SUSTAIN

LITTORAL 2012, Oostende, Belgium, 27-29. Nov. 2012

Measuring sustainability: Baltic application case studies

Gerald Schernewski & Silke Schönwald

Leibniz-Institute for Baltic Sea Research

Leibniz-Institut für Ostseeforschung Warnemünde

IOW

SUSTAIN

The SUSTAIN process

Choice of core and optional indicators for all issues of the 4 pillars (Governance, Social, Economy, Ecology) to allow comparisons across regions and to reflect specific local situations.

Indicator application: Data search and numerical scoring of indicators, aggregation of indicator scores to issue and pillar scores.

Moderated stakeholder exercise to self-determine the relevant importance of the Issues and Pillars, based on matrices.

Combination of the indicator application results with the weighting matrices. Visualization of the state of sustainability .

Use of the system as a decision-support tool for policy options .

SUSTAIN

SUSTAIN set of indicators to measure coastal sustainability

Pillar:	Economics	Environmental Quality
Issue:	Economic Opportunity Fisheries & Aquaculture Land Use Tourism Transportation	Biodiversity, Natural Resources & Process Management Energy & Climate Change incl. Waste Management Fisheries and Aquaculture Land Use Water Resources & Environmental Pollution ……..
	Social aspects	Governance
	Public Health and Safety Local and cultural Identity Education and training Equity Demography	Policies/ strategies for sustainability Monitoring tools for sustainability Human resources capacity building Implementation of good management practices Stakeholder involvement/ public participation

SUSTAIN

Are indicator applications stable & reproducable ? The case study 'Neringa' community in Lithuania

Altogether 74 core-indicators were applied.

		Score				
Pillars	**Criteria/ issues**	**Group 1**	**Group 2**	**Group 3**	**Group 4**	**Group 5**
Economics	Economic Opportunity	7,0	4,3	3,0	3,5	5,3
	Land Use	8,0	8,0	8,0	8,0	6,0
	Fisheries and Aquaculture	0,5	5,0	3,0	3,5	7,0
	Tourism	3,5	3,3	5,7	5,0	5,5
	Transportation	2,5	1,5	2,5	1,0	4,0
		43%	**44%**	**44%**	**42%**	**56%**
Environ-mental Quality	Air Pollution	9,5	9,5	10,0	8,5	10,0
	Biodiversity & Natural Res. Management	10,0	6,0	8,0	10,0	8,7
	Change at the coast	6,7	8,7	6,0	9,3	8,7
	Energy & Climate Change	7,0	7,0	6,0	6,7	7,0
	Fisheries and Aquaculture	0,0	10,0	4,0	10,0	8,0
	Land use	10,0	10,0	10,0	9,0	10,0
	Public Health and safety	8,0	8,0	8,0	10,0	10,0
	Waste Management	3,2	2,2	3,8	3,7	3,2
	Water resources and Pollution	8,0	8,4	4,8	3,8	7,8
		58%	**77%**	**61%**	**73%**	**78%**
Social well Being	Demography	2,0	1,0	10,0	4,0	2,0
	Equity	5,5	4,0	8,0	9,0	6,0
	Education and Training	10,0	10,0	9,0	9,0	9,0
	Local and cultural identity	3,3	1,8	5,3	5,0	5,3
	Public Health and Safety	7,5	5,0	8,5	6,3	6,8
		57%	**44%**	**82%**	**67%**	**58%**
Governance	Policies/ strategies for sustainability	10,0	6,1	10,0	10,0	8,7
	Monitoring tools for sustainability	6,8	7,0	10,0	5,2	7,0
	Human resources capacity building	7,8	3,3	5,5	10,0	5,5
	Implement. of good management practices	7,5	3,3	10,0	7,8	3,3
	Stakeholder involvem. & public participation	10,0	7,0	4,0	4,0	1,0
		84%	**53%**	**79%**	**74%**	**51%**
TOTAL		**61%**	**55%**	**67%**	**64%**	**61%**

SUSTAIN

Some lessons learnt

- Reasons for different scores were mainly a) insufficient indicator definition or mis-interpretation and b) lack of data and the need to guess.
- The indicator scores to a large degree reflect the national situation rather than local specifics.
- Different groups with similar local and educational background tend to obtain similar results. External experts would partly come to other results.
- The results of a fast screening (1.5 days) and a detailed application (10 days) are largely similar.

The process in a community counts more than the result! To ensure an awareness-raising and learning process the application has to be a group work.

For a comparison between different municipalities experienced external experts have to carry out the application !

SUSTAIN

The SUSTAIN process

Choice of core and optional indicators for all issues of the 4 pillars (Governance, Social, Economy, Ecology) to allow comparisons across regions and to reflect specific local situations.

Indicator application: Data search and numerical scoring of indicators, aggregation of indicator scores to issue and pillar scores.

Moderated stakeholder exercise to self-determine the relevant importance of the Issues and Pillars, based on matrices.

Combination of the indicator application results with the weighting matrices. Visualization of the state of sustainability .

Use of the system as a decision-support tool for policy options .

Weighting exercise with stakeholders: Pillars

PILLARS	Y → Economics	Environmental Quality	Social	Governance	Impact-factor	Pillars Definition
X ↓ Economics	1 / 0,22	3 / 0,56	1/3 / 0,10	5 / 0,50	0,35	To promote and support a vigorous and sustainable coastal economy
Environmental Quality	1/3 / 0,07	1 / 0,19	1 / 0,30	3 / 0,30	0,22	To make available and promote sustainable environmental practices
Social	3 / 0,66	1 / 0,19	1 / 0,30	1 / 0,10	0,31	To promote social unity and durability
Governance	1/5 / 0,04	1/3 / 0,06	1 / 0,30	1 / 0,10	0,13	To provide consistent management, cohesive policies, guidance, processes and decisions for the wise use of the coast.
Total	4,53	5,33	3,33	10,00	1	
Total check	1	1	1	1		

Input field > Scoring scheme:

	Pillar X			COMPARED TO		Pillar Y	IS
less important ←					→ more important		
much	more	slightly	equal	slightly	more	much	
1/7	1/5	1/3	1	3	5	7	

DeCyDe system by
X. & M. Loizidou
Isotech Ltd. Limassol, Cyprus

SUSTAIN

1st weighting exercise workshop in Warnemünde, Germany

- 10 participants with different background and local knowledge
- Introductory presentation, moderated interactive session with visualizations of progress and results

1st weighting exercise workshop in Warnemünde

Intensive discussions on

- suitability of indicators, definitions & terminology;
- presentation, explanations and the weighting table;
- weighting and valuation methodology;
- voting & consensus finding methods;
- sustainability and is the present or the target state reflected.

