10.North Lebanon Coastal Zone (NLCZ)

Section 1. Coastal Issues:

1.1 Why did you select the identified coastal issues?

The selected coastal issues for the North Lebanon Coastal Zone (NLCZ) CASE are:

- Urban sprawl/artificialization. Most of Lebanon's population and its activities are concentrated on the CZ. According to the report "Analysis Of The Current Land Use And Socio-Economic Activities In The Coastal Zone" produced by the Environmental Resources Monitoring in Lebanon project (UNEP-Ministry of Environment, 2013 to be published), the artificialization of the coastal zone reached more than 5.2 % of the total surface of coastal cadastral units (46,100 ha) between 1998 and 2010. 7% (160 ha) of the artificialization are considered as sea filling.
- Erosion: Previous research carried-out at the Marine Resources and Coastal Zone Management Program at the Institute of Environment-University of Balamand (MRCZM-IOE-UOB) within the context of the project entitled Integrated Management of East Mediterranean Coastlines (IMAC), funded by the European Commission (MED/2005/110-659) (IMAC project; home.balamand.edu.lb/IMAC) has revealed that beaches are highly eroded increasing risk of storm surges and coastal flooding.
- Impact on fisheries: Fisheries in Lebanon is artisanal and is restricted to shallow coastal areas. Urban development and environmental degradation in coastal areas have negatively impacted the fisheries sector. Results from the IMAC roundtable on fisheries highlighted the lack of governmental support and the negative impacts of industry, pollution in general and destruction of coastal marine habitats in particular.

In addition, the consultation with stakeholders on many occasions through several projects targeting the the CZ showed that the above issues are the most important priority issues to be addressed on the NLCZ.

What is the social, political and economical relevance of the identified coastal issues?

As mentioned before, the identified issues where selected based on the main outputs of the IMAC project and are as follows:

Economic Valuation of the Coastal Zone of the Mohafaza of North Lebanon: Municipal assessment focusing on the budget and capacities of municipalities concluded that local authorities lack the financial and human resources to address environmental challenges. This study also assessed the socio-economic situation of residents (education, gender, income,…) and their perception of the coastal zone, the partial GDP of the target area and main economic activities.

The study recommended the establishment of an entity either through the existing governmental structure or the creation of a new one to take charge of the coastal zone.

The MRCZM is developing a BBN model in order to improve the quality of decision-making in regards to the interaction between the manmade and the natural environment for the issue of artificialization on the NLCZ. Several indicators were therefore chosen from the PEGASO toolbox:

- Area of built-up space (Annex 1).
- Erosion and instability (Annex 2).
- Value added per sector (Annex 3).
- Number of enterprises (Annex 3).

Also, the MRCZM is currently in the process of launching a coastal forum (Annex 4).

Section 2. Relations between coastal issues and the ICZM Protocol and Principles.

2.1 How do the selected coastal issues relate to the ICZM principles and protocol?

Coastal Issue / ICZM Protocol Principle	**Erosion**	**Urban sprawl/Artificialization**	**Impact on Fisheries**
(a)	X		X
(b)	X	X	X
(c)	X	X	X
(d)			
(e)			
(f)	X	X	X
(g)		X	X
(h)		X	X
(i)	X	X	X
(j)	X	X	X

Section 3. Policy issues and ICZM principles and approaches.

3.1 So far, how have been the coastal issues addressed by the local/regional government?

They have been addressed sectorally with an economic growth mentality without any consideration to sustainable development. The marine/coastal environments are still considered as areas of urban development and exploitation, especially by the tourism sector. A maritime public domain separating private lands from the shoreline exists, but the majority of it has been privatized over the past three to four decades.

3.2 At which spatial scale?

At municipal level and taking into consideration the maritime public domain.

3.3 Can you assess the results of the implemented policies? Which are the main results achieved?

No positive results can be reported as no policies specifically addressing the coast and its adjacent marine waters in an integrated manner exist.

3.4. On the basis of the ICZM principles (as they are expressed by the Protocol), do you think that the coastal issues were addressed with an integrated approach (in terms of organization, politics, tools, etc)?

No.

Section 4. Relevance with National ICZM process

4.1 Do you think that your work is relevant for the ICZM process of your country? Why and how?

A strategy for the coast of North Lebanon has already been produced through the IMAC project by the MRCZM-IOE-UOB, and current activities within the PEGASO CASE implemented selected components of this strategy.

One of the objectives of the IMAC project was to establish a Coastal Forum (CF) that would serve as an informal platform to "engage different sectors and interested organizations in the discussion and promotion of issues or concerns related to the coastal area of North Lebanon". Its role, tasks and structure were therefore defined in the strategy document of the IMAC project. The strategy document also suggests possible steps for the implementation of this forum as well as the identification of possible sources of financing.

As part of the IOE's commitment to ensure sustainability of its axes of research and development activities, and since the CF emerged as an essential requirement of stakeholders through the IMAC project, the concept of the CF was further elaborated as part of the PEGASO-CASE actions.

Furthermore, the IOE has gathered and analyzed data related to the shallow area (0-30m depth) of the NLCZ where further investigations were launched to study beach dynamics (granulometry, beach profiling and wave and current profiling). In addition, and through several projects addressing the environmental and socio-economic challenges experienced on the NLCZ were achieved leading to a better understanding of the status of this coastal stretch (economic assessments, legal studies, ecological studies, research on conflict resolution, and GIS and remote sensing analysis).

4.2 On the basis of the work that you have done, which are in your opinion, the main constraints in implementing ICZM principles and tools? What is missing? Where are the main gaps? Where we should put more energy and resources in the future?

Problems exist on several levels, with the main challenges being the following:

- Absence of a national strategy addressing coastal challenges through an integrated approach.
- Absence of an integrated land-use plan for coastal areas.
- Lack of awareness of the political body of the importance of preserving coastal habitats for the benefit of the public at large.
- Lack of awareness of the political body and the public at large of the importance of the coast in reducing coastal risk in a changing climate.
- Lack of funding for research and development activities to better understand coastal dynamics and to better introduce sustainable development legislation.

- Shy presence of coastal and marine sciences in school and university curricula preventing up-coming generations from understanding and dealing with the challenges that coasts face.

Effort should concentrate on:

- Funding essential research and development activities to fill information gaps.
- Increasing the awareness of the political body as well as the public at large on the role of coastal zones including their capacity to reduce coastal hazards and to provide resources for the well-being of society.
- Develop an integrated land-use plan for the CZ.
- Update legislation related to the coast and associated marine resources.

Section 5. Stakeholders involvement

5.1 Have you involved the main stakeholders?

The main stakeholders were involved on many occasions. This involvement started with the IMAC project (please refer to the Download section on the IMAC website home.balamand.edu.lb/IMAC for further details) and continued throughout the implementation of the CASE activities, more specifically when developing the BBN model. The same stakeholders are continuously involved in participatory activities of all projects implemented by the IOE that target the NLCZ.

5.2 How have you involved them (e.g. focus group, interviews, questionnaire)?

In the IMAC project, involvement was through workshops, surveys & questionnaires, direct contact and meetings, and a one month awareness campaign. Please refer to IMAC reports for further details. In addition, stakeholders of the NLCZ have been and are still being involved through several projects:

- "Evaluating coastal risk on the Chekka El Heri beach" project through the assessment of the physical oceanographic parameters (2011-2013) and funded by the UOB Research Council. This multidisciplinary study aims at understanding the physical factors that affect the retreat and deterioration of the Chekka/El Herri beach and that have led to reduction of its role as the first line of defense against wave breaching. A questionnaire is administered to the local inhabitants, stakeholders and end-users to evaluate the changes in usage over time of this portion of the Chekka/El Herri beach.
- Environmental Resources Monitoring Project (2011-2012) funded by the United Nation Environment Program. One of its components aimed to improve the understanding of the environmental quality in Lebanon and its implications for the population through the development and implementation of environmental monitoring programs developed based on scientific assessment, review of existing legislation and development of appropriate monitoring strategies for the CZ of Lebanon.
- Conflict and Environment in North-Lebanon: A longitudinal study of environmental and socio-economic mitigation processes in conflict-affected areas (2009-) funded by the Netherland

Organization for Scientific Research-WOTRO Science for Global Development. This project is assessing risks associated with long-term conflicts related to vulnerabilities of the human-environment system. Workshops and meetings are continuously being held with the community of the NLCZ.

- Survey of the Fishing Sector and Associated Acrivities in Abdeh Harbour - North Lebanon (2009), funded by the UNDP. It analyzed and reported on frame survey and legal context for the fishing sector in Abdeh Harbour with monitoring of daily/weekly reports on environmental compliance of the dredging activities. Activities were agreed upon through meetings with the fisherman cooperative of the region.
- Assessment of Commercial Fish Species (2004-) that is a resource center for fisheries data on the Lebanese coast and beyond. Gathered information is entered in the Fish Landing Operational Utility for Catch Assessment database (FLOUCA) allowing the generation of monthly and yearly trends. The main goal of the initiative is to establish long-term monitoring of commercial fish landings and effort in order to contribute to developing appropriate management plans based on scientific data to sustainably benefit from the resource. At least 2 times a week, data is collected from fishermen by personal contact, and regular meetings held with fishermen cooperatives and representatives of the Ministry of Agriculture.
- MEDERMIS (2000-2004), funded by University of Athens, Greece, AMIDEAST, ACT, FHS-UOB. The project produced a set of calculated indicators at the local level and disseminated them through a web-based “information system” to the public at large to enhance transparency, accountability and good governance. Indicators were selected and decided upon by the communities of each municipality in several workshops held over several years.

