municipalities got inspired by the book *Hungry City* by Carolyn Steel (2008). In The Hague, the manifestation “Foodprint, Food for the City” was held (Stroom, 2012). The reports however haven't been updated since the strategies were released. In the case of The Hague the document hasn't even been approved by the board and has thus no binding status. Both

strategies give a good snapshot overview of the initiatives in both cities and their hinterland. Nonetheless a more integrated, regional view is missing. There is no discussion yet about the robustness of the food network in these cities. If we compare these two strategies to the one that has been written by the city of Amsterdam, it becomes clear that an update is needed to make the strategies more concrete. Food & Amsterdam (Amsterdam, 2012) describes the financial means that will be reserved to finance goals that have been set and describes a deadline for these goals, in this case a period of ten years. This gives extra urgency to these goals and shows that partners who have been involved are committed to the strategy. Meanwhile, the Metropolitan Region Amsterdam has started writing a regional food vision (MRA, 2015).

3. Mapping the current MRDH food network

A food network can be subdivided into food hubs (or nodes) and food flows. Food flows go from node to node by air, water or road. The means of transport may change slightly over time, but the linear infrastructure of the MRDH will not change much anymore. This is why this research focuses exclusively on the food hubs: places where different actors meet, such as producer, trader, distributor and consumer. Despite the food strategies of Rotterdam and The Hague that promote local produce and urban agriculture, nearly the whole food supply of the region is channeled through large wholesale hubs and the distribution network of supermarkets and other retailers. Even organically produced food is sold for 75% in supermarkets (Bosatlas Voedsel, 2014). The spatial form of this food network consists of sub-networks per sector. Fish, for example, is landed and auctioned at the harbors of Scheveningen and Stellendam (see figure 3). Afterwards it is packaged and sold through a limited number of wholesale points near the highways, together with the flow of imported frozen fish.

Meat is only produced on a small scale in the MRDH, for example beef. There is a number of meat processing facilities in the region as well (see figure 5). Most of the meat comes to the region via the so-called global cool-chain, where wholesale companies finally deliver it to supermarkets, other retailers and restaurants (see figure 3). The meat network is almost entirely located in industrial areas, because of regulations (odour and noise from the cooling installations). Access to the highways is key for the larger facilities. Dairy products from the pastures in the MRDH, such as cheese and butter, are quite famous and they are exported worldwide. Most milk, however, is collected by the Friesland Campina cooperative and processed near Rotterdam and outside of the MRDH (see figure 5). Fruit and vegetables are an entirely different story, since these are produced in vast quantities in the MRDH region itself (see figure 4). The greenhouse complexes in the Westland area form the world's most intensive production facility for tomatoes, bell peppers, cucumbers and other vegetables. The national government stimulates innovation in this area through the Greenport policy. Much of this produce is destined for export. South from the harbor of Rotterdam, the clay polders produce potatoes, onions, apples and other crops. Therefore, the network of vegetable and fruit wholesalers is much denser and locally rooted. Large auctions such as ABC Westland and the Greenery are located in industrial areas, but many wholesale points can be found in cities and villages (see figure 3). They therefore show much more spatial relations with the residential areas of the MRDH than the sub-networks of fish and meat.