Break off after 3 hours, with only 70 % of the exercise finished!

SUSTAIN

Weighting exercise workshops in Klaipeda, Lithuania

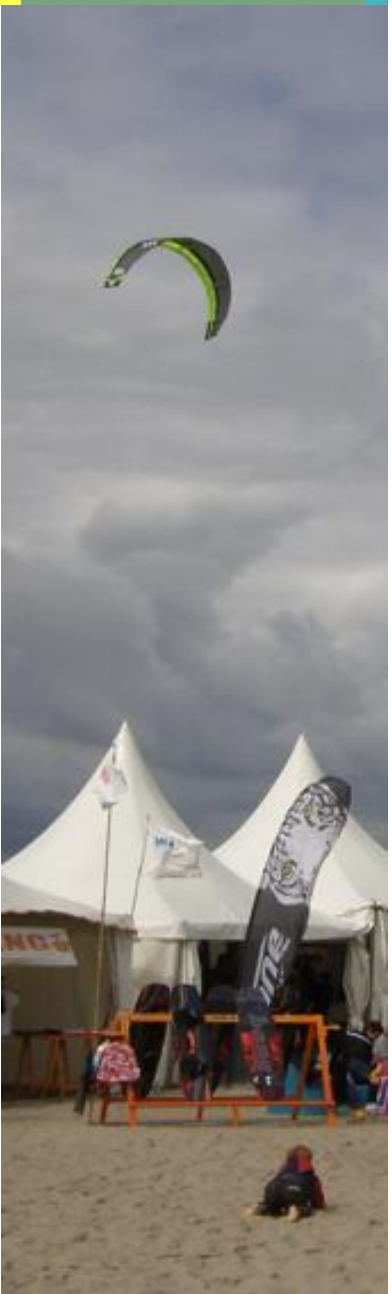
3 groups

7-8 participants

1-2 moderators

1:15 hour time for the exercise

SUSTAIN



Evaluation of the weighting exercises

Efficiency: How long does it take, how many tables with how many issues can be manage during an exercise? How to ensure a learning and awareness-rising process?

➡ **Low in Warnemünde**

➡ **Low in Klaipeda**

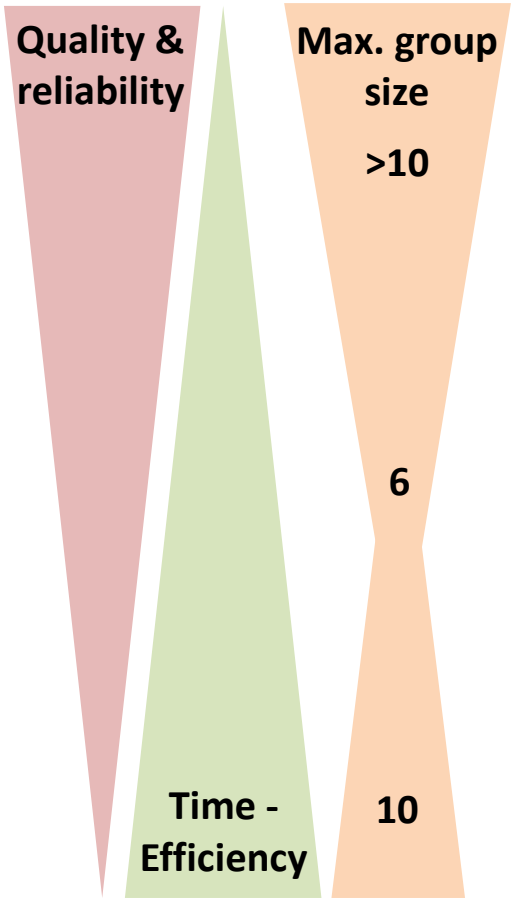
Transparency: How clear is the process and the benefit for participants and end-users? How to improve transparency?

Reproducibility: To what extend does the weighting result depend on composition of and dynamics within participant groups, voting methods, levels and quality of information?

➡ **Low in Klaipeda**

Practical benefit: Does the process increase the awareness about sustainability and are the products concrete and applicable enough?

Finding the balance between time-efficiency and quality



- Remote method based on a questionnaire
- Several bilateral discussions between stakeholders and moderator = time consuming with reliable results but without consensus
- Moderated meeting which starts with a questionaire filled out by every participant and with subsequent consensus discussion
- Moderated meeting, where every participant is asked for his opinion according to the weighting scheme. Moderator suggests a consensus score which is discussed
- Moderated meeting with group-voting for each pairs. Moderator suggests a consensus score which is discussed
- Moderator asks the group without addressing every participant separately

Choice depends on group size and available time
(Group exercise max. 2 h; questionnaire max. 0,5 h/person)

Weighting exercise with stakeholders: issues

Economics

Issue Y →

Issue X ↓

	Economic Opportunity	Fisheries & Aquaculture	Land use	Tourism	Transportation	weight coef	Issue description
Economic Opportunity	1 / 2/7	3 / 0,53	3 / 0,47	1 / 0,09	1 / 0,16	0,3049	Statistical data on the labour market and Expenditures/Investments in coastal management
Fisheries & Aquaculture	1/3 / 0,09	1 / 0,18	1 / 0,16	3 / 0,27	3 / 0,47	0,2343	Commercial production of aquatic organisms in coastal waters
Land use	1/3 / 0,09	1 / 0,18	1 / 0,16	3 / 0,27	1 / 0,16	0,1712	People and assets at high risk from coastal flooding or erosion
Tourism	1 / 0,27	1/3 / 0,06	1/3 / 0,05	1 / 0,09	1/3 / 0,05	0,1055	A measure of tourism pressure mainly upon social and environmental systems
Transportation	1 / 0,27	1/3 / 0,06	1 / 0,16	3 / 0,27	1 / 0,16	0,1840	Information about Transport usage & Volume of port traffic
Total	3,67	5,67	6,33	11,00	6,33	1,0000	
Total check	1,00	1,00	1,00	1,00	1,00		

Input field > Scoring scheme:

	Issue X	COMPARED TO		Issue Y	IS
less important ←				→ more important	
much	more	slightly	equal	slightly	more	much
1/7	1/5	1/3	1	3	5	7