As for the PEGASO project, the involvement was mainly through a BBN exercise addressing the issue of artificialization of the NLCZ.

The BBN is being carried-out in the following four steps:

Step 1: Expert meeting for the identification of influences and drivers in order to build a first draft of the BBN.

Step 2: Translation of the BBN into a questionnaire in order to determine states and probabilities for each influence/driver. The questionnaire is then sent online to the attendees of the first expert meeting for pilot testing. Experts are solicited to provide comments on the questionnaire if any.

Step 3: Production of the final form of the questionnaire after addressing all the comments of the experts and analyzing the answers in order to evaluate the appropriateness of the questions. The final form of the questionnaire is then sent to all concerned stakeholders on national level for completion.

Step 4: Results of the questionnaire at national level will be represented in a complete BBN model with measurements and introduced to stakeholders in a large seminar.

The UOB-PEGASO Team has completed the majority of Step 3 and the questionnaire is currently being produced in “Survey Monkey” to be sent to all stakeholders on national level.
On the other hand the concept of the North Lebanon CF has been updated from its original form as produced by the IMAC project to:

- Create a network of communication between experts and the public to discuss CZ issues.
- Form a platform for an open exchange of information.
- Spread awareness on coastal problems and conflicts and propose solutions.
- Propose new strategies to improve Coastal Zone Management (CZM) with the help of public and private institutions and/or any interested individual as a collective initiative for a balanced development of the coastline.
- Develop a better understanding of the coastal environment through awareness-raising in schools, colleges, clubs and NGOs.

5.3 Which kind of constraints have you faced?
Funding for material and human resources; level of awareness; knowledge of and acceptance of the integrated approach; the political and security situation in the country.
Section 6. Tools
6.1 Which tools (indicators, LEAC, scenario, participation, economic assessment and social valuation or others) have you used during the activities of the CASES?
Given the urgency to address artificialization, the “area of built-up space in the coastal zone” (Annex 1) and “coastal erosion and coastal instability” (Annex 2) indicators were selected. It is well understood that coastal zones are often areas of intense economic activities, and the Northern Coastline in Lebanon is no exception. Therefore the “value added per sector” and the “number of enterprises” indicators were also taken into consideration and calculated (Annex 3).
6.2 Which have been the main constraints faced during the application of the tools?
The main constraints in applying the PEGASO tools have been identified as follows:

- Delay in the production of the tools.
- Once produced, the technical requirements for some tools were beyond the capacities of the CASES.
- Lack of data.

Furthermore, the PEGASO project did not foresee any funds for acquiring necessary resources that will allow the development of an advanced CASE in terms of results (like buying data or spatial imagery). The MRCZM-IOE-UOB had to rely on its proper resources to use the tools, specifically that these tools were developed on the basis of availability of the information needed to generate the results. Therefore, the NLCZ CASE was built on, and results limited to, databases already available at the IOE.

Section 7. Main results of CASES

7.1 Achievements

- Calculation of the above mentioned indicators.
- BBN model for “Controlling artificialization” (ongoing).
- Coastal Forum (ongoing).

7.2 Lesson learnt

- All project partners had the chance to practice the participatory process and gain much relevant expertise.
- European project partners gained a better understanding of social, economic and environmental situations and processes in Lebanon.
- The MRCZM-IOE-UOB team gained better understanding of social, economic and environmental situations and processes on many Mediterranean and Black Sea coasts.
- The implementation of the project within an international partnership fostered the management skills of the project partners and promoted intercultural understanding.
- The local partner gained significant expertise in the course of the project.
- Following the technical expertise that the local partner gained, coastal zone research and development has been anchored as a main theme at the University of Balamand. The Lebanese team at the University of Balamand had the chance to attend several meetings which contributed to the exchange of expertise in marine sciences and coastal zone management. Several actions were started during PEGASO and will be continued after the closing of the project in line with IOE policy to build on achievements and to benefit from experience gained for the protection and conservation of Lebanese coastal resources and beyond...

Area of built-up space in the coastal zone indicator

Indicator (name)	
Area of built-up space in North Lebanon Coastal Zone NLCZ	
Objective of the indicator	
Urban sprawl and artificialization are common to the whole Mediterranean basin. In North Lebanon, the problem is quite severe where 80% of the population lives on the coastal zone. In addition, the area encloses the international highway to Syria and the Tripoli Marine Port, the second largest commercial port in the country. Therefore, anthropogenic activities like sea-filling, sand dredging and marina development are main contributors to the degradation of the NLCZ. This degradation is negatively affecting the economy and wellbeing of coastal communities through the loss of important natural capital. This is further compounded by the increase in intensity and frequency of natural hazards born at sea due to climate change. Balanced urban development taking into consideration changes in coastal dynamics and coastal degradation has not been seriously addressed in Lebanon. Consequently, urban sprawl and artificialization have become a real threat to the health of coastal ecosystems.	
Policy context	
ICZM Policy Objective	Policy objective: To have a balanced use of the coastal zone, and avoid urban sprawl
ICZM Protocol Article	Article 8: **Protection and sustainable use of the coastal zone** To establish in coastal zones, as from the highest winter waterline, a zone not less than 100 m in width, where construction is not allowed; (EXCEPT FOR areas having particular geographical or other local constraints, especially related to population density or social needs, where individual housing, urbanisation or development are provided for by national legal instruments) To identify and delimit, outside protected areas, open areas in which urban development and other activities are restricted or, where necessary, prohibited; To limit the linear extension of urban development and the creation of new transport infrastructure along the coast;
UNEP-MAP Ecological Objective	8.2 Integrity and diversity of coastal ecosystems, landscapes and their geomorphology are preserved 8.2.2 Change of landscape types

INSPIRE ANNEX I-III Data Theme (34)	Annex II-2 (land cover) Annex III-4 (land use)

Spatial consideration	
Coverage	
Coastal Zone of North Lebanon (NLCZ)	
Resolution	
Cadastral units with shorelines on the NLCZ	
Spatial Object	
Shapefiles (polygons)	

Temporal consideration	
Period	Resolution (time interval or unit)
1998-2010	12 years

Parameter(s)	
(i)	Land use per Cadastral Unit
(ii)	Distribution of Artificialization per Cadastral Unit
(iii)	Percent of built-up land by Cadastral Unit and by Caza

Calculation method		
Steps		Products
1	Use of Landsat TM satellite images for the years 1998 and 2010: Seven spectral bands with a spatial resolution of 30 meters for bands 1 to 5 and 7. Spatial resolution for band 6 (thermal infrared) was 120 meters resampled to 30-meter pixels. Approximate size of each scene is 170 km north-south by 183 km east-west.	Land cover/land use (LCLU) map of 1998 LCLU change between 1998 and 2010 map
2	Built up space calculated by summing up the urban areas and the artificialized areas between 1998 and 2010.	Area of built-up land within each Cadastral unit with shorelines on the NLCZ (Figures 1-2-3-4-5-6)

Assessment context	
Use of the indicator in previous assessments/initiatives	SAIL DEDUCE
DPSIR framework	P