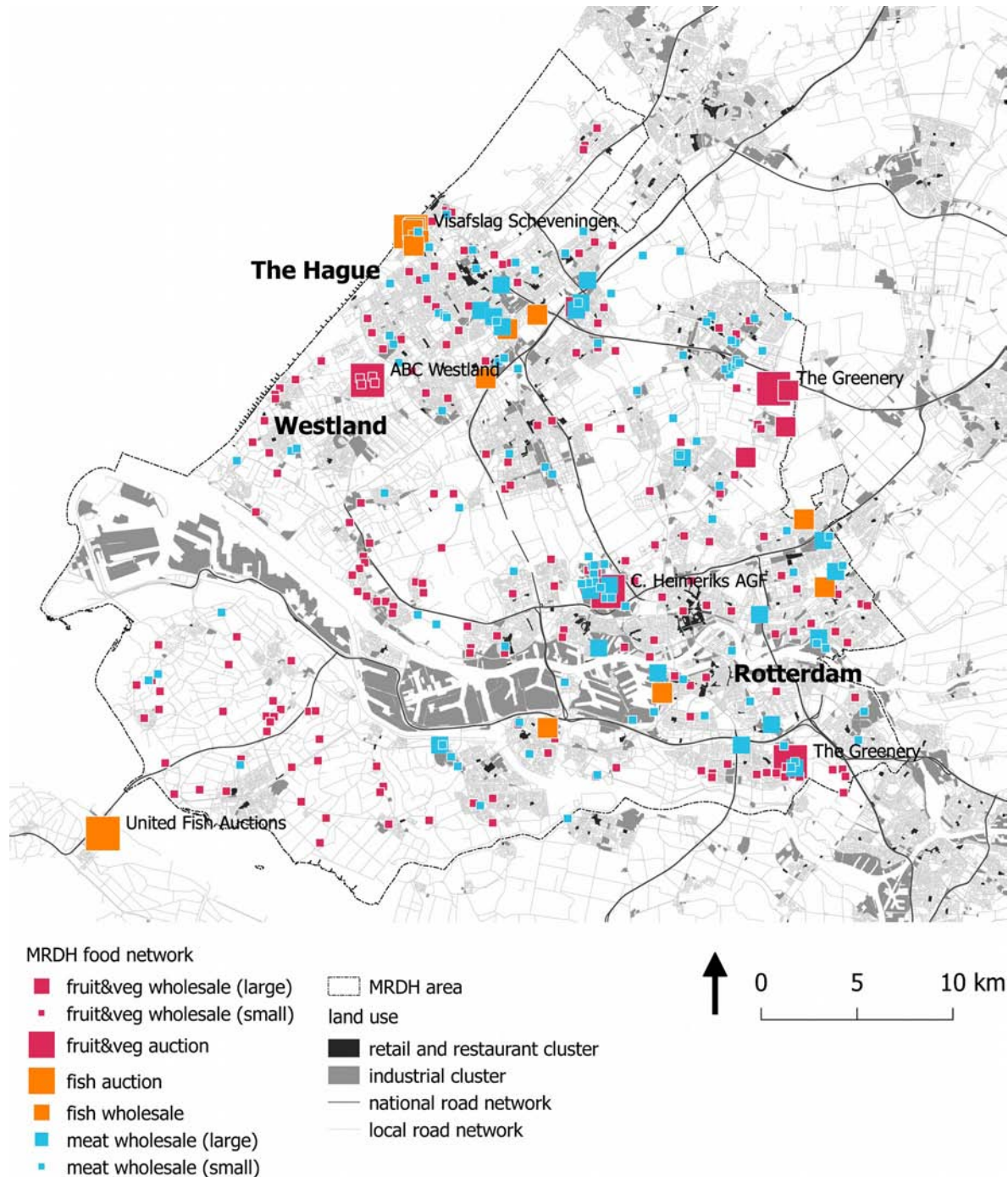


Figure 3. Map of the MRDH region food network, sectors: fish, meat, fruit & vegetables
 (Source: Top10Vector, google maps search per sector for 'groothandel', 2015; Image by VerseStad.nl)

As mentioned above, much of what people eat is purchased in supermarkets. And precisely this sector is centralizing and scaling up, driven by heavy competition. Most supermarket chains obtain their fresh products from just a few distribution centers in the whole country. Market leader Albert Heijn is planning to concentrate all fresh products in one distribution center near Utrecht (Volkskrant, 2015). This is a move in the opposite direction of what

municipalities mention in their food strategies: strengthening the link between local producers and consumers while reducing food kilometers. Closing loops in the urban-rural metabolism and the circular economy, a goal frequently expressed by designers and policy makers these days, does not play a role yet in the management of the largest food flows, dominated mainly by cost-efficiency.



Figure 4. Agriculture in the MRDH region. (Image detail taken from *Maak Ruimte*, a publication by the Deltametropolis Association, 2015)

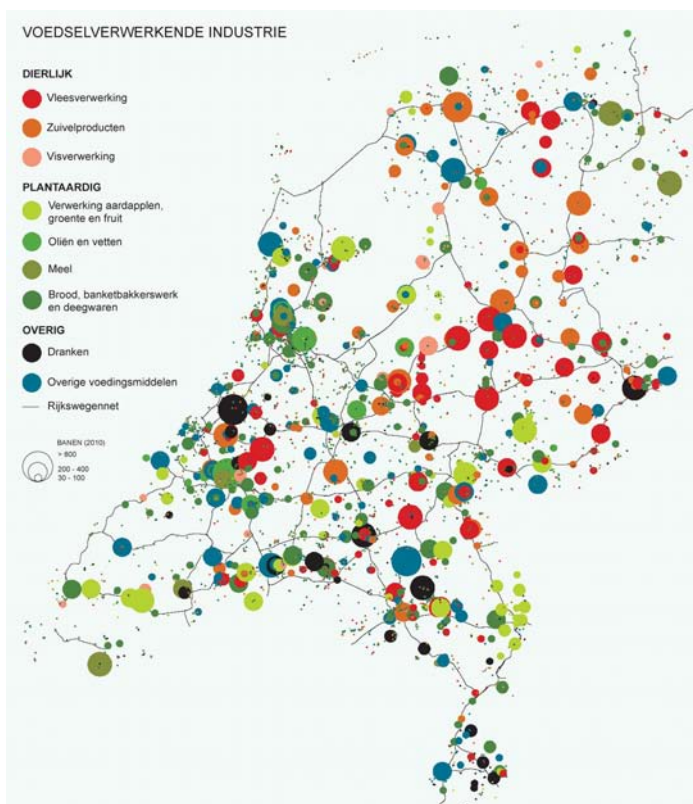


Figure 5. Food processing in The Netherlands. (Image detail taken from *Maak Ruimte*, a publication by the Deltametropolis Association, 2015)

It was already mentioned that the Westland area is a 'greenport' and the harbors of Rotterdam and Scheveningen play an important part in the food network. For such an urbanized region, the MRDH seems to play a remarkable role in the production and trade of food. Figure 6 shows that compared to the Netherlands and the province of South-Holland, the MRDH region has a larger number of food wholesale companies, which grows in a faster rate. The region also goes along with the national trend of increased number of fish retailers and shops for foreign foods, and at the same time decreasing numbers of shops for fruit and vegetables as well as butcher shops and bakeries (figure 7). Compared to the Dutch average, the MRDH region has more supermarkets, another contrast with the ambitions mentioned in the urban food strategies aiming for direct producer-consumer relations. In practice, the whole chain from thousands of producers to millions of consumers passes through a number of trade offices that can be counted on one hand, as shown by PBL in figure 8.