DeCyDe system by
X. & M. Loizidou
Isotech Ltd. Limassol, Cyprus

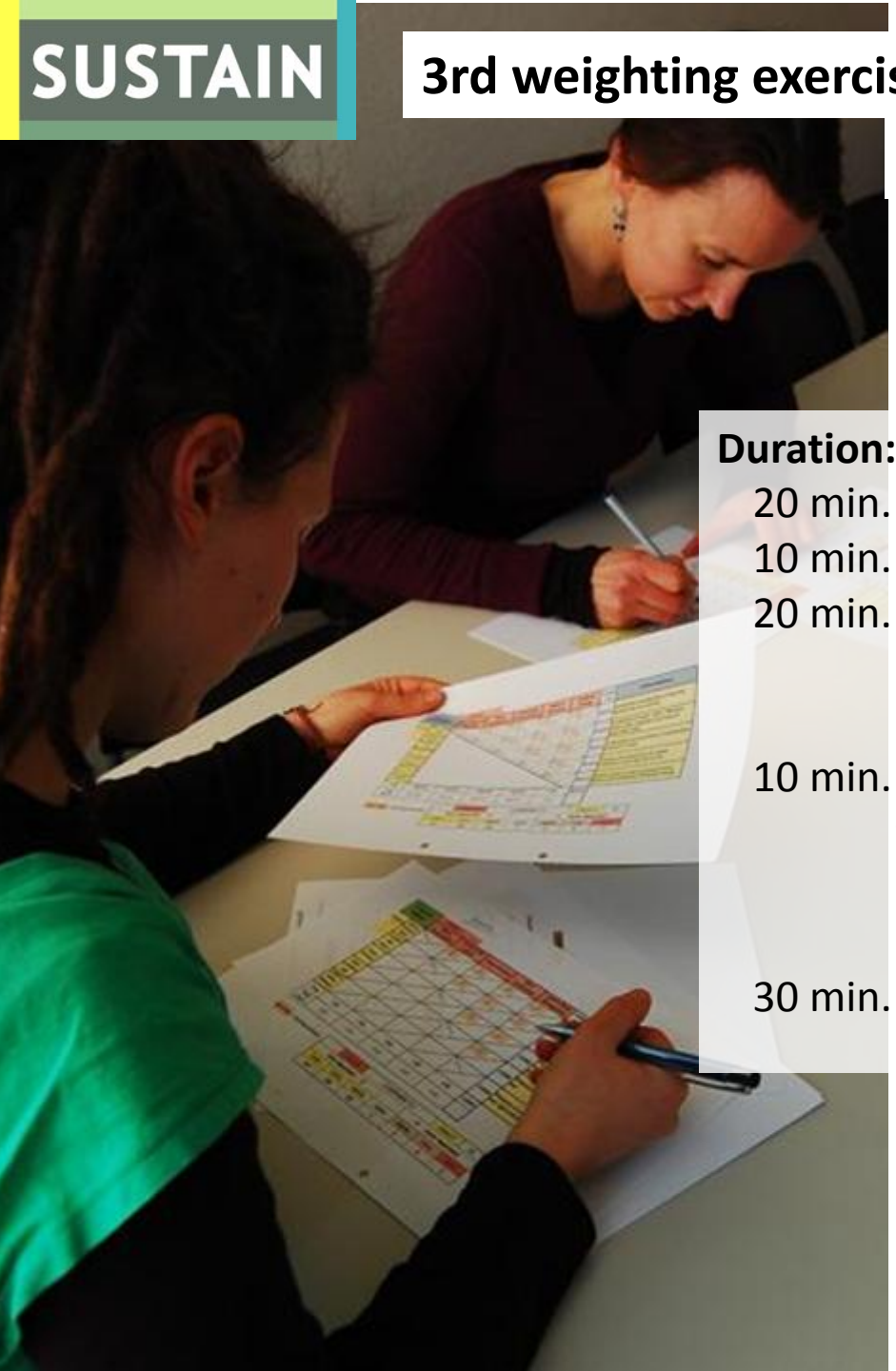
2st weighting exercise workshop in Warnemünde

- **Particpants:** 7 scientists and students, moderator and minute taker
- **Voting system**: Moderator asks participant by participant about their preference (weighting) on every pair of issues. The median (majority of votes) is used to describe the consensus. Divergent opinions were discussed in the feedback round.
- **Duration:** 2 hours
  - 15 min. background presentation,
  - 15 min. introduction and practical exercise
  - 45 min. Weighting of tables: Social, Economics & Environmental Quality (5 issues/10 pairs each)
  - 15 min. Weighting of sustainability pillar table (Social, Economics & Environmental Quality, Governance; 6 pairs)
  - 30 min. Feedback discussion

SUSTAIN

3rd weighting exercise in Warnemünde

Pre-tests with questionnaires



Duration: 1.5 hours

- 20 min. background presentation,
- 10 min. introduction and practical exercise
- 20 min. Weighting of tables: Social, Economics & Environmental Quality (5 issues/10 pairs each)
- 10 min. Weighting of sustainability pillar table (Social, Economics & Environmental Quality, Governance; 6 pairs)
- 30 min. Feedback discussion

Evaluation after the meeting

SUSTAIN

The SUSTAIN process

Choice of core and optional indicators for all issues of the 4 pillars (Governance, Social, Economy, Ecology) to allow comparisons across regions and to reflect specific local situations.

Indicator application: Data search and numerical scoring of indicators, aggregation of indicator scores to issue and pillar scores.

Moderated stakeholder exercise to self-determine the relevant importance of the Issues and Pillars, based on matrices.

Combination of the indicator application results with the weighting matrices. Visualization of the state of sustainability .

Use of the system as a decision-support tool for policy options.

SUSTAIN

Task

Indicator application

Weighting exercise with Stakeholders (DeCyDe system)

Flow of work

Development of an application strategy

Data search & valuation

Definition of a classification for each core indicator

Index value for each issue

Index value for each pillar

Quality and reliability assessment

Sustainability index calculation

Aggregation of issues

Definition of stakeholder group and involvement process

Application of the weighting system

Gov	Econ (5)	Env (5)	Soc (5)

DeCyDe application: vision 2050

Translation into indicator target values

Comparison between status and vision2050

Output

Local sustainable state evaluation

Weighted state evaluation

Development strategy 2050

Sustainability vision 2050

SUSTAIN

Summary

The combination of an adjustable indicator set with the Cyprus weighting/preference system is an innovative, comprehensive approach with high practical relevance. It

- enables guided discussions among stakeholders and raises awareness about sustainability,
- serves as a tool that gives communities flexibility to express what is important to them,
- allows to visualize the consequences of measures and policy options on sustainability and
- allows to express a future development vision and to compare it with the present state. It shows communities if they are on the right track (Development Strategy 2050).