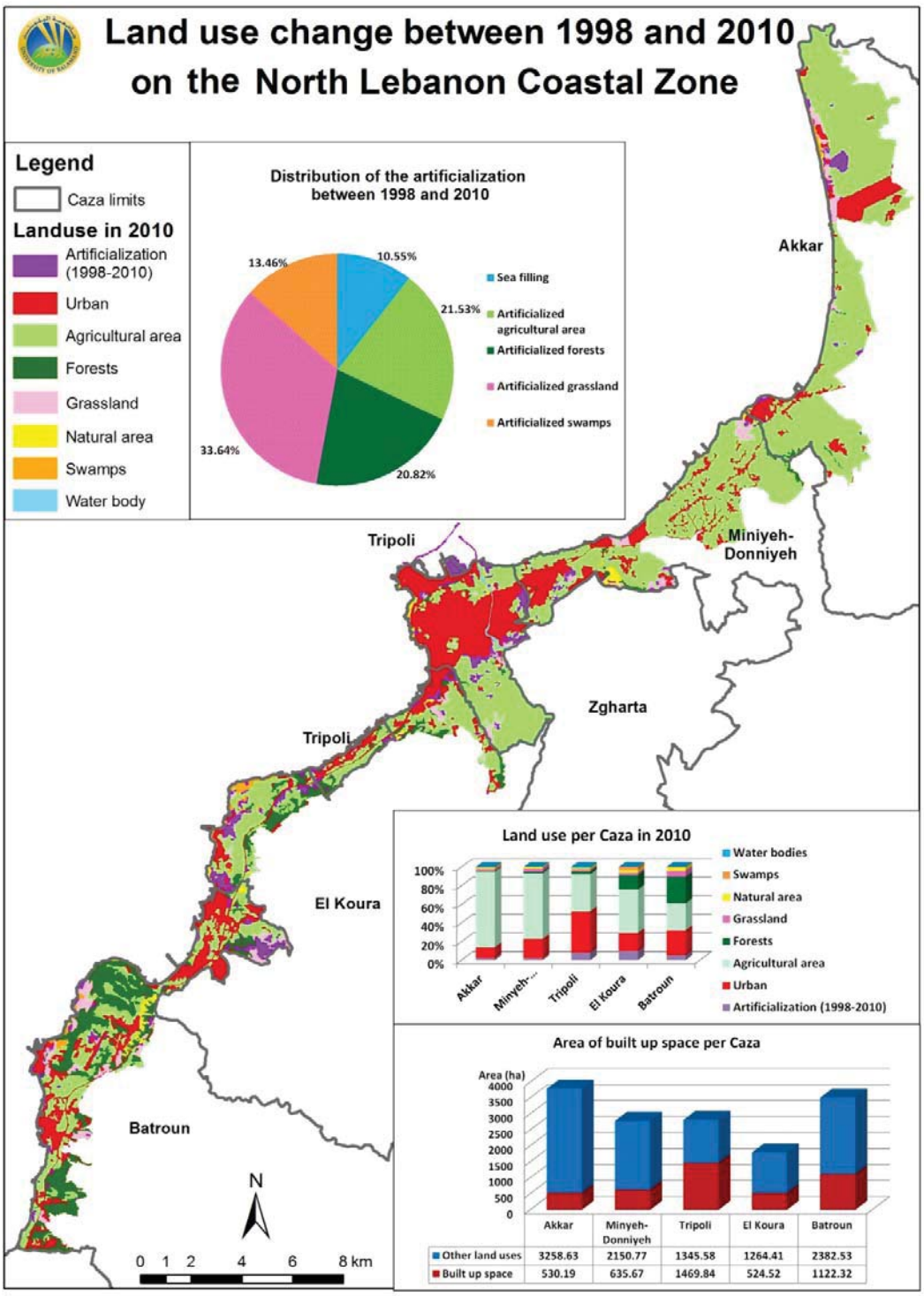

Figure 1: Land use change map of NLCZ

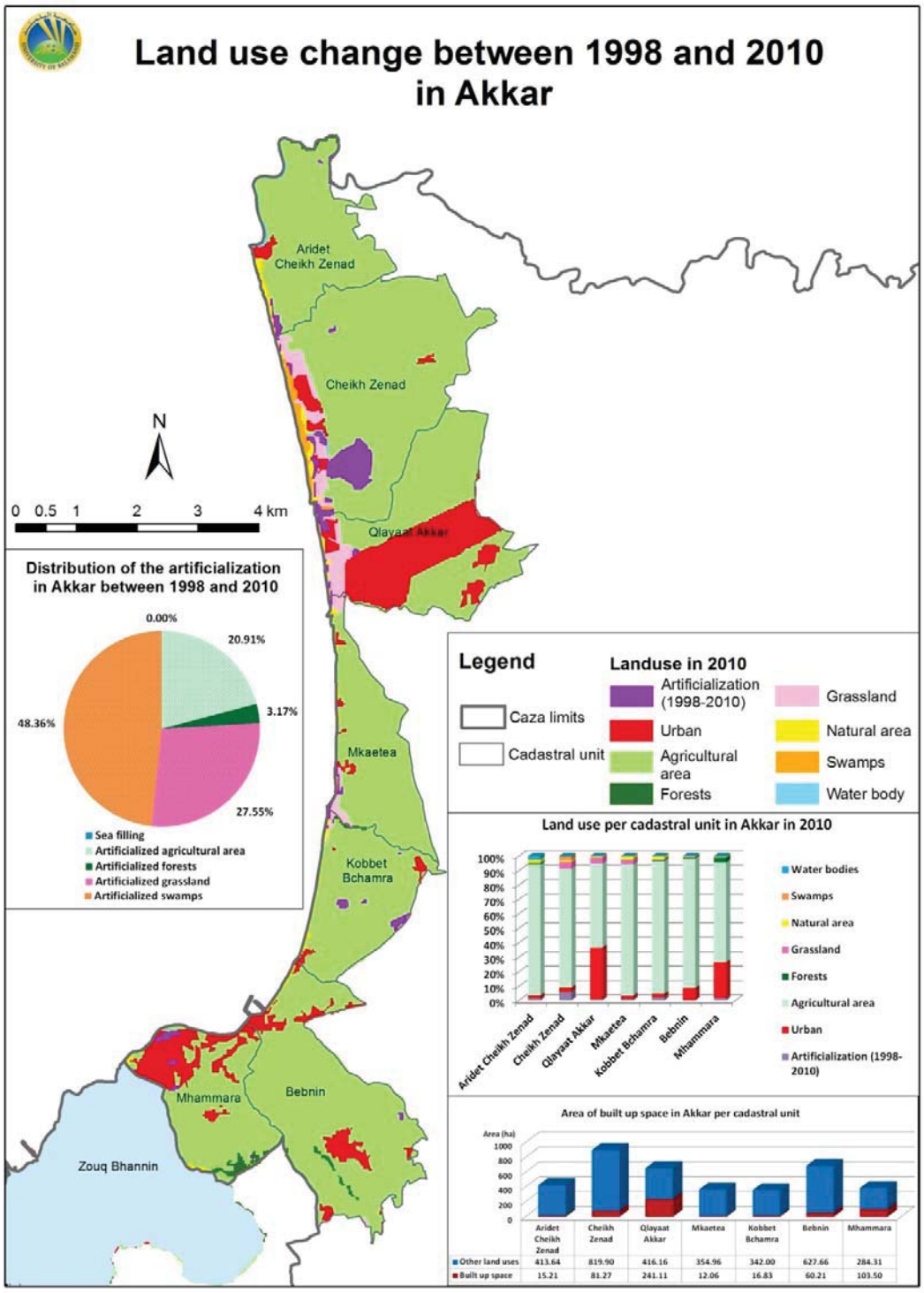

Figure 2: Land use change map of the Caza of Akkar

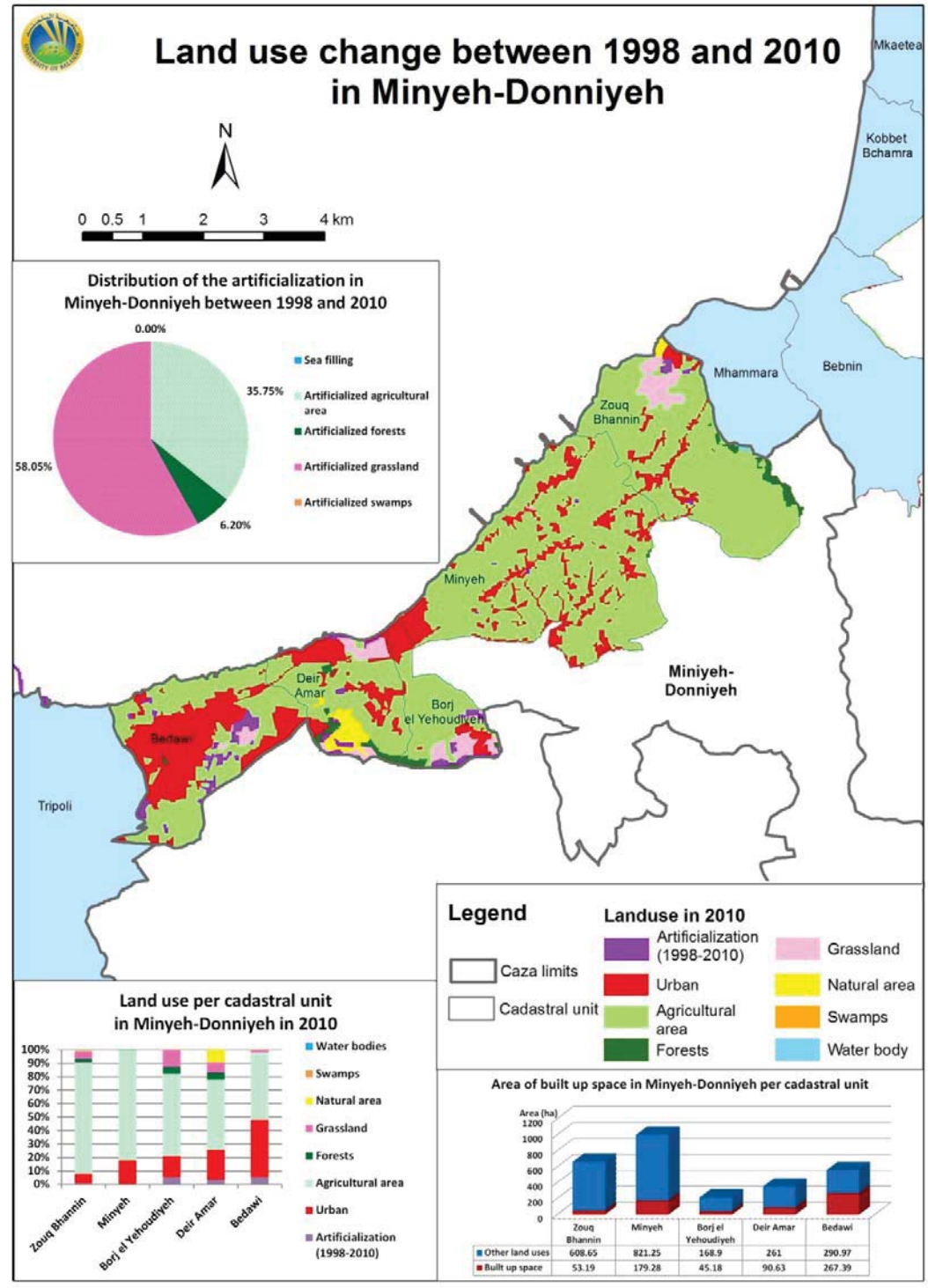

Figure 3: Land use change map of the Caza of Minyeh-Donniyeh

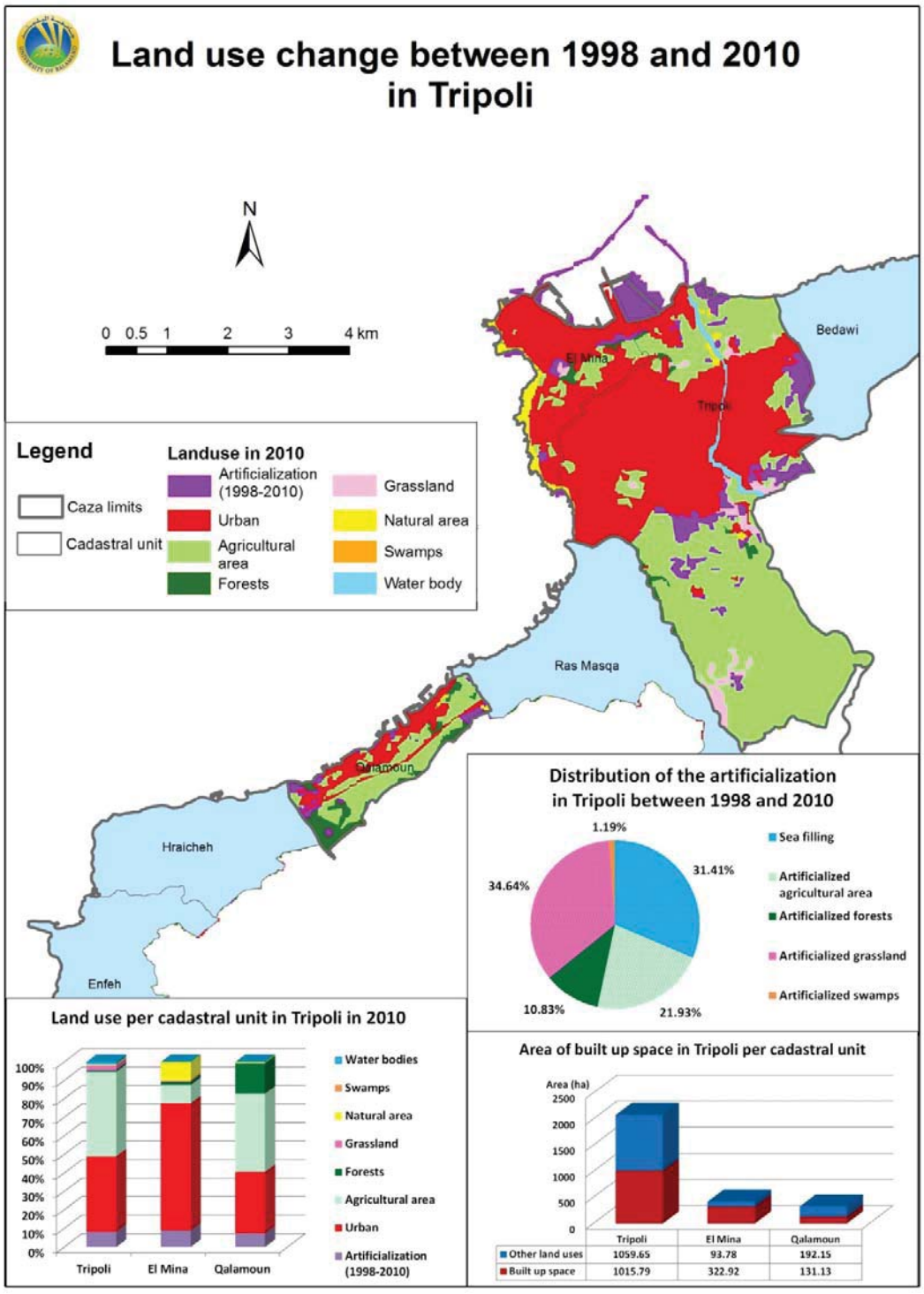

Figure 4: Land use change map of the Caza of Tripoli

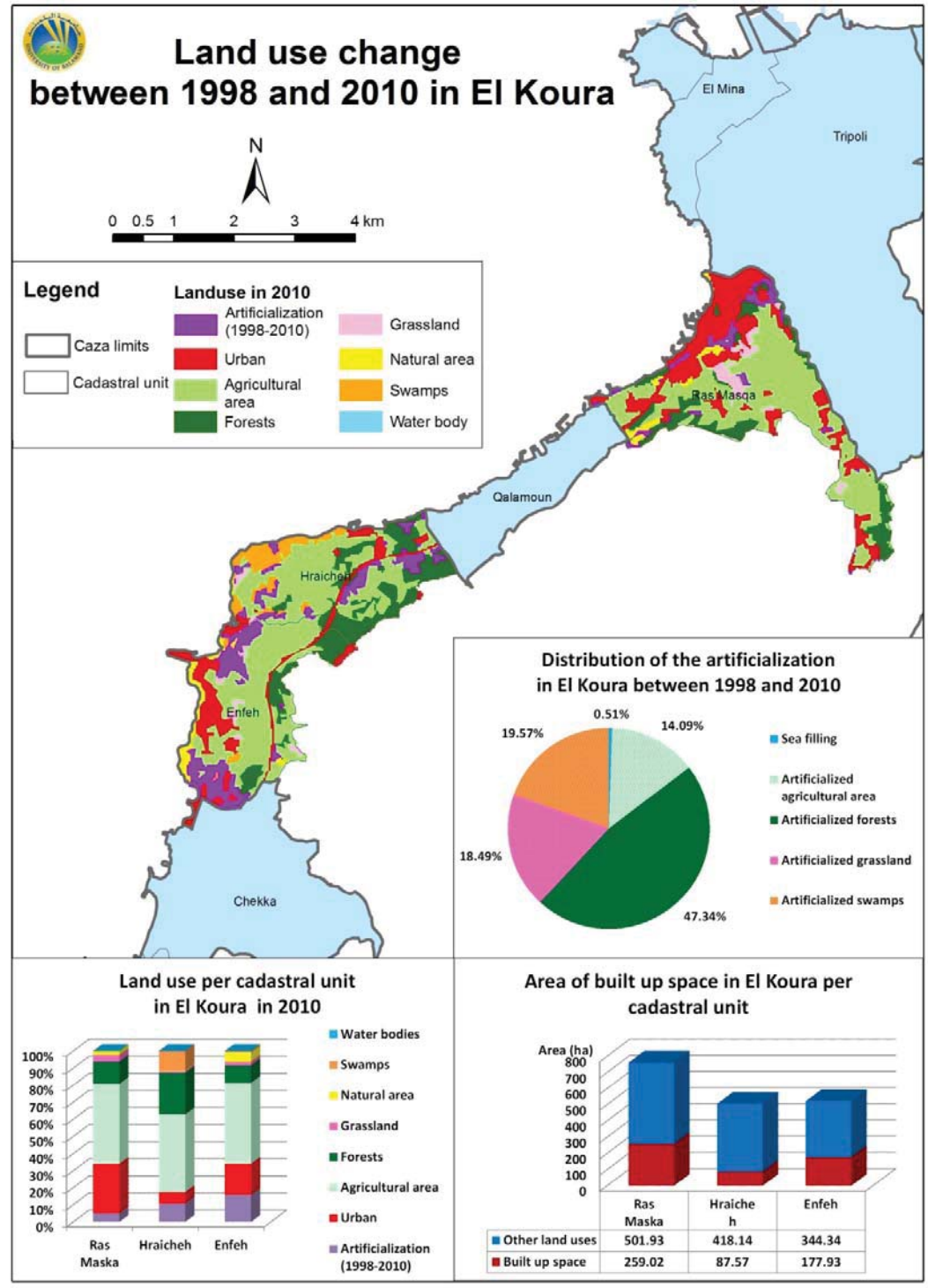

Figure 5: Land use change map of the Caza of El Koura

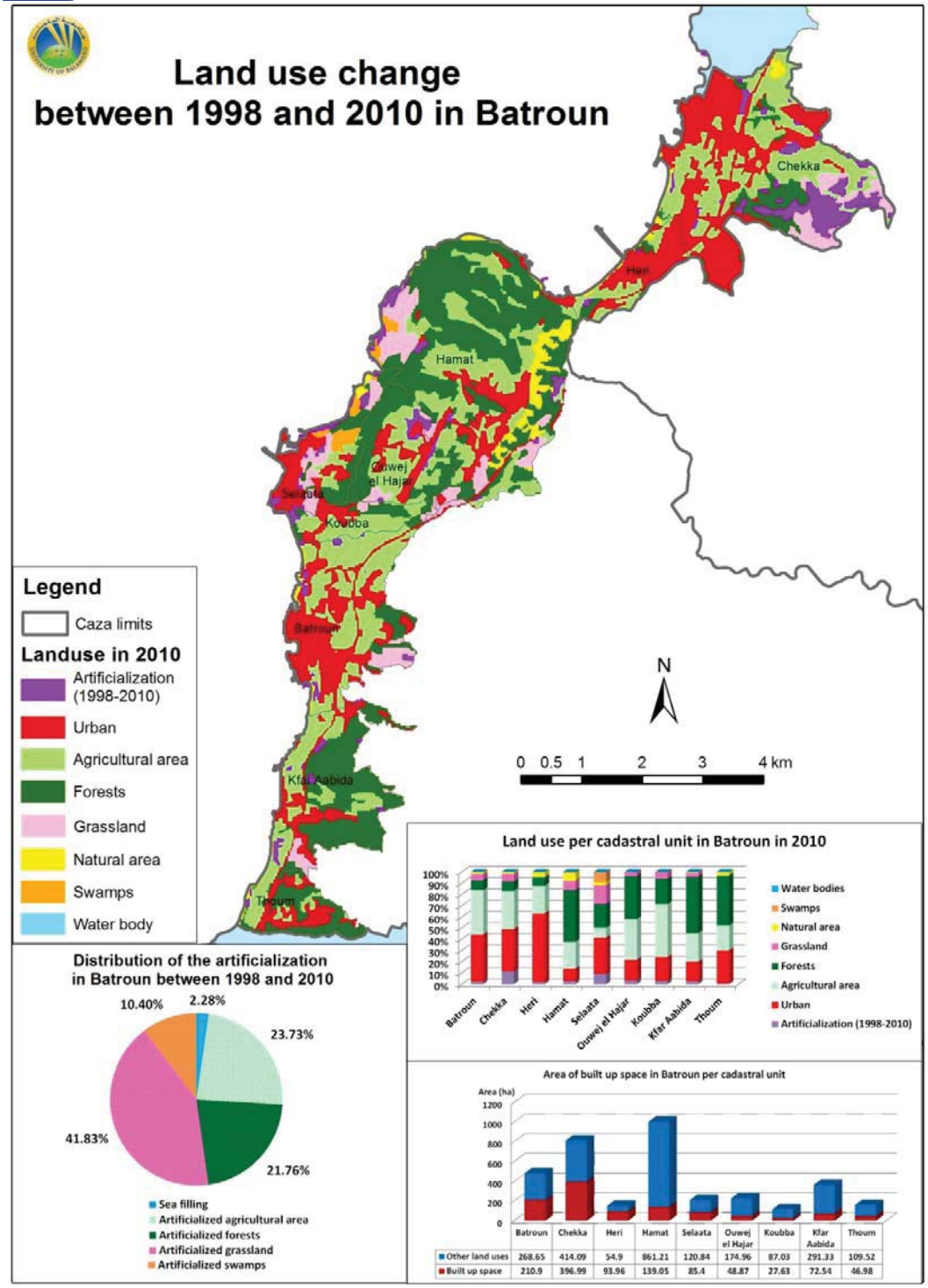

Figure 6: Land use change map of the Caza of Batroun

Annex 2

Coastal erosion and coastal instability indicator

Indicator (name)
Areal extent of coastal erosion and coastal instability.
Objective of the indicator
The total length of the coastline in North Lebanon is 100 km which constitutes around 42% of the total Lebanese coast. The coast is sandy or pebbly with typical rocky terraces which function as an important wave barrier protecting the coastline from storm surges and erosion due to strong winter storms. Beach erosion due to sand and gravel extraction from the coastal areas and riverbeds has been extensive through the years of war. Currently such activities are utterly prohibited by law (Decree 15649-1970), however they are still being practiced at a much lower rate due to the absence of strategies to find alternative