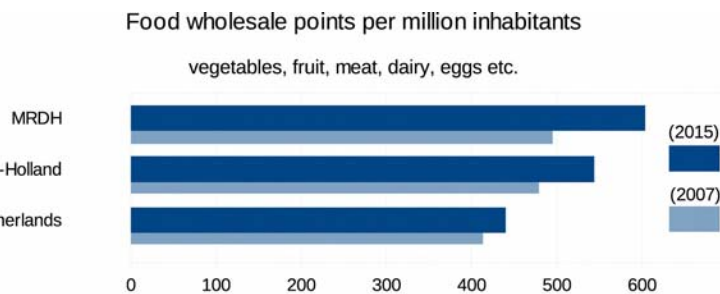


Figure 6. Food wholesale in the MRDH region, province South-Holland and The Netherlands (Source: CBS, 2015; Image by VerseStad.nl, 2015)

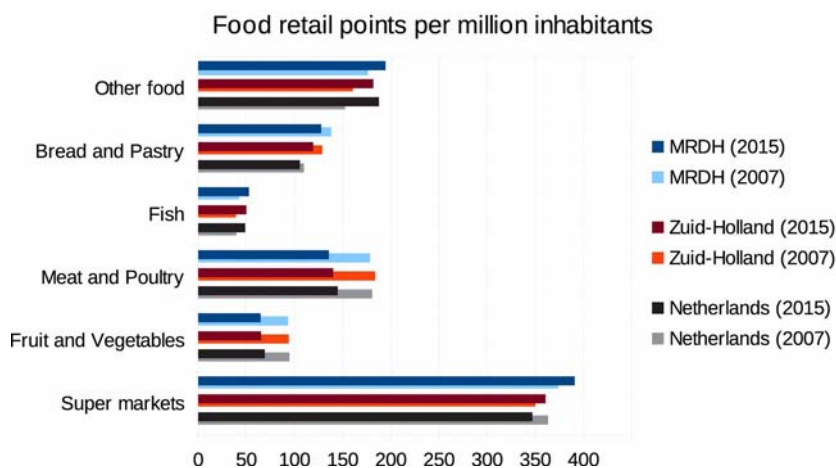


Figure 7. Food retail in the MRDH region, province South-Holland and The Netherlands (Source: CBS, 2015; Image by VerseStad.nl, 2015)

Of course these direct relations do exist, and in increasing numbers as they are promoted by local governments and entrepreneurs. An example is the online map of Dutch regional products (Nederlandse streekproducten, 2015). These relations are very important to create awareness about food and the landscape. Also do they strengthen the economic and political position of the rural parts of the metropolitan region, which generally have the ambition to 'stay green' and not be urbanized. It is clear however, that they cannot feed the entire population of the MRDH on a daily basis, nor is it accessible to all groups. The ambitions

described in the first chapter show a big contrast with the way the food network of the MRDH is currently organized in practice, mapped in this chapter. In the last chapter, recommendations are made for a metropolitan food policy in the MRDH, considering the above and current trends and developments, discussed in the next chapter.

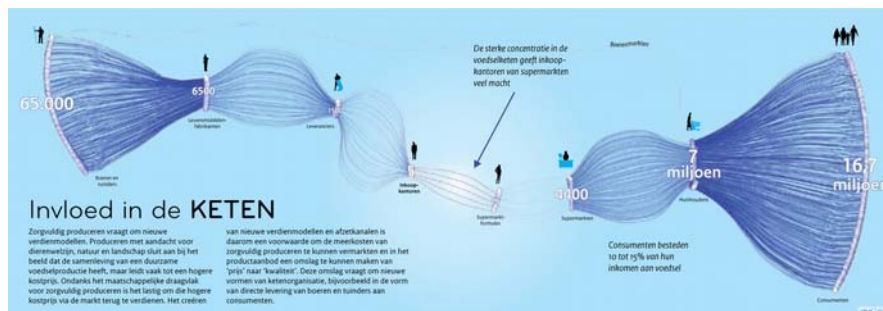


Figure 8. Food chains in The Netherlands. (Image by PBL, 2011)

4. Trends and developments

At the moment food is a hot topic in the Netherlands and it has been for some years. Not only does a large young public turn to urban farming, but the newly built Markethall in Rotterdam as well is a sign of a changing food culture in the Netherlands, connected to global trends. Many organisations and reports about the food network call this moment in time a crucial one. There seems to be an urge to adapt and change the food system (STT, 2015). Feeding the growing world population will become harder and harder as soil and water become scarce and the climate is changing. How can we adapt our regional food system to deal with these challenges?