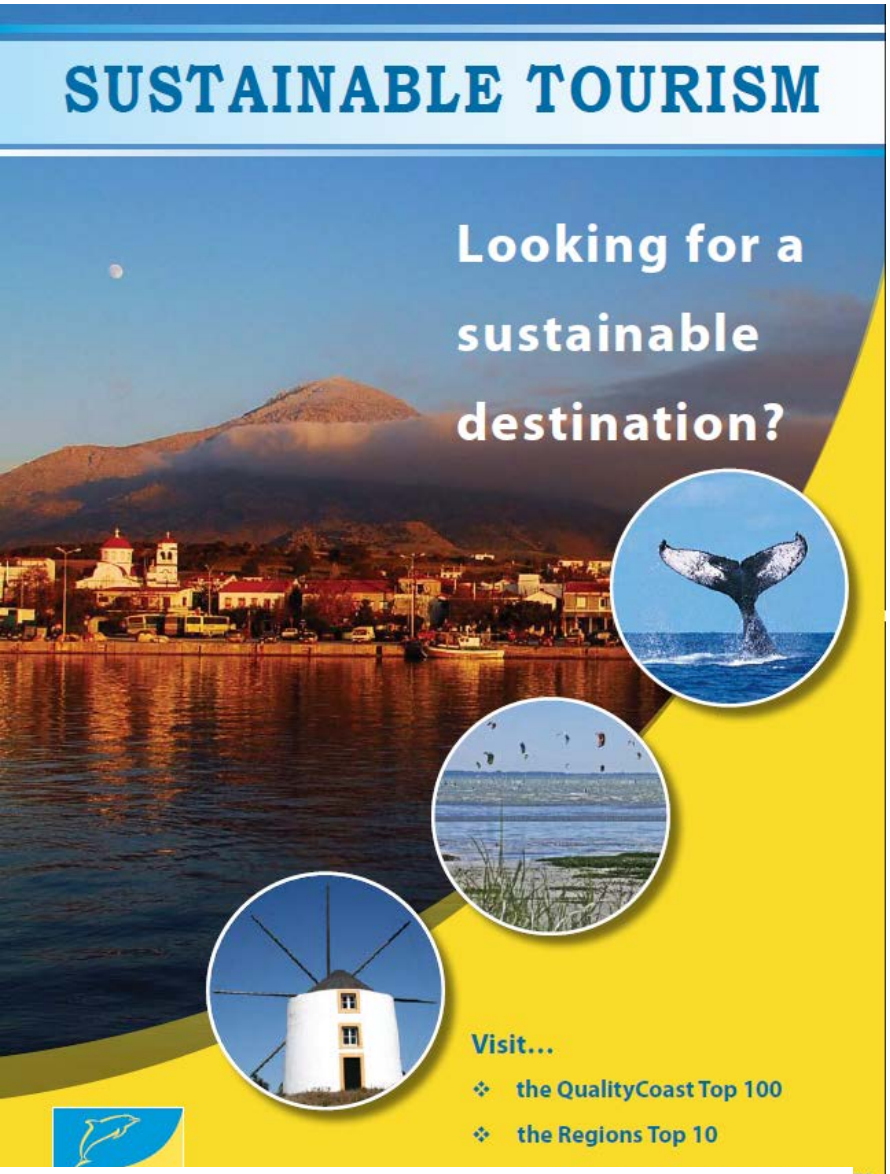
The practical application of the weighting/preference system requires a sound preparation, pre-tests, experienced moderators and adaptations to local needs.

Are output and benefit sufficient to make it attractive for coastal communities?

Gerald Schernewski & Silke Schönwald

Leibniz-Institut für Ostseeforschung Warnemünde
IOW

How to increase motivation of and benefit for municipalities? The QualityCoast tourism destination quality label



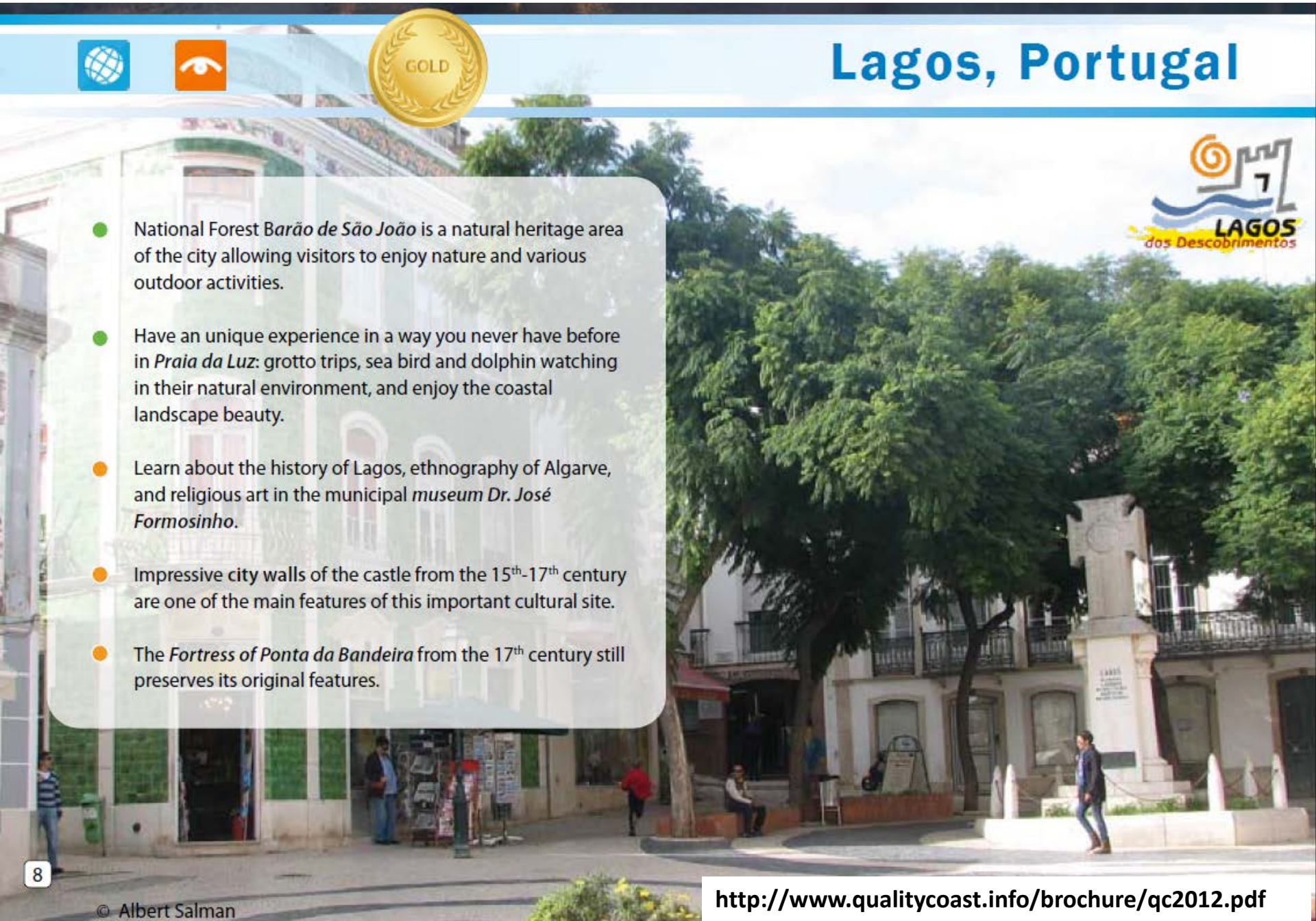
http://www.qualitycoast.info/brochure/qc2012.pdf

