

Measuring Sustainable Development on the Coast

a Report to the EU ICZM Expert Group by the Working Group on Indicators and Data under the lead of ETC-TE

Recommendation

- *That the EU ICZM Expert Group agrees to adopt and assist in taking forward an indicator which measures progress in implementing integrated coastal zone management.*
- *That the EU ICZM Expert Group agrees to adopt and assist in taking forward a set of indicators which measure progress in the sustainable development of the coastal zone.*

1. Context and purpose of the report

1.1 Context

Growing concerns about the state of the European coast prompted the European Commission and Member States to establish a 'Demonstration Programme' in 1996 to ascertain best practice in addressing coastal issues.

The outcome of six thematic studies together with the experience of 35 pan-European demonstration projects led to the presentation of two documents by the Commission in September 2000: a *Recommendation concerning the implementation of Integrated Coastal Zone Management*¹ and a *Strategy for Europe*². The Recommendation was adopted by Council and Parliament on 30 May 2002.

Inter alia, the Recommendation recognises that good decisions are based on relevant, credible and reliable information. It argues that we need to improve our understanding of coastal and marine processes, and to bridge the gap between the scientific and technical community and practitioners. In particular, the Recommendation calls for an integrated approach to monitoring the sustainable development of the coastal zone. Such an approach would provide information in appropriate and compatible formats relevant to the needs of end users at all spatial levels – European, regional seas, Member States, regions and localities.

Responding to the Recommendation, the first High Level Forum on Community Strategies for Integrated Coastal Zone Management, held in Spain in October 2002⁽³⁾, commended the use of comparable indicators in assessing both the status of the coast and the degree to which an integrated system of coastal management is being introduced around the European littoral.

¹ Commission of the European Communities (2000). Proposal for a European Parliament and Council Recommendation concerning the implementation of Integrated Coastal Zone Management in Europe. Brussels COM (2000) 545 final.

² Commission of the European Communities (2000). Communication from the Commission to the Council and the European Parliament on Integrated Coastal Zone Management: a Strategy for Europe. Brussels COM (2000) 547 final.

³First European ICZM High Level Forum on Community Strategies for Integrated Coastal Zone Management (2002). La Vila Joiosa, Spain.

The Forum further recommended establishing an 'expert group' to assist Member States and Accessing Countries in developing, where appropriate, a common methodology for responding to the challenges facing the coastal zone and enumerated in the EU Recommendation.

The EU ICZM Expert Group held its first meeting in October 2002 and agreed to set up a Working Group on Indicators and Data (WG-ID) under the leadership of the European Topic Centre Terrestrial Environment which would advise the Expert Group on ways in which an indicators-based assessment could be taken forward. The WG-ID was asked to report to the second meeting of the Expert Group scheduled for June 2003.

The WG-ID met in Barcelona in February and began an exchange of views about the value and validity of different types of indicators and the varying ways in which they are employed by end users at different spatial levels. Subsequent to that meeting, a number of draft proposals were circulated between Working Group members and a penultimate draft discussed at a private meeting with the Commission in May. Further modifications led to the current document being drawn up and circulated to the Expert Group at the beginning of June.

1.2 Purpose

This report sets out how best to respond to the Recommendation's call, echoed by the High Level Forum, for an integrated approach to monitoring the sustainable development of the coastal zone.

It proposes that Member States and Accessing Countries adopt a framework which will establish not only a benchmark of ICZM activity in each country but also a method by which subsequent progress in implementing multi-sectoral coastal planning and management can be monitored and assessed in preparation for the presentation of national coastal strategies in 2006.

The report further seeks to help practitioners at all spatial levels to assess whether we are moving further towards, or away from, a more sustainable future for the coastal zone, and at what pace.

2. Integrated Coastal Zone Management

ICZM is defined by the European Union as a dynamic, multi-disciplinary and iterative process designed to promote sustainable management of coastal zones. Central to that process are cycles of information collection, interpretation, transformation, dissemination, review and evaluation responsive to the varying needs of end users at European, national, regional and local levels.

ICZM is recognised as the most effective tool for incorporating conservation and sustainable use of marine and coastal biodiversity aspects into the planning process. However, in order to determine how well, or efficiently, ICZM is being implemented, certain signposts of progress need to be delineated.

3. Indicators and ICZM

An indicator provides a simplified view of a more complex phenomenon, or provides insights about a trend or event that cannot readily be observed. Thus indicators both quantify information and simplify information.