The food strategies of Rotterdam and the Hague show that municipalities are concerned with these developments. By stimulating urban farming and educational programs, they try to improve the quality of life in the city and stimulate the awareness of its citizens. Another aspect that has the attention of the municipalities is the role food plays in our health. Obesitas and diabetes type 2 are two examples of growing health issues that occur especially in our cities. Food programs launched by the municipalities can contribute to a solution for these problems. At the same time trends in consumer behaviour are noticed. Interviews with Dutch actors in the food network (Innovatienetwerk, NVWA, Wageningen University etc.), conducted by *VerseStad.nl* in 2014, show 4 main developments:

A growth of and growing interest in locally produced food

In the larger cities like Amsterdam, Rotterdam and The Hague, consumers show a growing interest in locally produced food. Initiatives such as 'Uit je eigen stad', 'Rotterdamse oogst' and the 'Fenix Food Factory' in Rotterdam all sell locally produced products, besides national chains like Marqt. Experts are certain that this trends will continue, not only because people like to know where their food comes from and how it is produced (food transparency, food security, due to recent scandals in the meat industry), but also because of a growing awareness of climate change. Locally produced food might reduce food kilometers and might make a city or region become less dependent. Finally, the most important factor that adds to this trend is the demand for a food experience (Retailwatchers, 2014). Retailers in all sectors

underline the importance of adding an experience to distinguish oneself from other retailers. As webshops become more and more popular, the added value of real-life shops is expressed by adding a distinctive consumer experience. This applies to the food sector as well. An example is the Campina "Open farm days" (Campina, 2015). Apart from consumer aspects there is a growing number of people in the city that grow their own vegetables, both professionally on a large scale and in their backyard. Urban farming has assumed larger proportions and initiatives are being stimulated by municipalities.

Multifunctionality

Multifunctional farming is also seen as a huge opportunity for farmers (Ecorys, 2009). Ecorys estimated that turnover of locally produced food products, education and other rural services in The Netherlands amounted 232 million euros in 2007, excluding landscape maintenance (90 million). They estimate the growth potential of these activities to lie between 1,5 and 4,5 billion euros (Ecorys, 2009). Care farms, or combinations with recreation and nature education can help to raise the income of (urban)farmers. In turn, multifunctionality can also help to make food hubs more attractive for consumers. An example is the Fenix Food Factory in Rotterdam, where one can buy fresh products but also can consume them.

Organic food

Although the consumption of organic food has grown over the past years, 5,4% from 2012 to 2013, experts don't expect a huge growth of this segment (Rijksoverheid, 2013). The market share in 2013 was a mere 6,1%.

Growing efficiency of food production

Food production becomes increasingly efficient. In the Westland farmers no longer grow their vegetables in local soil. Development in food production techniques make it more efficient to grow them in specially designed boxes in which they can adjust the amount of water, nutrients and sun. More far-fetching developments like 3d printing of food, vertical and aqua agriculture, sensor technology and even weather modification technologies can play an important role in the food production of the future (STT, 2015).

As agriculture is a complex industry, it is hard to predict which trends and developments will persevere and determine the future. The Netherlands have a prominent role in the development of new techniques in food production. It is likely that new developments will be implemented especially in an already very technology-based, intensive agricultural areas such as the Westland in the MRDH region.

5. Recommendations for a metropolitan food policy

When one compares the ambitions of the first Food Strategies made in Rotterdam and The Hague with the reality of the current food network in the MRDH region, the obvious conclusion is that they describe two parallel worlds, one serving a local niche market and more concerned with awareness, recreation and education, and the other actually feeding the metropolis. This doesn't mean however that it is useless to propose a new food system that can feed the entire region in a more sustainable way, making use of the potential of local producers and traders. This could be the starting point for a new generation of food strategies on the regional scale. Three recommendations are listed below.

A. Establish a food region

A region composed of over 10 municipalities and millions of inhabitants is better able to negotiate with the global food sector, about locations and implementation of food hubs. This is also the best workable scale to close most loops in the circular economy: the metropolitan urban-rural metabolism. Food regions may also be a relevant scale to organize reuse of organic waste flows and (partial) food independence projects.

B. If you can't beat them, join them

Instead of competing with the supermarket and the fast-food chain, use them as a distribution channel and work with them to establish a change from within. This is probably the only way to reach the large public, beyond the 'wealthy & healthy', and to get a grip on the total food network. For bigger impact, food strategies need to leave the comfort zone of the niche market.

C. Resilient food system – stimulate the middle scale

Besides health, awareness and local production, the resilience or robustness of the food network as described by the WRR should be addressed in a metropolitan food strategy. Like in the financial sector, it might not be a good idea to rely only on large food conglomerates that are too big to fail, or too small to feed us. Questioning extreme centralizations and increasing local produce could be part of such a strategy. Especially in a world where the access to affordable fresh food will become less obvious.

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Strategy as a Tool for Replanning Cities

Strategy to Strengthen Trade of Local Producers in the State of Paraná, Brazil

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ABSTRACT

With the cities expansion and overcrowding, society needs to rethink the way that the cities will be developed in the future to ensure its survival not only economically, but aiming social fair development and environmental preservation. The goal of this article is to present a strategy to plan the cities for the future, through the methodology of local contextualization, risk and opportunities analysis, population needs, scenario development and feasibility testing. In this project it is presented a study applied to a disabled industry in the city 's-Hertogenbosch, the Netherlands. For the elaboration only secondary data were used, together with the assistance of university and local business (Avans Hogeschool and Except). A case study with local producers in the State of Paraná, Brazil, is presented in order to demonstrate how this strategy can be implemented. The analysis was done with practical studies together with stakeholders who are willing to strengthen trade of local producers.

1. Introduction

The world's population is growing and each year it raises the number of people living in the cities looking for better living conditions. A hundred years ago, 10% of the population were living in cities, today it is more than 50% and by 2040 it will be more than 75% (LEITE, 2012).

With the cities expansion and overcrowding, the housing market tends to stagnate, since the space becomes scarce. Besides this difficulty, another limiting factor is financial resources. The world is undergoing an economic crisis that also affects Brazil, where contractionary policies are being taken, reducing the investment capacity of the population.