EUCC - QualityCoast is the largest international certification programme for sustainable tourism destinations. Since 2007, more than 140 tourism destinations in 23 countries have been selected for a QualityCoast Award: coastal towns, resorts and islands.

Service package	★	★★	★★★
QualityTourism door plate/certificate, banner or flag	+	+	+
QualityTourism flags and banners (retail price)	+	+	+
Use of QualityTourism in your own communication	+	+	+
Inclusion in our brochures (1)		+	+
Inclusion in the Dutch Kust&Zee Guide (2)		+	+
Inclusion in our websites		+	+
Your folder in our exhibit at Scheveningen Pier (3)			+
Your folder in our stand at holiday fairs			+
Promotion in our social media campaigns			+
Possibility to apply for a QualityTourism Business Award	+	+	+

http://www.qualitycoast.info/business-partners/brochure.pdf

The QualityCoast tourism destination quality label



- National Forest B*arão de São João* is a natural heritage area of the city allowing visitors to enjoy nature and various outdoor activities.
- Have an unique experience in a way you never have before in *Praia da Luz*: grotto trips, sea bird and dolphin watching in their natural environment, and enjoy the coastal landscape beauty.
- Learn about the history of Lagos, ethnography of Algarve, and religious art in the municipal *museum Dr. José Formosinho*.
- Impressive city walls of the castle from the 15th-17th century are one of the main features of this important cultural site.
- The *Fortress of Ponta da Bandeira* from the 17th century still preserves its original features.

http://www.qualitycoast.info/brochure/qc2012.pdf

The QualityCoast tourism destination quality label

QualityCoast Regions Top 10

For Europe, the following regions are best to enjoy quiet places with a clean environment, local identity and a rich natural and cultural heritage:

1. Azores (P)
2. Zuid-Holland coast (NL)
3. Northern Aegean islands (GR)
4. East Frisian isles (Ostfriesland, D)
5. Frisian isles (Fryslan, NL)
6. Syddanmark coast (DK)
7. Nordjylland coast (DK)
8. Canary Isles (ES)
9. Tuscany coast (IT)
10. Crete (GR)

QualityCoast

The QualityCoast Criteria

Performance and progress of QualityCoast Destinations is measured through 20 different criteria:

NATURE

1. NATURE CONSERVATION
2. CONTACT WITH NATURE
3. GREEN POLICIES
4. OPEN LANDSCAPES
5. NOISE & LIGHT MANAGEMENT

ENVIRONMENT

6. BLUE FLAGS & BEACHES
7. WATER MANAGEMENT
8. SUSTAINABLE TRANSPORTATION
9. WASTE & RECYCLING
10. CLIMATE & ENERGY

IDENTITY

11. CULTURAL HERITAGE
12. TERRITORY & TRADITION
13. LOCAL IDENTITY
14. HOSPITALITY & SATISFACTION
15. HUMAN RIGHTS & JUSTICE