sources of basic building material. Detecting erosion, accretion and sea filling along the coast of North Lebanon are indispensable parameters for the monitoring of coastal health and erosion indicators. This indicator can provide an insight on the evolution on the Northern shoreline in the last 50 years in order to identify the causes of shoreline change, identify drivers of coastal stresses, calculate the rate of urban sprawl, model coastal risk and raise awareness on the necessity for responsible coastal zone management.

Policy context	
ICZM Policy Objective	8) To prevent damage to coastal environment, and appropriate restoration if damage already occurred
ICZM Protocol Article	Article 23 – coastal erosion
UNEP-MAP Ecological Objective	Objective 8 The natural dynamics of coastal areas are maintained and coastal ecosystems and landscapes are preserved Operational objective 8.1: The natural dynamic nature of coastlines is respected and coastal areas are in good condition
INSPIRE ANNEX I-III Data Theme (34)	Natural risk zones Oceanographic geographical features

Spatial consideration	
Coverage	Resolution
North Lebanon Shoreline	1962: aerial photographs 1:8000 1970: Russian satellite image 1m resolution 1994: Russian satellite image 2m resolution 2007: Quick bird 60 cm resolution

Temporal consideration	
Period	Resolution (time interval or unit)
From1962 (T0) to 2007	Data also available for 1970 and 1994

Parameter(s)	
	Areas of beaches affected by erosion, accretion, or sea filling

Calculation method (based on DEDUCE factsheet)		
	Steps	Products
1.	5 km inland and 5km offshore Reporting unit: Surface area of changes in the state of the shore	
2.	Base map: Aerial photo of 1962 to draw the shoreline of the NLCZ	Map of the shoreline NLCZ (100km)
3.	Digitization of the shorelines for the four above mentioned years through photo-interpretation; shorelines of sandy beaches drawn according to the High Water Limit (HWL) seen on the imagery as dry/wet sand.	Digitized shorelines of 1962, 1970, 1994 and 2007
4.	Comparison between the shorelines for the years 1970, 1994 and 2007, respectively using the year 1962 as T0.	A number that estimates changes in the coastline classified either as eroded, accreted or sea filled
5.	Surfaces were measured as polygon areas.	Surfaces of eroded, accreted or sea filled areas (Figures 1,2,3)

Assessment context	
Use of the indicator in previous assessments/initiatives	DEDUCE
DPSIR framework	State - Impact
Link to anthropogenic pressure	Construction of infrastructure (protective structures, harbours)

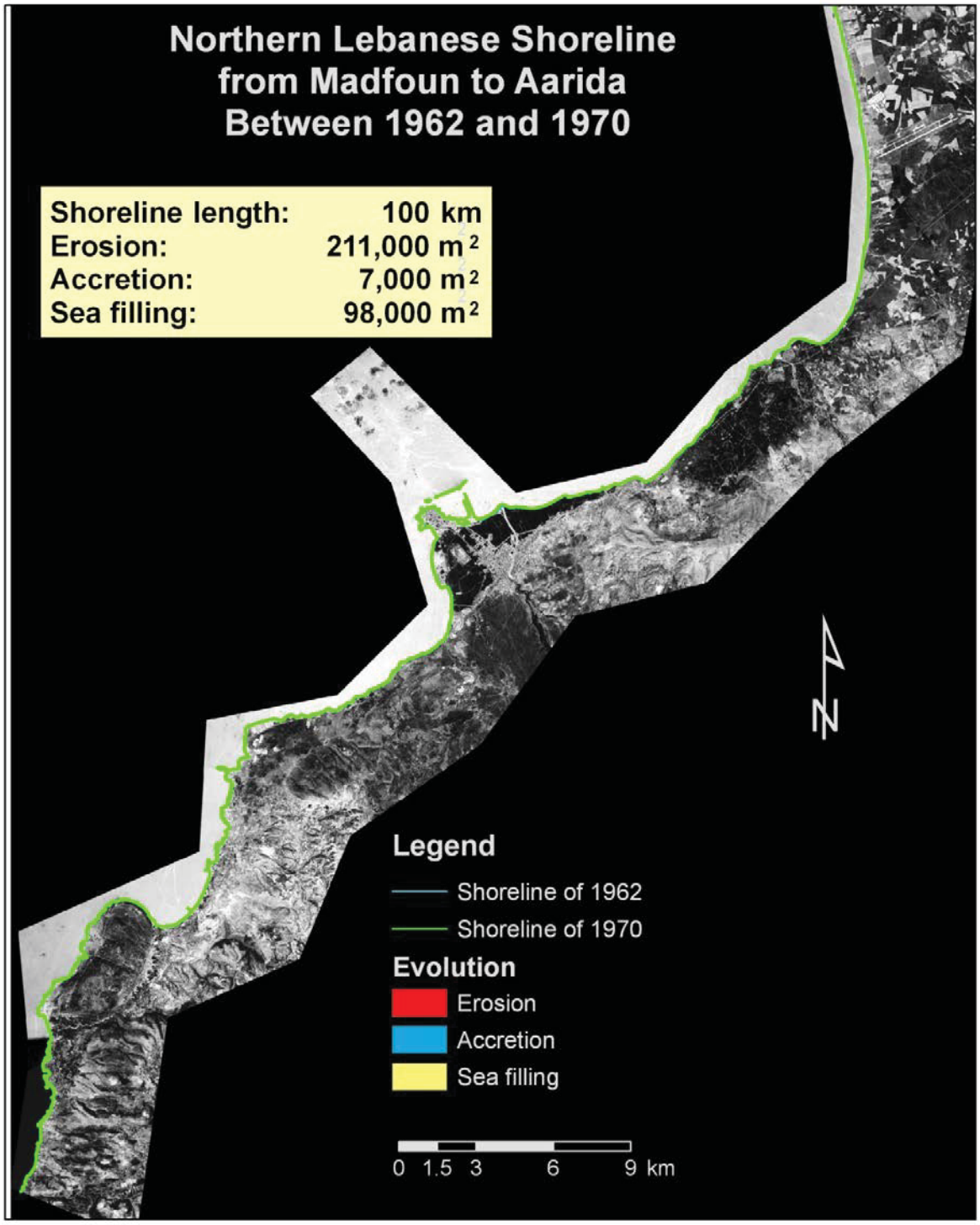

Figure 1: Evolution of the shoreline of North Lebanon Coastal zone between 1962 and 1970