With this vision, society has to rethink the way that it will develop in the future. How to ensure the income sources? What kind of work should be done? How to ensure that all stakeholders involved will be benefited? In the case of a developing country as such Brazil, the issue becomes even more delicate. It involves insecurity among stop growing or taking the correct actions for the integrated sustainable development. However, this requires a change in the society structure and mentality.

The world changing to ensure its survival not only economically, but aiming social fair development and environmental preservation. Resources and efforts must be directed to regenerate territories and create compact cities with high concentration of technology, innovation and sustainability.

The goal of this article is to present a strategy to plan the cities for the future, taking into account the local contextualization, risk and opportunities analysis, population needs, scenario development and feasibility testing. In this project it is presented a case study applied to a disabled industry in the city Den Bosch, the Netherlands.

2. Methodology

The city replanning requires a multidisciplinary approach, involving ecologists, sociologists, architects, engineers, economists, among others. These professionals must work together to order to develop resilience strategies for the cities of the future, building bridges between different sectors, but with needs and offers that complement each other. For example, a manufacturer may use biomass provided with a nearby farm to generate their own energy. While the farmer can get profit through a source that was not being used.

Some projects in this sector can be developed, such as software to calculate CO2 emissions, urban agriculture as a tool to reduce food shortages and urban renaissance projects through connections that add value to the city. In all cases, you must follow a strategy planning and execution, as shown in **Figure 1**.

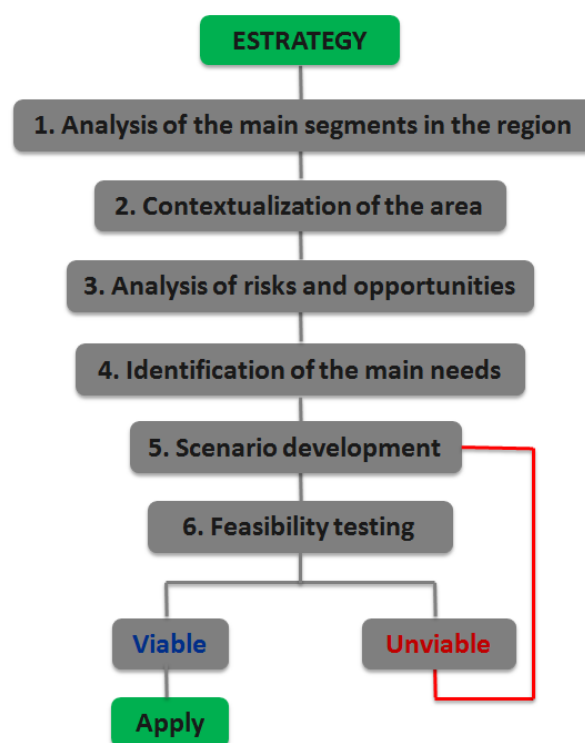


Figure 1: Strategy for City Replanning

3. Case study in 's-Hertogenbosch

To demonstrate the strategy described it will be used a case study applied to a disabled industry in the city of 's-Hertogenbosch, the Netherlands. The first step is to analyze the main segments of a city and the society which lives in it. One of the possible tools is to make a brainstorm by a multidisciplinary team. In this case, it was done with the joint work between students in the field of engineering, biology, construction, design and architecture.

CULTURE AND WELL BEING	<ol style="list-style-type: none"> 1. It is a social city, known for being a good place to relax e go out. 2. There is a lack of jobs (the population is growing). 3. There is a need for more education, students are moving to other.
FOOD	<ol style="list-style-type: none"> 1. There are farms around the city. 2. A lot of restaurants in the center.
NATURE	<ol style="list-style-type: none"> 1. Need for recreation.
ENERGY	<ol style="list-style-type: none"> 1. Intensify sources close to home (wind, solar, biomass).
TRANSPORT	<ol style="list-style-type: none"> 1. There are buses, metro and cycles ways, but it still needs renovation of mobility.

Table 1: The main topics raised about the city of 's-Hertogenbosch, the Netherlands

With the contextualization using the available resources (collection of primary and secondary data, mind maps, software, etc.), the next step is to do the analysis of risks and opportunities involving the site where project will be applied. In this case, the disabled industry, where we want to propose a new destination for the area. The tool used in this project is a SWOT analysis and it is shown in **Table 2**.

STRENGTHS	WEAKNESS
<p>Next to a canal Surrounding area of the fabric is growing The industrial area is big The city itself is growing (birth rate) The historical value of the fabric The storage area, volume and machinery</p>	<p>City is constructed on sand No good connection with the city center Lack of basic needs Roof of the storage 21 silos The condition of the building</p>
OPPORTUNITIES	THREATS
<p>Use the canal for social place Potential for new jobs Residents and commercial growth Reuse of the machinery and silos Keep the structure as a remarkable place Urban farm for restaurants</p>	<p>Local people not in agreement with changes Environmental risk with the growth Possibility of polluting the river Asbestos of the roof</p>

Table 2: SWOT Analysis about the disabled industry in 's-Hertogenbosch

Now knowing what is the city backdrop and what risks and opportunities the industry offers, we identify the main topics to be intensified or mitigated. That is, what the city needs and how the industry area could be used to supply them. The main issues raised are:

- Historical value of the building;
- The city is known for its social environment;
- The need for renewal of transport;
- There are many restaurants, but the food comes from out for the city;
- There is potential for generation of local energy;
- The waste produced (organic and inorganic) are incinerated or taken to landfills; and
- The city needs to create new jobs.