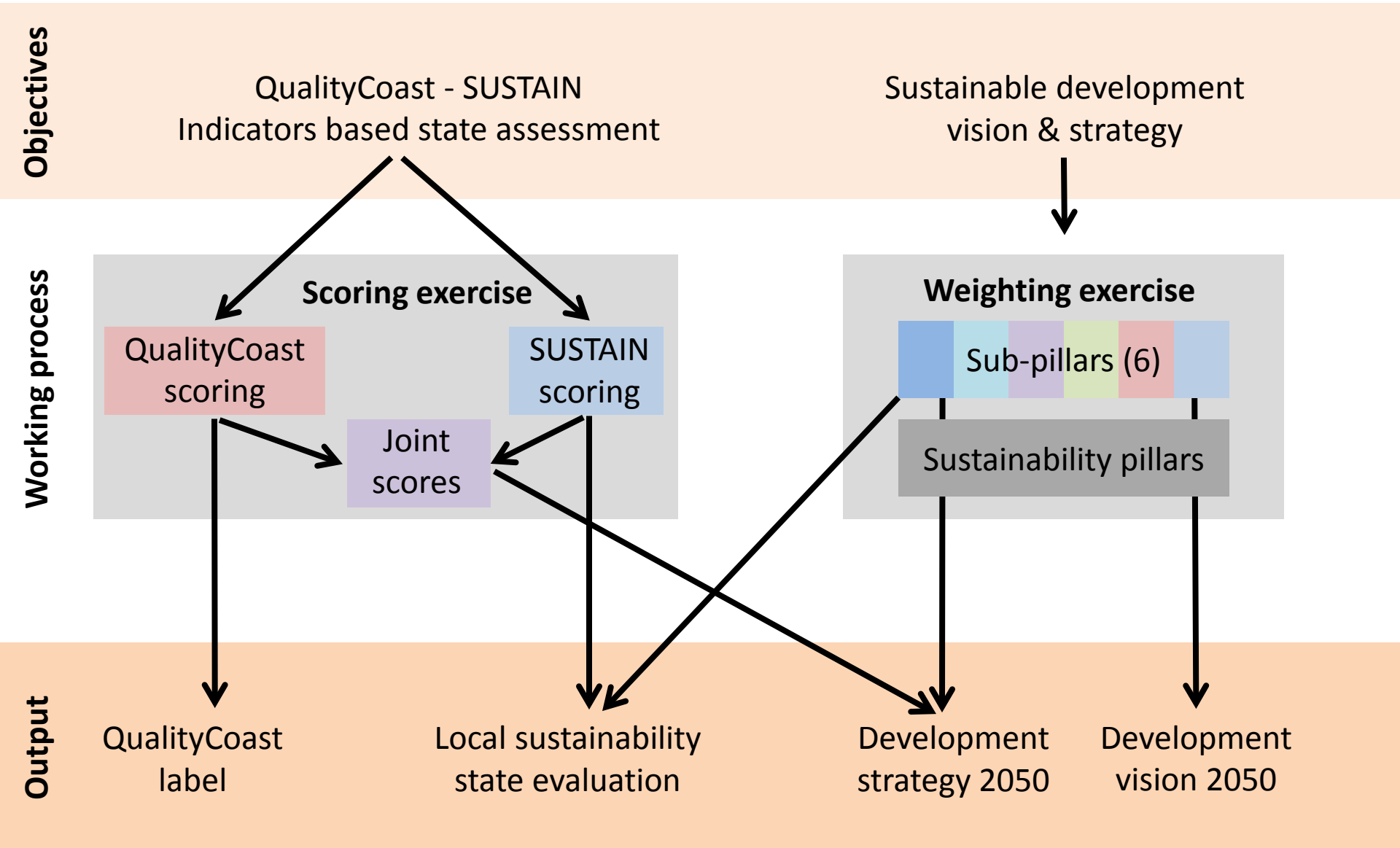
SOCIO-ECONOMICS

16. TOURISM
17. DESTINATION MANAGEMENT
18. BUSINESS INVOLVEMENT
19. COMMUNITY PARTICIPATION
20. HEALTH & SAFETY

Thank you for your attention!

Picture: OZ

Combination with the QualityCoast indicator set to increases the motivation and benefit for municipalities.



SUSTAIN

SUSTAIN indicator sets are a starting point..... what is necessary to make it a success ?

- Indicator application results have to have a concrete benefit (economic, promotional etc.)
- The application has to include a learning and awareness-rising process which is perceived as valuable and maintains motivation
- The application process and the results have to support strategic planning towards sustainability

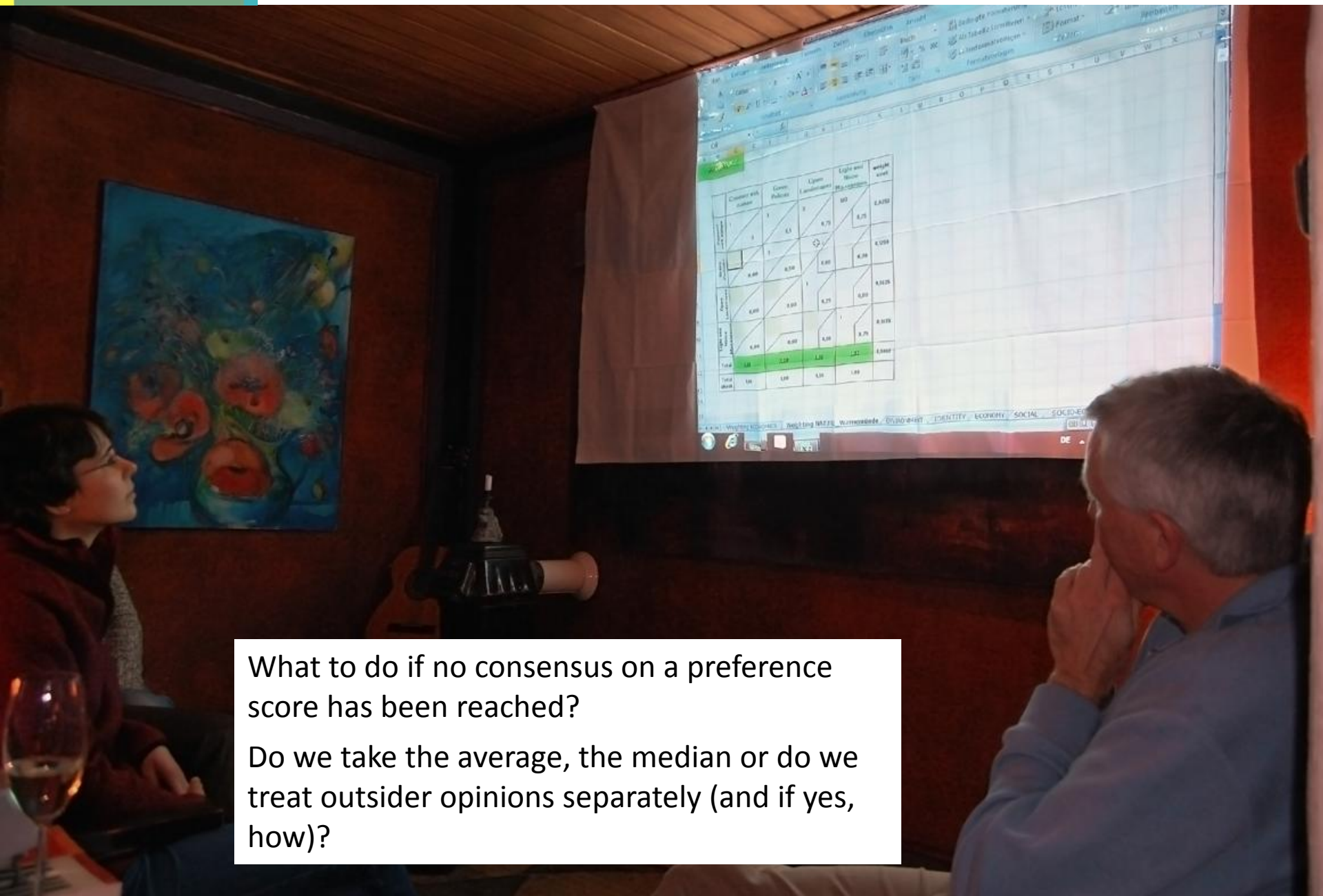
SUSTAIN…the way ahead

- The combination of SUSTAIN and QualityCoast indicator sets ensures a concrete economic and promotional benefit (QualityCoast label) .
- Flexible indicator sets and a weighting/preference system give communities flexibility to express what is important to them (Development Vision 2050).
- The weighting/preference system allows to express a future development vision and to compare it with the present state. It shows communities if they are on the right track (Development Strategy 2050).