3.1 Selection of key indicators

The two indicator sets chosen – one measuring progress on implementing ICZM and one measuring progress in sustainable development – are linked inextricably. Used together, they can give an indication of the degree to which the implementation of ICZM is correlated with a more sustainable coast. That is, decisions using an integrated approach should see a positive improvement in the state of the coast with concomitant progress towards sustainable development and increased or status quo biodiversity values. The indicators measuring sustainable development will in turn feedback to give policymakers an indication of the need for further action in ICZM.

At present it is not possible, except in relatively few and fairly specific instances, to be precise about the role ICZM is playing in meeting the challenges laid down in the Recommendation. It will be necessary in the longer term to develop specific indicators which will measure the *impact* of ICZM on the state of the coast. The need at present, in order to compare past events with the current situation, is to benchmark as soon as possible.

3.2. Indicators that show progress in the implementation of ICZM

An attempt could be made to evaluate progress in the use of the appropriate mechanisms and processes of ICZM using semi-quantitative criteria. If ICZM is regarded as a cyclical, but step-wise, process, it should be possible to order the various steps needed to pass from a situation where no ICZM is being used to one where it is being fully implemented.

Initially, answering simply “yes” or “no” to whether a particular coastal management mechanism is being used should enable an authority to determine how far along the ICZM path it has traveled. It should also help in identifying impediments to further progress.

This binary response could be extended, for example, by a “progress made” response and after that, it may be possible to refine the methodology such that the *degree* of implementation at any one level can be assessed, perhaps with a star-rating of * to ***** or quantitatively with either the percentage of regional/local authorities achieving a particular result or the length of coastline influenced by ICZM.

Thought will also have to be given to the *quality* of the response at any level, i.e. how *good* is the Master Plan (level 2). This should be possible as experience is gained by the introduction of various states within any indicator. An example for level 14, public consultation, would be

- 0 = no mechanism for public consultation,
- 1 = building of a mechanism in progress,
- 2 = a mechanism exists but is not in use, and
- 3 = a mechanism exists and is routinely used.

This methodology will allow the trend in implementation *within* any one country to be compared at regional and local levels. It will also allow a comparison *between* countries to be

made. In both cases, such comparisons will mean that best practice in ICZM can be disseminated more readily to those localities, regions and countries which perhaps lack capacity in certain aspects of technical application or in management and planning expertise.

Table 1 shows how progress in the development of the mechanisms and process of ICZM can be measured. The criteria shown may be regarded as potential indicators in this step-wise process. Although the list is not exhaustive, it is comprehensive enough to allow progress in ICZM to be measured.

Several conclusions may be drawn from the hypothetical example. Ten years ago, despite a general lack of national initiatives, there existed both regional and local plans for the coast. However, progress in implementing ICZM has taken place over the past decade although the national outlook still lags behind the regions and local areas. The example also shows that the national perspective with respect to information flow is not the same as that perceived by the regional and local authorities. This would indicate a problem area that needs attention. Further, it demonstrates that the local and regional authorities need to concentrate on conflict resolution as their next step in the process whilst the national bodies need to include mechanisms for participation. Funding, as always, remains a problem!

Although step-wise in design, it takes the thinking about the cyclical ICZM management process towards a means for a semi-quantitative, comparative analysis. The steps listed provide a simplified 'road-map' for a complex, dynamic and adaptive process. This approach will need to be refined as experience in monitoring ICZM progress is developed. However, in the longer-term, mapping of coastal areas in terms of the progress in ICZM should be achievable.

3.3. Indicators that show progress in the sustainable development of the coastal zone

This set of indicators measures the general state of the coast and the general trend towards, or away from, sustainability.

There are many hundreds if not thousands of coastal and marine indicators. The WG-ID has looked for those which can measure whether or not we are meeting the sustainable challenges for the coastal zone laid down by the EU ICZM Recommendation (see Annex 2). Apart from that criterion, the indicators chosen have several advantages:

- they allow baseline data across a range of issues to be produced fairly quickly (with the intention of updating by 2006)
- they help to understand the meaning of the challenges in a synthetic way
- they are easy to understand and useful for both practitioners and policy-makers as well as the general public
- they allow trends to be measured and compared
- they can (largely) be measured at European, Member State, regional and local levels.

Taken together, these indicators should show a correlation, over time, between the ICZM decision-making process and improvement in the sustainability of coastal communities and coastal ecosystems and biodiversity.