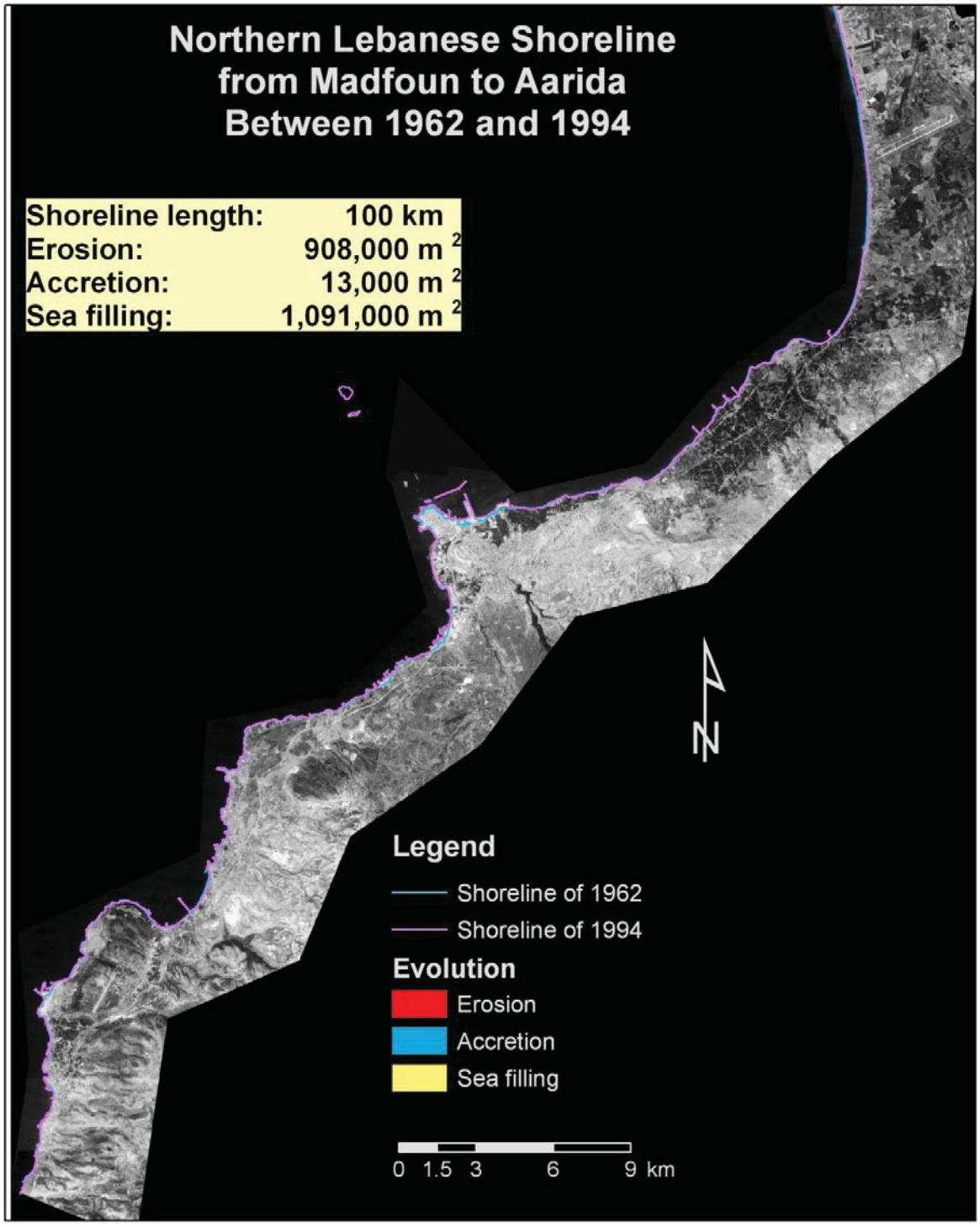

Figure 2: Evolution of the shoreline of North Lebanon Coastal zone between 1962 and 1994

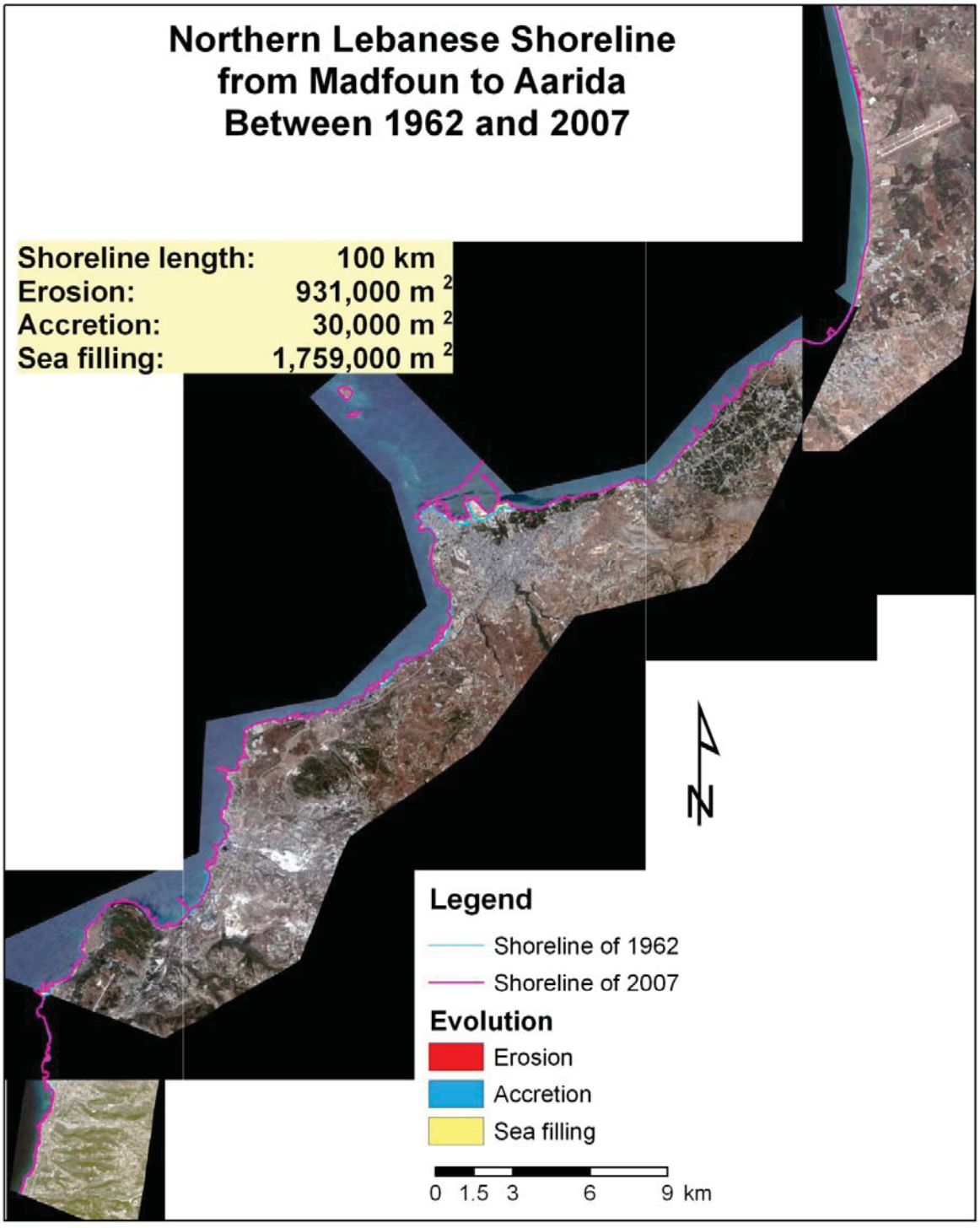

Figure 3: Evolution of the shoreline of North Lebanon Coastal zone between 1962 and 2007

Annex 3

Socio-economic indicators

The mining and industrial sectors, the coastal tourism industry, the fisheries sector, the agriculture sector and the public sector through electricity power production, oil and gas storage and ports activities, are particularly relevant in the Lebanese case. Health services infrastructure and financial sector development should also be given due consideration.[40]

However given the weak official statistical apparatus in Lebanon, the coverage, quality, and timeliness of socio-economic data is insufficient for surveillance, environmental and developmental policy decision-making. Consequently, reliance is on circumstantial and anecdotal evidence for environmental and socio-economic monitoring and analysis. For the present purpose, the "Number of enterprises" and "Value added per sector" were selected for the socio-economic indicators.

- The "Value added per sector" indicator:

Table 18: Sectoral Composition of National and North Lebanon Coastal Zone (NLCZ) GDP

Sector	NLCZ GDP (2005)	National GDP (2004)
Agriculture and livestock	8%	5%
Energy and water supply	15%	0.3%
Industry	58%	12%
Construction		7%
Transportation and communications	2%	7%
Market services	12%	33%
Trade		24%
Government	7%	11%

[40] The high level of financiarization of the Lebanese economy is mainly due to the healthy development of financial intermediation, namely the banking sector. Given the cultural importance of retail banking in Lebanon, and the essential role of banks and other financial intermediaries in channeling national savings towards local consumptive and productive needs, the number of bank branches was selected. Future work could consider more precise estimates on banking services, banks deposits and credits sectoral allocation. Financial and banking data is of good quality in Lebanon which allows a time series perspective to be adopted.