Now that the local study stage of the strategy was drawn up, we must create scenarios with the possible destinations for the site and then feasibility tests to ensure they are compatible with the city's needs. For example, imagine a scenario where the disabled industry will be used for power generation for the city using biomass originated from farms nearby. With this scenario, the historical value of the building would be maintained, the city would continue with their recreational activities, the city would produce its own energy, farmers would earn an extra income from the sale of biomass and new jobs would be created. However, the food would still come from other cities and transport still would not have their needs met.

To do this judiciously analysis and as close to reality as possible is necessary to make a careful analysis of the proposed scenarios and find that it really is feasible and so apply it. This choice will avoid investment waste and generation of future problems with the wrong choice.

Some questions should be raised, such as: Who are the stakeholders involved? The city needs were met in the best way possible? There are software which can simulate these scenarios. One is them is the Energy Transition Model created in the Netherlands to assist the work of government agencies, corporations, NGOs and educators.

Another tool designed to make the assessment of sustainability is the Symbiosis in Development (SiD), also created by a Dutch company called Except. This method aids in the development of sustainability innovations using systems-thinking, network theory, and life cycle understanding. SID can be used for many purposes, and one of its main applications is to make rapid and effective assessments, ensuring the integrity, including aspects such as circular economies, biobased design, resilience thinking and social justice (BOSSCHAERT, 2009).

2.1 Conclusion

The strategy presented is a tool to plan the cities for the future, taking into account the local contextualization, risk and opportunities analysis, population needs, scenario development and feasibility testing.

The city replanning requires a multidisciplinary approach, involving professionals who must work together to order to develop resilience strategies for the cities of the future, building bridges between different sectors, but with needs and offers that complement each other.

To do this judiciously analysis and as close to reality as possible is necessary to make a careful analysis of the proposed scenarios and find that it really is feasible and so apply it. This choice will avoid investment waste and generation of future problems with the wrong choice.

4. Case study in Paraná, Brazil

In order to demonstrate the strategy described a case study was done also in Brazil, together with stakeholders interested in strengthen trade of local producers in the State of Paraná. This stakeholders are the producer, distributors, government and university.

4.1. Analysis of the main segments in the region

Again, the first step was analyzing the main segments of the region where the local producers live. One of the possible tools is to make a brainstorm by a multidisciplinary team (Figure 2).

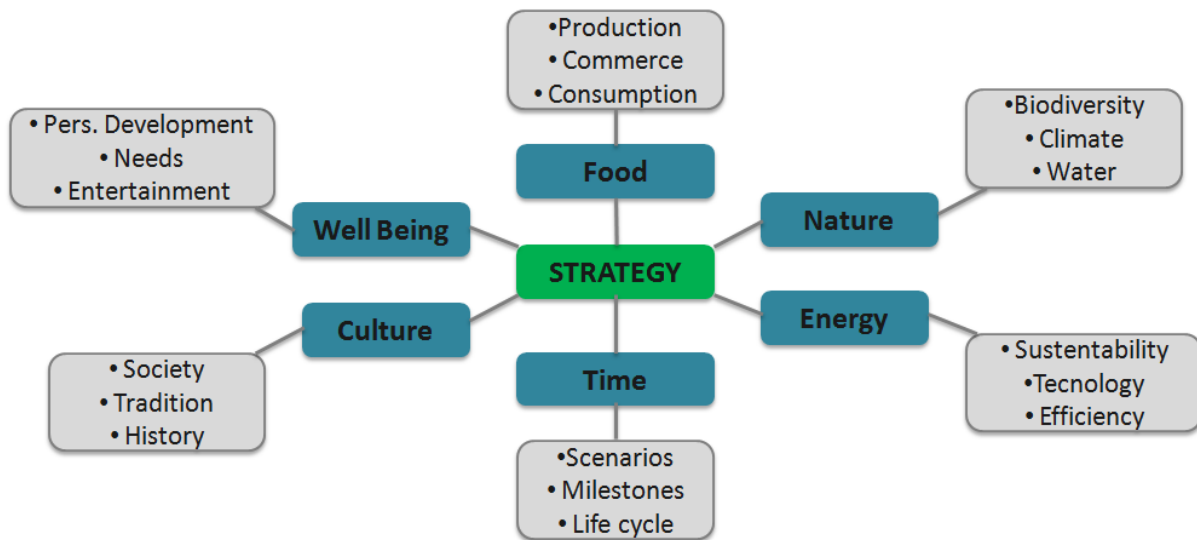


Figure 2: Mind map about the main segments of society

4.2. Contextualization of the area

The next step is to make a connection between the mind map and the region being studied. In the case of the State of Paraná the major topics raised are shown in Figure 3 and Table 3.