4. Concluding comments

Given the history of coastal degradation caused by decades of neglect and sectoral mismanagement, improvements shown through sustainable development indicators will only be achieved in the long-term through a successful, national ICZM programme implemented regionally and locally.

Measuring progress in ICZM implementation against improved sustainability of the coastal zone at all spatial levels is a necessary component in the evolution of national coastal strategies. Employing a harmonised methodology with the capacity to share in the collection, interpretation, transformation and dissemination of information will add value immeasurably to the efforts of individual localities, regions and countries and help promote a collective and mutually supportive approach to tackling the challenges posed by coastal and marine issues.

1 Annex 1 Indicators that show progress in the implementation of ICZM

How an assessment may look.

Table 1: Indicator for the development of the Mechanisms and Process of ICZM.

Level	Criteria	National		Regional		Local	
		1990	2000	1990	2000	1990	2000
0	None of the following levels are being used	No	Yes	No	No	No	No
1	Assessment of the state of the coast	No	Yes	Yes	Yes	Yes	Yes
2	Master plan for the Coast	No	Yes	Yes	Yes	Yes	Yes
3	Normative planning for protected areas	No	Yes	Yes	Yes	Yes	Yes
4	Funding commitment	No	No	No	No	No	No
5	Isolated demonstration projects	No	Yes	Yes	Yes	Yes	Yes
6	Integration of legal instruments at the coast / ICZM plans	No	Yes	No	Yes	No	Yes
7	Human capacity & programme administration	No	No	No	No	No	No
8	Strategy for sustainable development	No	Yes	Yes	Yes	Yes	Yes
9	Coordination of competent authorities at all levels	No	Yes	No	Yes	Yes	Yes
10	Information flow from national to local & vice versa	No	Yes	No	No	No	No
11	Stakeholder consultation	No	No	No	Yes	No	Yes
12	Scientific information - natural & social	No	No	No	No	No	No
13	Inter-regional authority co-operation	No	No	No	No	No	No
14	Public consultation	No	No	No	No	No	Yes
15	Monitoring improvement at the coast	No	No	No	Yes	No	Yes
16	Mechanism for conflict resolution	No	No	No	No	No	No
17	Sustainable financing mechanism	No	No	No	No	No	No
18	Assessment of sustainable trends	No	No	No	No	No	Yes
19	Integrated evaluation	No	No	No	No	No	No
20	ICZM National Strategy	No	No	No	No	No	No
21	Implementation of all the above levels	No	No	No	No	No	No

Level 0 indicates that no planning is being carried out at all in any form.

Levels 1 - 4 indicate that coastal planning is occurring but it may not be of an integrated nature.

Level 5 indicates that *non-systematic* ICZM schemes are occurring

Levels 6 - 8 are indicative of the framework for ICZM.

Levels 9 - 10 are indicative of the *vertical* integration of administrative/planning bodies.

Levels 11 - 14 are indicative of *horizontal* integration of interested parties.

Levels 15 - 20 are indicative of *efficient, participatory* planning.

Level 21 is the goal, complete implementation of ICZM.

Annex 2 Indicators that show progress in the sustainable development of the coastal zone

This set of indicators will help to assess whether or not we are meeting the key challenges for the coastal zone identified by the EU Recommendation. The indicators chosen are representative of a wide range of environmental, economic and social variables and will help Member States and Candidate Countries prepare their coastal strategies by providing current benchmarks as well as a common methodology for identifying future trends.

Table 2: Challenges for a sustainable coast

1.1	Policy: Recommendation of the European Parliament and of the Council of 30 May 2002 concerning the implementation of ICZM in Europe [2002/413/EC]
1.2 Challenges	
<ul style="list-style-type: none"> to restrict further development of the undeveloped coast 	Chapter IV (b) (i); Chapter I (f)
<ul style="list-style-type: none"> to protect, enhance and celebrate natural and cultural diversity 	Chapter I (a)
<ul style="list-style-type: none"> to promote and support a dynamic and sustainable coastal economy 	Chapter I (d)
<ul style="list-style-type: none"> to ensure that beaches are clean and that coastal waters are unpolluted 	Chapter I (a) and (h)
<ul style="list-style-type: none"> to reduce social exclusion in coastal communities 	Chapter I (e) and (g)
<ul style="list-style-type: none"> to use natural resources wisely 	Chapter I (a)
<ul style="list-style-type: none"> to ensure appropriate and ecologically responsible coastal protection 	Chapter I (b) and (c)

Table 3: Indicators of a sustainable coast ('Headline' indicators highlighted)