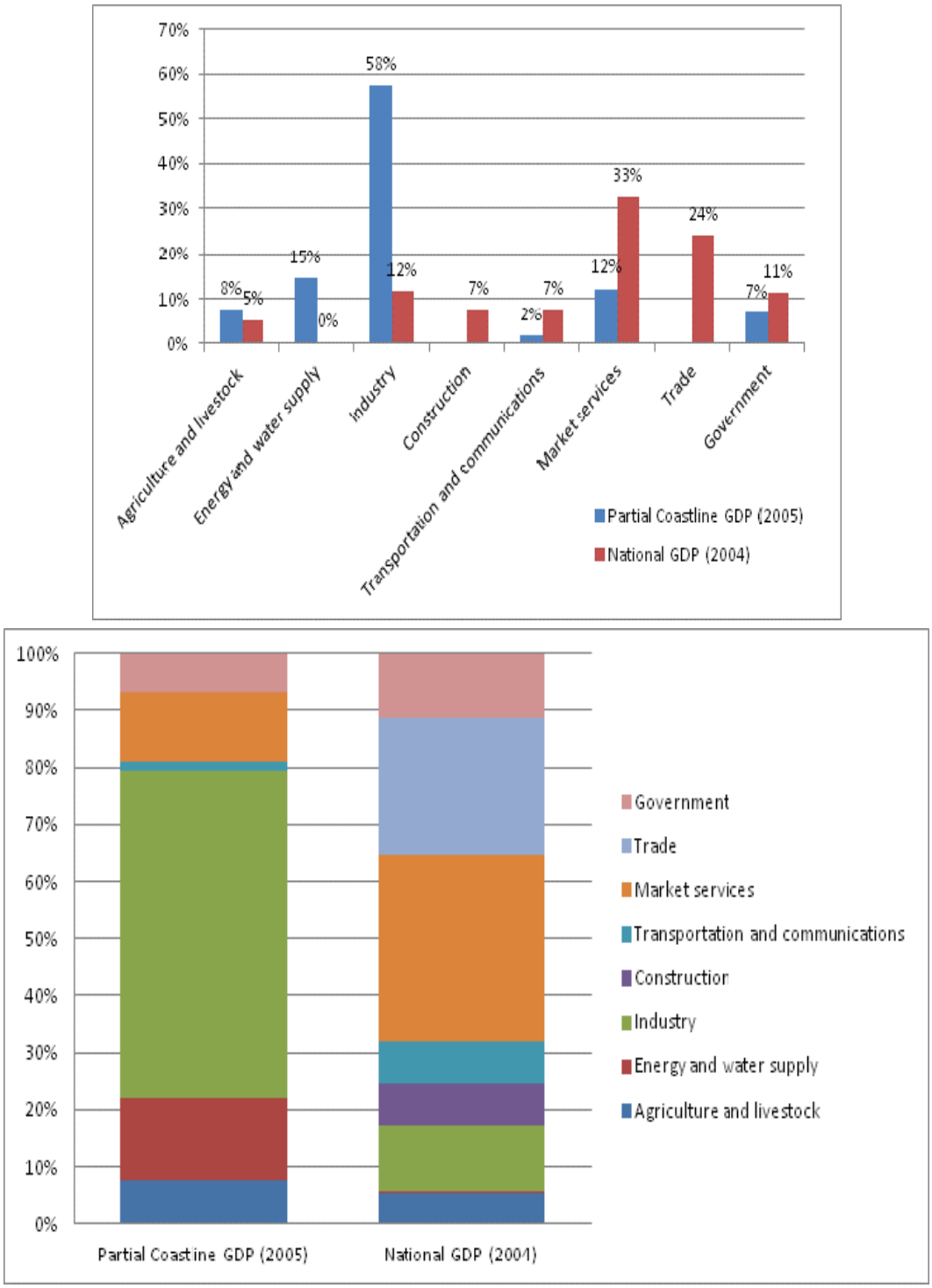

Figure 60: Sectoral Composition of National and NLCZ GDP

- For the 'Number of Enterprises" indicator, the following preliminary indicators per sector were selected:

Table 19: Number of Enterprises Indicators

Indicator	Value entire coast	Value North Lebanon coast	NLCZ as a Percentage of the Entire Lebanese Coast	Source
Number of factories	1642	342	21%	CCIA(2012)
Number of factories member of the Association of Lebanese Industrialists	333	25	8%	ALI (2012)
Number of hotel and tourist resorts	314	37	12%	Ministry of Tourism (2012)
Agricultural area in m^2	190620643.1	78976501	41%	UNEP (2012)
Number of fishing ports	38	15	39%	UNEP (2012), Majdalani (2005)
Number of fishing vessels	2611	963	37%	UNEP (2012), Majdalani 2005
Number of bank branches	568	65	11%	UNEP (2012), BdL (2012)
Number of hospitals	63	10	16%	UNEP (2012), MoPH (2012)
Number of thermal energy plants	6	2	33%	UNEP (2012), EDL (2012), IMAC (2007)
Number of wastewater treatment plants (under preparation or operational)	12	4	33%	UNEP (2012), CDR (2011)
Number of dumpsites	5	1	20%	UNEP (2012)
Number of commercial ports	4	1	25%	UNEP (2012), CCIA (2011)

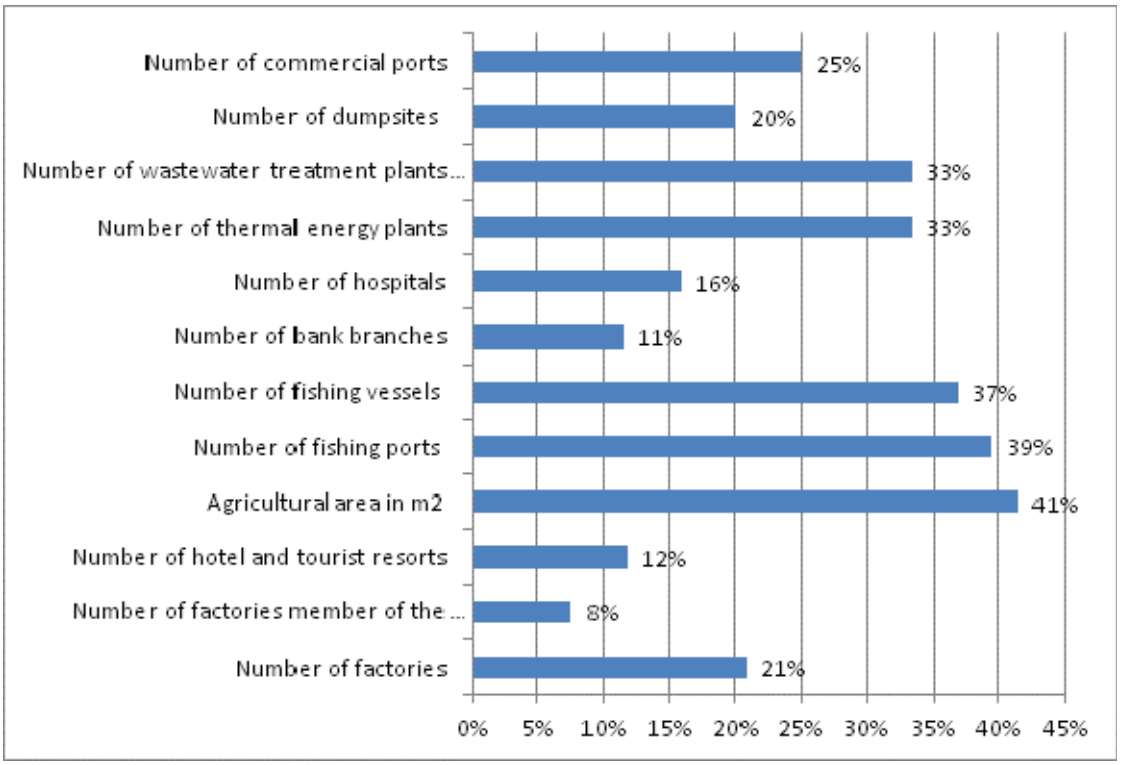

Figure 61: North Lebanon Coastal Zone as a Percentage of the entire Coast

Annex 4

UNIVERSITY OF BALAMAND

INSTITUTE OF THE ENVIRONMENT

North Lebanon Coastal Forum
A concept note

Executive summary

The creation of a Coastal Forum (CF) for the North Lebanon Coastal Zone is important in assuring a responsible management of the Lebanese coastal zone and is expected to be launched through two main phases: 1) Establishment of the Coastal Forum; and 2) The Coastal Forum. Its membership will be open to all individuals as well as representatives of associations, companies and institutions with a vested interest in Coastal Zone issues. It is designed to contribute to raising awareness of the public at large on: 1) the concepts of Integrated Coastal Zone Management (ICZM); 2) the importance of horizontal and vertical communication to advance dialogue on coastal zone issues; 3) problem solving mechanisms of coastal zone issues of priority; and 4) the value of commitment of coastal communities to addressing conflicting coastal issues. Its main objective is to bridge the gap between the scientific community, local community and decision makers for the benefit of the health of the coastal zone and its resources as well as the well-being of its communities.

Introduction

The Lebanese coastal areas are the most densely inhabited in the country where more than 70% of the Lebanese population resides. The Lebanese coast stretches over 240 km, and hosts residential areas, industries, businesses, touristic developments and other activities causing environmental pressures and degradation of coastal lands and waters.