SUSTAIN

Methods to involve stakeholders

Consensus on a joint score – a major challenge



What to do if no consensus on a preference score has been reached?

Do we take the average, the median or do we treat outsider opinions separately (and if yes, how)?

SUSTAIN

Back to the roots…..what exactly are the objectives of sustainability (ICZM) indicator sets ?

- To provide sets of measurable indicators that allow a comprehensive and reliable analysis of the state and/or process towards a sustainable development (in coastal communities)

  → Requires tested, largely fixed, high quality indicators

- To allow inter/trans-regional comparisons and applications at different times (years, states of development)

  → Requires (additionally) a fixed scheme with one scoring method, comparable ranges etc.

- To develop a structured learning and awareness-rising process, were indicators serve as tools to understand and transfer the concept of sustainable development.

  → Requires a flexible, customizable, guided approach with direct stakeholder involvement

SUSTAIN

Task

Indicator application

Weighting exercise with stakeholders (DeCyDe system)

Flow of work

Development of an application strategy

Data search & valuation

Definition of a classification for each core indicator

Index value for each issue

Index value for each pillar

Quality and reliability assessment

Sustainability index calculation

Aggregation of issues

Definition of stakeholder group and involvement process

Application of the weighting system

Gov	Econ (5)	Env (5)	Soc (5)

DeCyDe system by X. & M. Loizidou Isotech Ltd. Limassol, Cyprus

Output

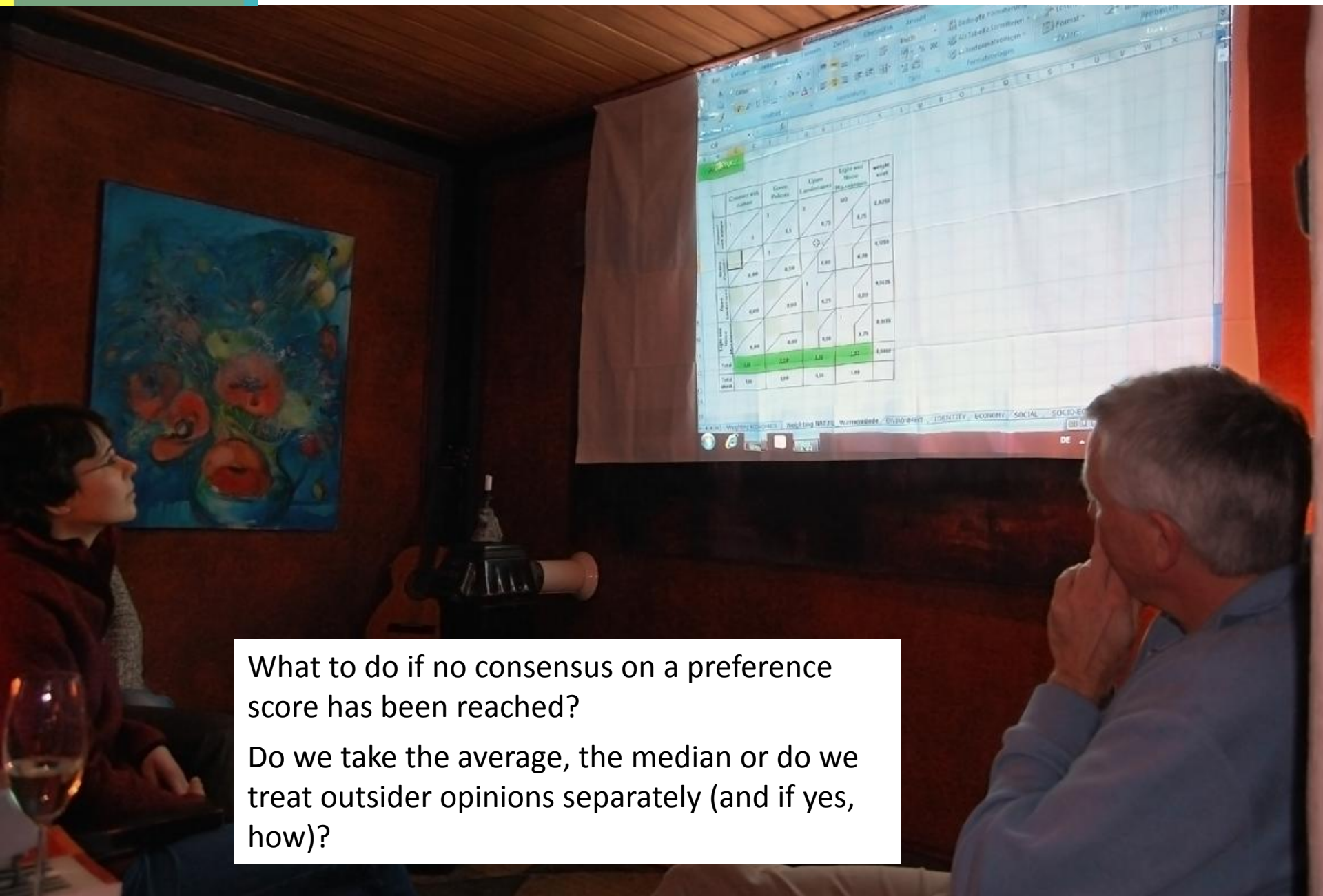
Local sustainable state evaluation

Weighted state evaluation

SUSTAIN

Methods to involve stakeholders

Consensus on a joint score – a major challenge



What to do if no consensus on a preference score has been reached?

Do we take the average, the median or do we treat outsider opinions separately (and if yes, how)?