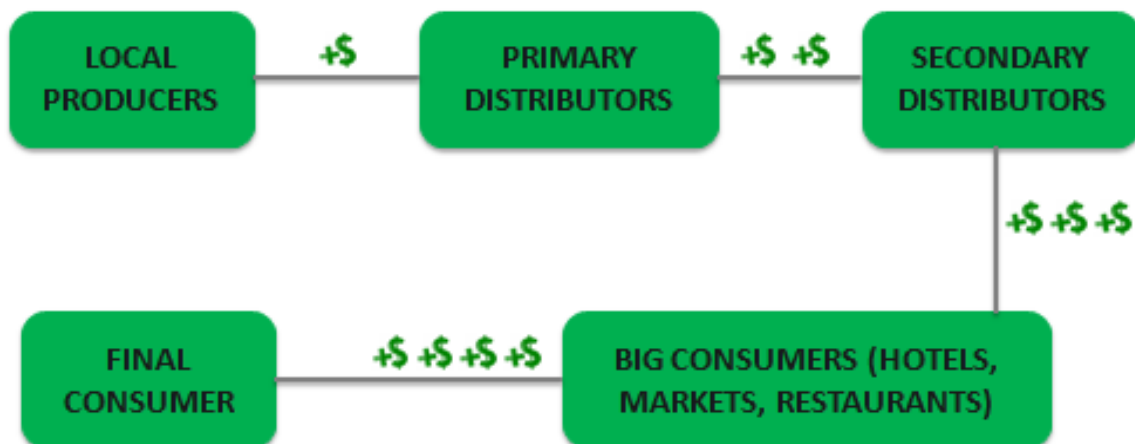


Figure 3: Financial flow of the products commerce

WELL BEING	<ol style="list-style-type: none"> 4. PERSONAL DEVEL.: they do not do training for fear of going out 5. NEEDS: vehicle for transport; spot in distributors; government support; training; organization; returnable boxes 6. ENTERTAINMENT: festivals in the region
FOOD	<ol style="list-style-type: none"> 3. PRODUCTION: abundant, but disorganized 4. COMMERCE: 20% of the profit is for distributors; a lot of foods are lost in transport; lack spot in CEASA 5. CONSUMPTION: abundant, markets want to buy direct from the producer (cheaper)
NATURE	<ol style="list-style-type: none"> 2. BIODIVERSITY: abundant 3. CLIMATE: propitious 4. WATER: abundant
ENERGY	<ol style="list-style-type: none"> 2. SUSTENTABILITY: local foods are healthier 3. TECNOLOGY: precarious, lack of vehicles to transport the food 4. EFFICIENCY: they are producing far below capacity for fear
TIME	<ol style="list-style-type: none"> 2. SCENARIOS: the producers don't have time to sell the product 3. MILESTONES: to have someone leading the commercialization of the products 4. LIFE CYCLE: during the whole year
CULTURE	<ol style="list-style-type: none"> 1. SOCIETY: very closed, simple, afraid to not get paid for what they produce 2. TRADITION: Polish, Italian 3. HISTORY: In the past they have been very exploited, living with little

Table 3: The main topics raised about the Local Producers in the State of Paraná, Brazil

4.3. Analysis of Risks and Opportunities

With the contextualization using the available resources (collection of primary and secondary data, mind maps, software, etc.), the next step is to do the analysis of risks and opportunities involving the site where project will be applied. In this case, the disabled industry, where we want to propose a new destination for the area. The tool used in this project is a SWOT analysis and it is shown in **Table 4**.

STRENGTHS	WEAKNESS
Abundant production and consumption; Enabling environment; People want to bring change; Markets want to buy directly from the producer; Healthier foods; They could produce more than they produce; There are labor (sons coming back home).	They do not do training for fear of leaving home; Lack vehicle for transporting products; No place in distributors; Lack organization of production; Food lost in logistics; Intermediaries pay little; Producers do not have time to sell.

OPPORTUNITIES	THREATS
Do training; Arrange the transportation logistics; Have a local leader for organization and distribution of products (-20% price); Use returnable boxes; Be partnering with markets; Get investment and obtain the highest profit.	Lack of government support; Resistant crop changes (trauma coming from the exploitation that they passed during the colonization); Today, they survive the way they are; Lack investment.

Table 4: SWOT Analysis about the Local Producers in the State of Paraná, Brazil

4.4. Identification of the main needs

Now knowing what is the city backdrop and what risks and opportunities the local production offers, it was raised what the producers need and which local actions could be used to supply them, which are:

- Do training / update;
- Arrange the transportation logistics;
- Have a leader for organization of production and sales;
- Use returnable boxes;
- Be partnering with guaranteed consumers;
- Getting investment.

4.5 Scenarios development

4.5.1 Fair of the Products

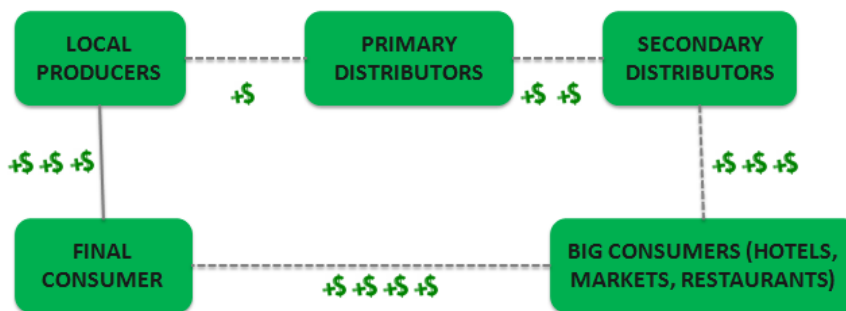


Figure 4: Financial flow of the products commerce in fairs

As a Municipal Market, the goal is to sell directly to end consumers. Thus, the benefit must be supply products slightly cheaper than the markets, to attract consumers. In the image is shown a Fair in Belo Horizonte, Brazil.