The Marine Resources and Coastal Zone Management Program at the Institute of the Environment, University of Balamand (MRCZM-IOE-UOB) implemented in 2006 a three-year project entitled Integrated Management of East Mediterranean Coastlines (IMAC), funded by the European Commission (MED/2005/110-659). The IMAC developed a Coastal Strategy for the North Lebanon Coastal Zone base on several studies and on different round tables and workshops that involved all stakeholders (home.balamand.edu.lb/IMAC). One of the recommendations of the IMAC project was to establish a Coastal Forum (CF) that would serve as an informal platform to *"engage different sectors and interested organizations in the discussion and promotion of issues or concerns related to the coastal area of North Lebanon".*

As a result of the achievements of the IMAC project, the MRCZM-IOE team opted to launch the development of a CF concept as an activity within the PEGASO project. The current concept has been conceived after a thorough review of several successful coastal fora from around the world (Annex 1).

The CF is expected to contribute to raising awareness of the public at large on: 1) the concepts of Integrated Coastal Zone Management (ICZM); 2) the importance of horizontal and vertical communication to advance dialogue on coastal zone issues; 3) problem solving mechanisms of coastal zone issues of priority; and 4) the value of commitment of coastal communities to addressing conflicting coastal issues.

The Coastal Forum Vision

As developed by, and agreed upon with, the Northern Lebanese coastal community through the IMAC project in 2009, the vision of the CF foresees the creation of a platform for discussion to contribute to: *"The responsible development of the coastal zone of North Lebanon to realize opportunities for its thriving coastal communities while making wise use of the rich natural resources of the area without foreclosing the prospects of future generations".*

Goal and Objectives

The main goal of the CF is to share, reflect and discuss the issues and wishes of the northern Lebanese

community regarding their coastal zone. This requires soliciting and integrating proposed ideas by all stakeholders to create better management of coastal and marine resources and to guide and influence decision makers. The objectives of the CF have been identified as follows:

1. Create a network of communication between experts and the public to discuss Coastal Zone (CZ) issues
2. Form a platform for an open exchange of information
3. Spread awareness on coastal problems and conflicts and propose solutions
4. Propose new strategies to improve Coastal Zone Management (CZM) with the help of public and private institutions and/or any interested individual as a collective initiative for a balanced development of the coastline
5. Develop a better understanding of the coastal environment through awareness-raising in schools, colleges, clubs and NGOs.

Coastal Forum membership

The CF membership will be open to all individuals as well as representatives of associations, companies and institutions with a vested interest in CZ issues. The main requirements to become a CF member are as follows:

- Officially register in the CF and become member of the General Assembly
- Participate in the election of the CF Steering Committee (SC)
- Endorse the CF vision and bylaws
- Commit to share information for the benefit of CZ conservation and management
- Commit to present new proposals and ideas to resolve conflicting CZ issues
- Commit to support the solicitation of support, financial and otherwise, for the sustainability of the CF
- Support the SC in advocacy and in influencing decision making

- The Steering Committee (SC) that will be:
  - Elected by the CF members from the General Assembly
  - In charge of the daily operation of the CF
  - Developing yearly programs for CF activities
  - In charge of soliciting funding for CF activities
  - Responsible for advocacy and for influencing decision making at public institution level
  - Responsible for the CF website and related social media

Members could be/representatives of:

- Individuals with vested interest in CZ issues
- Coastal municipalities

- Private land owners
- National environmental NGOs
- International Organizations
- Experts in the field
- Workers in the present active sectors on the coast
- Mass Media representatives

Implementation of the CF

Even though established by the MRCZM-IOE, the aim is for the CF to become an autonomous, self-dependent platform supported and managed by its members. The MRCZM-IOE will host the CF on its server and manage its Website according to a clear mandate from the General Assembly. Upon launching, the MRCZM-IOE will act as a Provisional Steering Committee until the SC is elected where the role of the MRCZM-IOE will switch to a technical advisory one. It is foreseen that the establishment of the CF will require two main phases.

Phase -1- Establishment of the Coastal Forum

The MRCZM-IOE, in its capacity as the Provisional Steering Committee, will set the basis for the creation of the CF as follows:

Step 1: Creation of the website of the Forum that will be hosted on the IOE Server to include:

- Online Registration
- Status of the CF
- Vision, objectives and by-laws of the CF
- Contact information
- Useful information such as articles, reports, studies, and links
- Topics for discussion

Step 2: Involvement in the Social Media to assure publicity and engagement

- Facebook page
- Twitter account
- Instagram account

Step 3: Invite all stakeholders to join the forum through e-mails and personalized phone calls

Step 4: Conduct a launching ceremony for the CF

Step 5: Elect the new SC

Step 6: Launch discussions for the development and endorsement of the CF internal by-laws and vision

Phase -2- The Coastal Forum

After the election of the new SC, the MRCZM will transfer all responsibilities to the new governing body while retaining the role of technical advisorship. Additional roles of the SC may include:

- Developing a one year program for the CF
- Initiating virtual discussions on CZ priority issues
- Enlarging membership
- Monitoring, evaluating and updating internal and external procedures
- Reporting on progress of activities to the General Assembly
- Organizing conferences, awareness campaigns and publishing newsletters
- Seeking public and private involvement in coastal issues
- Ensuring financial viability of the CF
- Adopting the shared vision as a reference guide to address future projects
- Developing and submitting for funding project proposals for issues of priorities
- Establishing long-term, active relationships with institutions such as:
    - Government bodies and Municipalities
    - Private sector institutions
    - Universities and research centers
    - Cooperatives and syndicates
    - International organizations

Time Table and Indicators of success

Table (1): Time Table of the proposed activities of the Forum Phase -1-

Steps	Description	Time scale	Indicators of success
1	Creation of the website	3 months	Website
2	Involvement in Social Media	2 week	Facebook page Twitter account Instagram account
3	Invite all stakeholders to join the CF	3 months	No. of registered members No. of visitors No. of uploaded files/docs No. of social media followers
4	Launching ceremony	2 month	No. of attendees
5	Election of the new SC	2 week	New elected SC
6	Launching discussions on the CF internal by-laws and vision	3 months	Clear vision By-laws

Expected Challenges

1- Unresponsiveness from stakeholders and lack of cooperation
2- Insufficient number of members and absence of across the board sectoral involvement
3- Unwillingness of the public to adopt and support CZM concepts and to cooperate towards a sustainable use of coastal resources
4- Medium to long-term financial viability
5- Technical problems with the website domain, design and/or encoding

Conclusion

The Lebanese coast is facing many challenges that accumulated over decades of poor management. A national strategy for the management of the coast is therefore necessary in order to protect the CZ, its resources and the communities dependent on such resources. That requires cooperation and collaboration amongst the public, stakeholders and government institutions. A Lebanese CF could provide an essential platform to discuss the best means to integrate the needs of all sectors for the benefit of the CZ and its resources.

The CF will educate and raise the awareness of its members and the Lebanese public at large about the importance of a healthy CZ in reducing natural hazard risks and in positively contributing to the well-being of Lebanese coastal communities. More importantly, it will strive to provide solutions to challenging coastal issues through an integrative, participatory approach that will meet the needs of all sectors involved. In the future, the CF will support awareness campaigns and projects that will address priority issues, and will endeavor to promote ICZM concepts in Lebanon through all possible tools including the media.

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Annex 1

Title	Organization	Objective	Achievements
Northern Ireland Coastal and Marine Forum	Interest groups People from Causeway Coast, Strangford Lough and Mourne Coast	Bring together those organizations which have a responsibility for managing the activities of the coastal and marine environment of Northern Ireland in a sustainable manner.(ICZM)	Monitor and follow up the ICZM for implementation in Ireland and preserving marine ecosystem
North Yorkshire & Cleveland Coastal Forum	North Yorkshire and Cleveland council	Draw together and integrate all of the various agencies, authorities, residents, communities, holiday providers etc., to develop a consensus of opinion on coastal management and its outcomes.	Newsletters Meetings
Lyme Regis Coastal Forum	Lyme Regis Town Council	Keep local people informed on the Lyme Regis Coast Protection Scheme initiated by West Dorset District Council in the early 1990s	Building of the Gun Cliff Walk promenade near the mouth of the river Lim Major works to the main town beach and seafront gardens Council owned Monmouth Beach and Ware Cliff.
The North West Coastal Forum	Government Office for the North West	Promote and deliver integrated coastal zone management in the North West to secure the long-term sustainability of the region's coast.	Developing policy tools to measure coastal sustainability
Scottish Coastal Forum	Governmental organization	Development of policy relating to marine planning and licensing within a sustainable marine environment Network for circulating information and best practice in coastal management amongst its own varied membership and	Website Launching of "Scotland's Coast- a discussion paper" revolving around local coastal flora preservation and

		the wider ICZM community.	necessities. Strategy for sustainable use of Scotland's coast and inshore water.
North Yorkshire and Cleveland Coastal Forum	Governmental organization	Give everyone with an interest in the management of the coast the opportunity to discuss key issues, and to guide and shape future policies and actions.	Published its UK Sea Fisheries Statistics 2011 report
Suffolk Coast Forum	Waveney District Council Suffolk Coastal District Council Community	To take a partnership approach to flood and coastal erosion risk management on the coast and estuaries and closely related issues in the context of an ICZM approach.	Flood and Water Management Act. Awareness of the concept ICZM Government policy on localism Environment work undertaken on a rationalization of processes with Defra.