Weighting exercise with stakeholders: issues

Social		Issue Y → Public health & safety	Local & cultural identity	Education & Training	Equity	Demography	weight coef	Issue description
Issue X ↓	Public health & safety	1 / 1/8	1 / 0,09	3 / 0,29	3 / 0,24	1/5 / 0,11	0,1732	Presence of healthy, safe and secure environment and of preventive measures
	Local & cultural identity	1 / 0,13	1 / 0,09	1 / 0,10	1/3 / 0,03	1/5 / 0,11	0,0913	Local products, cultural sites, festivals to strenghten identity
	Education & Training	1/3 / 0,04	1 / 0,09	1 / 0,10	3 / 0,24	1/5 / 0,11	0,1171	Educational attainment & Literacy
	Equity	1/3 / 0,04	3 / 0,27	1/3 / 0,03	1 / 0,08	1/5 / 0,11	0,1081	Quality of living like equal opportunities and social inclusion and poverty situation
	Demography	5 / 0,65	5 / 0,45	5 / 0,48	5 / 0,41	1 / 0,56	0,5103	Statistical study of human populations and sub-populations
	Total	7,67	11,00	10,33	12,33	1,80	1,0000	
	Total check	1,00	1,00	1,00	1,00	1,00		

Input field > Scoring scheme:

	Issue X	COMPARED TO		Issue Y	IS
less important ←				→ more important	
much	more	slightly	equal	slightly	more	much
1/7	1/5	1/3	1	3	5	7

DeCyDe system by
X. & M. Loizidou
Isotech Ltd. Limassol, Cyprus

1st weighting exercise workshop, Warnemünde, 25.Jan 2012

Lessons learnt

- Improved presentation of the benefit and added-value of the weighting method, without mentioning the indicators itself
- Clear definition of exercise objectives, participant tasks and time frame
- Well-structured but reserved moderation, with short, clear introductions
- Improved and balanced explanations on issues and terminology
- Better visual presentation of tables and the calculation system
- Better test exercises with examples to learn the methodology and the valuation
- Clear idea on a consensus finding strategy and how to deal with scattered and extreme positions
- Feedback and critical remarks at the end of the session. During session only questions to understand the process allowed
- External person takes minutes and notes

SUSTAIN

Stakeholder workshops in Warnemünde: Lessons-learnt

- **Methodische Erfahrungen: Für und wider einzelner Abstimmungsmethoden, Mittelwert-Median, Arithmetische Berechnung, Wechsel der Abstimmungsreihenfolge, Konsensfindung bei Streuung und Polarisierung. Umgang mit fehlendem Konsenz (späterer Rückgriff),**
- **Abfragefelder für min-max, Streuung**
- **Briefing der Teilnehmer: Fokussierung auf konkrete Region**

Rahmenbedingungen von Case Study Warnemünde –
Weighting-Testlauf im IOW-Saal 09.02.2012

- 9 bis 11 Uhr – ca. 2 Stunden
  davon 10 min. Einführung des Moderator (Silke) und ca. 30 min. Auswertung/Diskussion
- Kombination der Indikatorgruppen aus Quality Coast (QC) und Sustain (S)
- Ausgefüllt:
  - Category „Nature“ (QC) mit 5 Criteria = 10 Paare
  - Category „Environment“ (QC) mit 5 Criteria = 10 Paare
  - Category „Identity“ (QC) mit 5 Criteria = 10 Paare
  - Category „Social“ mit 3 Criteria (QC) und 2 Issues (S) = 10 Paare
  - Category „Economics“ mit 3 Criteria (QC) und 2 Issues (S) = 10 Paare
  - die 6 Categories (+ Governance) untereinander = 15 Felder ausgefüllt
- Zusätzliche Sustain-Indikatoren waren jeweils QC-Criteria-Gruppen (in externer Tabelle) zugeordnet
- QC und Sustain-Bezeichnungen waren abgebildet
- **-> in ca. 1,5 h wurden 25 Criteria plus 6 Categories (inklusive Governance) gewichtet – 100% allerdings ohne Governance (Yes/No-Fragenbogen auszufüllen)**
- **Teilnehmer**: 7 plus Gerald als Protokollant, Silke Moderatorin
- **Abstimmung**: Konsensprinzip; mündliches individuelles Erfragen des Wertes, alle Werte zusammen nehmen entweder - Durchschnitt
  oder - Mehrheit der Werte

SUSTAIN

Basic statements

- The application of indicators in a community raises the awareness about sustainability. This is much more important than the application result.

  → **The process counts more than the result!**

- The development of indicator has only limited relevance. Important is the development of a comprehensive methodology than enables municipalities to carry out steps towards sustainability.

  → **We only pave the way to a sustainable development!**

- A comprehensive, transparent, innovative methodology with clear practical benefit is required. It has to support planning and future steps towards sustainability.

  → **A set of indicators is not enough!**

SUSTAIN

Does SUSTAIN already provide a compromise ?

GOVERNANCE:.....

ECONOMICS: ***To promote and support a vigorous and sustainable coastal economy***

Issues (5)	Core indicators (12)	Description	Units	Relevance
Economic Opportuni-ty	Employment by sector	Percentage of the overall employed workforce by sector (e.g. % employed in fishing and agriculture, % employed in manufacturing)	%	gives indication of economic importance of different industries. The relevance of different types of economic activity at the coast will be different from place to place and will need to be locally defined.

ENVIRONMENTAL QUALITY: ***To make available and promote sustainable env. practices***

Issues (9)	Core indicators (18)	Description	Units	Relevance
Air Pollution	Air quality	Number of times limit values are exceeded for Particulate Matter (PM_{10}), Nitrogen dioxide (NO_2), Ozone (O_3), Sulphur dioxide (SO_2)	No. of times limits are exceeded	Air quality trends can provide an indication of the relationship between air pollution and adverse effects on natural ecosystems, human health and quality of life.

SOCIAL: ***To promote social unity and durability***

Issues (5)	Core indicators (11)	Description	Units	Relevance
Demograp hy	Demographic ependency	The demographic dependency ratio is the number of children (0-14 years old) and older persons (65 years or over) …		imbalanced populations can affect the long term viability of coastal communities, impact on local service provision and may ….

Core indicators provide the framework

Additional optional indicators ensure flexibility

SUSTAIN

....but numerous sets of indicators are available to measure sustainability.

- **Are they successful to transfer the idea of a sustainable development and to raise awareness about it ?**
- **Are they useful in practice and do they have a meaning for coastal communities ?**
- **Are they applied at all ?**

SUSTAIN

No, the acceptance of (ICZM and sustainability) indicators and their practical relevance (for communities) are poor !

Some reasons:

- **The development of indicators is largely an academic exercise – by scientists for scientists**
- **The development process is usually top-down and largely delivers inflexible schemes and fixed indicators sets**
- **The indicator application requires access to data and consumes much time and resources**
- **The practical relevance for communities is not obvious**
- **The results do not have an immediate and concrete benefit**