4.5.2 Cooperative of Local Producers

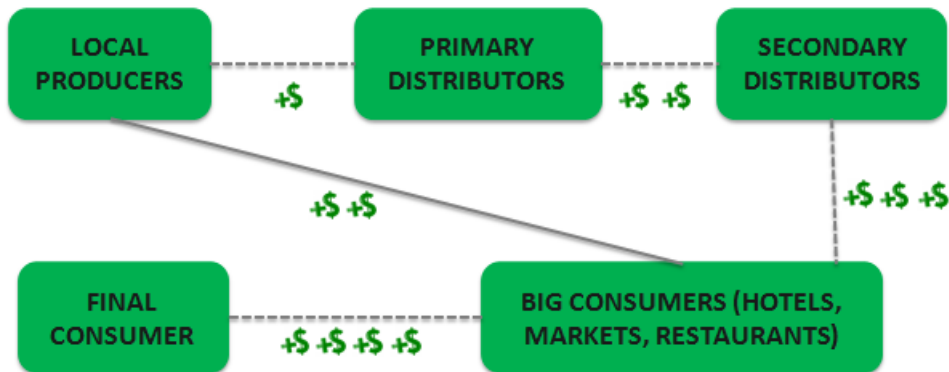


Figure 5: Financial flow of the products commerce in cooperatives

As a distributor, the goal is to meet the major consumers. Thus, the benefit must be supply products a little cheaper than distributors. In the image, is shown a Fair Trade from the Cooperative in São Paulo, Brazil.



4.5.3 RUAF Foundation

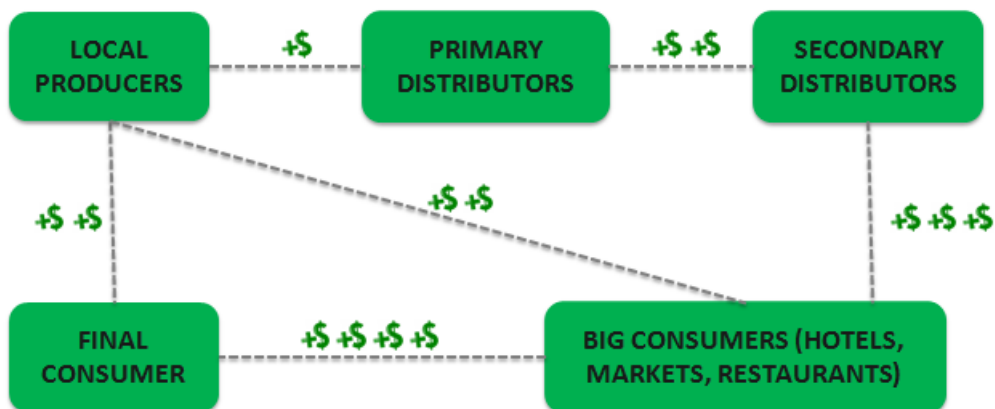


Figure 6: Financial flow of the products commerce with RUAF support

Spread the contribution of urban agriculture to reduce poverty, promote food security, management and city planning as well as promoting participatory management and the organization of farmers.

4.6 Feasibility testing

4.6.1 The scenarios meet the needs of the producers?

NEEDS	FAIR OF THE PRODUCTS	COOPERATIVE OF LOCAL PRODUCERS	RUAF FOUNDATION
Do training / update	Maybe	Maybe	Maybe
Arrange the transportation logistics	Maybe	Yes	Maybe
Have a leader for organization of production and sales	Yes	Yes	Maybe
Use returnable boxes	Maybe	Maybe	Maybe
Be partnering with guaranteed consumers	Yes	Yes	Maybe
Getting investment	Yes	Yes	Maybe

Table 5: Meeting the needs of the producers

4.6.2 Who could start working to implement the strategy, with order of interest?

NEED	STAKEHOLDER
Use returnable boxes	Company
Have a local leader for organization and distribution of products	Marcos (local distributor)
Be partnering with markets	Markets
Arrange the transportation logistics	Cooperative
Do training	UFPR (University)
Getting investments	Producers, government

Table 6: Possible stakeholders to implement the strategy

4.7 Conclusion

The first step to implement this strategy in Paraná, Brazil, is finding the best and possible way to apply it. By the study, it was identified if the scenarios meet the needs and if there are stakeholders interested to take actions towards it. The key, is finding the answer for the question:

"Which partnership with the company who sells returnable boxes could be made with the local leader for organization of producers so that they get guaranteed customers and develop the cooperative in order to improve transport logistics, enabling producers and Finally, get investment and government support?"

The replanning requires a multidisciplinary approach, involving professionals who must work together to order to develop resilience strategies for the cities of the future, building bridges between different sectors, but with needs and offers that complement each other. Currently in Paraná, the negotiations with the stakeholders interested to implement the strategy already started.

5. Final Considerations

For the elaboration of the case studies primary and secondary data were used, together with the assistance of university and local business. In order to make a deeper analysis so its content become close to the ideal, practical studies should be conducted with more information and technologies.

In Brazil some cities already took advanced steps towards a more sustainable way of feeding the metropolis, such as in Belo Horizonte. But in the state of Paraná is not yet implemented any large urban design for the necessary regeneration of our cities. As a result, there is a great need for in-depth research on integrated sustainability, in order to plan the country development strategically according to the local needs and global trends.

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