

Increasing problems in coastal zones and high-ranking political initiatives promoting Integrated Coastal Zone Management (ICZM) have resulted in indicator-based efforts to measure the state of and the progress towards sustainability in coastal zones. Indicators are popular because they provide a simplified view of complex phenomena, quantify information, and make it comparable. Indicators are regarded as important tools in European coastal and maritime policy and have been used for years to monitor the EU Sustainable Development Strategy.

1. Background

Within the three-year European INTERREG-IV Project SUSTAIN an indicator-based self-assessment method was developed. It allowed coastal municipalities throughout Europe to assess sustainability on a local and regional level for the purposes of examining and ensuring coastal sustainability. The project's objective was to develop a fully implementable policy tool targeted to coastal authorities and communities throughout Europe (Schernewski et al., 2014).

The SUSTAIN Indicator Set covered indicators from all pillars of sustainability: **Environmental Quality**, **Economics**, **Social-Wellbeing** and **Governance** that were sub-divided into criteria and it allowed flexibility through the use of core and optional indicators. The SUSTAIN indicators were scored based on a set of pre-defined scoring ranges.

2. Further Development

To add value and increase acceptance of the indicator set we merged it with the **QualityCoast Award** for sustainable tourism destinations. QualityCoast programme offers clear benefits for coastal destinations, and despite focusing on tourism, it uses an indicator system that covers many aspects of sustainability.

In the merged set all core indicators of QualityCoast were included and combined with the SUSTAIN Governance indicators. The new set was tested in ten destinations in Germany, Lithuania and Indonesia (see **Poster 97**). Thereby the following strengths and weaknesses were identified:

Strengths	Weaknesses
<ul style="list-style-type: none"> Awareness raising about coastal sustainability Identification of strength and weaknesses in coastal communities Data collection for indicators allows an easier application for QualityCoast Award 	<ul style="list-style-type: none"> High level of subjectivity due to qualitative nature of indicators Strong focus on tourism and the municipal level Lack benchmarks for indicator assessment Limited ability to measure success of ICZM initiatives Low level of reproducibility and comparability

3. Current Status of Indicator Set

The revisions following changes

- Divisions of 92 indicator in the SUSTAIN categories **Environmental Quality**, **Economics**, **Social Well-Being** and **Governance**, which are supported by 20 criteria (**Figure 1**)
- Uses the SUSTAIN spreadsheet method with pre-defined answering options on a scale from 1 to 5 (**see Figure 2**)
- To reduce tourism-focused and qualitative indicators, several QualityCoast indicators were substituted by similar SUSTAIN indicators with more quantitative answering options
- All QualityCoast BasiQ indicators that serve as a pre-assessment for the Awards, were kept to facilitate municipalities an easier application for the QualityCoast Award

ENVIRONMENTAL QUALITY	Pollution
	Water Resource Management
	Blue Flags & Beaches
	Sustainable Mobility
	Waste Management & Recycling
	Energy & Climate Mitigation
ECONOMICS	Changes at the Coast & Adaptation
	Biodiversity & Nature Protection
	Economic Opportunity
SOCIAL WELL-BEING	Business & Tourism
	Hospitality & Satisfaction
	Local Identity & Tradition
GOVERNANCE	Freedom & Justice
	Public Health & Safety
	Policies/Strategies for Sustainability
	Monitoring Tools for Sustainability
	Human Resources Capacity Building
	Implementation of Good Management Practices
	Stakeholder Involvement & Public Participation

Figure 1. Indicators Spreadsheet Tool categories and criteria

The Indicator Set designed

- To measure the current state of sustainability in coastal areas
- And to assess success in different ICZM initiatives.

CRITERION 8. BIODIVERSITY & NATURE PROTECTION	Brief description	Scoring Ranges					Indicator Score
		0-18%	19-31%	32-45%	46-58%	>58%	
8.1. Area of built-up land (SUSTAIN)	Please indicate the approximate %	1	2	3	4	5	No Data
		1	2	3	4	5	1
8.2. Nature area as a % of the total land surface of the destination (BasiQ N1)	Please indicate the approximate %	1	2	3	4	5	No Data
		1	2	3	4	5	1
8.3. Legally protected nature area (including geological features) as a % of the total land surface of the destination (Please add contours on the map) (BasiQ N2)	Please indicate the approximate %	1	2	3	4	5	No Data
		1	2	3	4	5	1
8.4. Marine protected area (incl. under Natura 2000) as a % of the marine waters (12 nautical miles zone) (BasiQ N3)	Please indicate the approximate %	1	2	3	4	5	No Data
		1	2	3	4	5	1
Number of indicators considered in the score calculation							4 out of 4

Figure 2. Sample scoring sheet taken from Environmental Quality category

4. Outlook

- Within the project BaltCoast a **Systems Approach Framework (SAF)** for the assessment of coastal management activities shall be adapted and the indicator set shall be further developed.
- It will be provided as generalized spreadsheet tool to allow scientists, authorities and municipalities map the present state of sustainability, to quantify changes in past and future and to evaluate the success of ICZM initiatives.
- For this, the indicators need to be more specific, allowing them to measure also small-scale changes.
- This shall be achieved by including a variety of optional indicators that allow flexibility.
- And incorporating ecosystem service indicators to measure and reflect the provision of the service and its change over time (**see Poster 61**).

5. BaltCoast Project

The three-year BONUS project '**BaltCoast – A Systems Approach Framework for Coastal research and Management in the Baltic**' aims at further-developing SAF for a coherent and systematic management approach of coastal regions. The BaltCoast consortium consists of seven interdisciplinary international partners in Baltic Sea region (Denmark, Lithuania, Estonia, Latvia, Sweden, Poland). Further information can be obtained from project website: www.baltcoast.net

Acknowledgements:

BaltCoast has received funding from BONUS (Art 185) funded jointly from the European Union's Seventh Programme for research, technological development and demonstration, and from Baltic Sea national funding institutions.

References:

Schernewski, Schönwald & Katarzyte (2014). Application and evaluation of an indicator set to measure and promote sustainable development in coastal areas. Ocean and Coastal Management 101, 2-13.
Loizidou & Loizides (2012) DeCyDe: a participatory method for "measuring" sustainability through a friendly, flexible, and adjustable [self-assessment?] tool In: Belpaeme, K. et al. (Eds.). Book of Abstracts, International Conference Littoral 2012: Coasts of Tomorrow Kursaal, Oostende, 27-29 November 2012, VLZI Special Publication, vol. 61, pp. 41-44.