Challenge	N°	1.2.1 Indicator	European	National	Regional	Local	Data source/existing data	
							European	Nat/reg/loc
To restrict further development of the undeveloped coast	1	Area of built-up coastal zone					CORINE	GIS
	2	Proportion of population living in the coastal zone					EUROSTAT	statistics/ GIS
	3	Population density in the coastal zone					EUROSTAT	statistics/ GIS
	4	Rate of development of previously undeveloped land					CORINE	GIS
	5	Volume of traffic on major roads in the coastal zone	-	-			-	statistics
	6	Number of coastal and estuarine berths and moorings	-	-			-	monitoring
	7	Rate of land take by intensive agriculture					CORINE	GIS
To protect, enhance and celebrate natural and cultural diversity	8	Proportion of coastal zone (land and sea) protected for nature conservation, landscape or heritage reasons					NATURA2000	GIS
	9	Rate of loss of, or damage to, protected areas					CORINE & NATURA2000	GIS/monitoring
	10	Change to significant coastal and marine habitats and species					Wetlands Intl/ GOOS/IUCN	monitoring/ research
To promote and support a dynamic and sustainable coastal economy	11	Volume of freight handled by ports					EUROSTAT	statistics
	12	Proportion of short sea shipping	-	-			-	statistics
	13	Rate of change in sectoral employment in the coastal zone	-				-	statistics
	14	Per capita expenditure on tourism	-	-			-	statistics
	15	Percentage change in the number of visitors to the coastal zone					EUROSTAT	statistics
	16	Rate of seasonal variations in employment in tourism	?				-	statistics

	17	Rate of growth of sustainable tourism in the coastal zone	-				-	webs and guides
To ensure that beaches are clean and that coastal waters are unpolluted	18	Number and volume of marine oil spills	-				-	ACOPS
	19	Degree of compliance with Bathing Water Directive microbiological standards					WFD, ADAC MARINEBASE	monitorin g/ statistics
	20	Degree of compliance with Shellfish Hygiene Directive and Shellfish Waters Directive					MARINEBASE	monitorin g/ statistics
	21	Concentration of nutrients in coastal waters				?	Nopolu/ Moneris	monitorin g/GIS
	22	Volume of coastal and estuarine litter	-	-			-	monitorin g/GIS
To reduce social exclusion in coastal communities	23	Index of social deprivation in the coastal zone	-				-	statistics
	24	Average household income in the coastal zone	-	?			-	statistics
	25	Rate of mortality in the coastal zone					EUROSTAT	statistics
To use natural resources wisely	26	Volume and value of fish landings					MARINEBASE	statistics/ GIS
	27	Number of days per annum of reduced supply of piped water in the coastal zone	-	-			-	statistics
	28	Waste water treatment capacity and index of reuse of treated water	-				-	statistics
To ensure appropriate and ecologically responsible coastal protection	29	Length of eroding, accreting and stable coast					EUrosion	Futurecoa st/GIS
	30	Annual number of stormy days at the coast	-				-	meteo services
	31	Rate of change in mean sea level	-	-			-	statistics/ GIS
	32	Area affected by flooding in the last 10 years					ETC-TE/EEA	GIS
	33	Length of protected and defended coast					CORINE EUrosion	GIS

2 Annex 3 Working Group on Indicators and data

Table 4. Participants:

Country or region	Name	Institution
Bulgary	Krasimir Gorchev	Ministry of the Environment
Finland	Saara Back	Ministry of the Environment
France	Christophe le Visage,	Secrétariat Général de la Mer
Germany	Volker Barthel	German Coastal Engineering Research Council
Kent Council	Clive Gilbert	Sailcoast project
Malta	Michelle Borg	Malta Environment and Planning Authority
Spain	Ma Jesus Rodriguez de Sancho	Ministerio del Medio Ambiente
	Gonzalo Gomez Barquin	Ports of Spain, Ministry of Public Works
UK	Nicola Carnie (until May 2003)	Department for Environment, food and Rural Affairs
	Sam Rowbury (after May 2003)	Department for Environment, food and Rural Affairs
ETC-TE	Françoise Breton	
	Alan Pickaver	

2.1 Table 5. Observers

Institution	Name
Generalitat of Catalonia- Dpt Environment	Xavier Marti
Generalitat of Catalonia- Dpt Public Works	Francesc Alavedra
CRPM (Comité des Régions Périphériques Maritimes)	François Desrentes
Esturiales network	François Burbaud