

COASTAL AREA MANAGEMENT AND MONITORING

Integrated Coastal Zone Management (ICZM) and Integrated
Coast Area Management (ICAM)

European Union Recommendations and Experiences,
UNEP MAP Protocol

Mr. Stefano Corsini

APAT

Agency for Environmental Protection and Technical Services

What is the coastal zone?

The coastal zone is defined as a strip of land and sea of varying width depending on the nature of the environment and management needs.

It seldom corresponds to existing administrative or planning units.

The natural coastal systems and the areas in which human activities involve the use of coastal resources may therefore extend well beyond the limit of territorial waters, and many kilometres inland.



The knowledge in deep is to be extended to all the coastal zone to which the principle of integrated coastal management (ICZM) are applied.

That area could be defined offshore by the limit of the continental shelf, if included in territorial waters, and onshore by the envelope of the municipalities nearest to the coastal ones crossed by the RICE line (APAT).

EU strategy: Integrated coastal zone management

ICZM represents the **innovative instrument** to reorient towards economic, social and environmental sustainability all the coastal activities

ICZM is elaborated favoring an **integrated and multisectorial approach** and acknowledge the most advanced indications by EU on coastal systems

ICZM aim to **aggregate the different politics** which influence the coastal regions and is actuated by the planning and management of the coastal resources and space.

ICZM is not an isolated initiative but a **dynamic process** destined to last and develop during time

EU strategy: Integrated coastal zone management

ICZM is not only an environmental politic. The protection of natural ecosystems is one of the main objectives of the strategy, but ICZM is aimed to promote the **economic and social welfare of coastal zones** and to allow them to develop modern and dynamic communities

The **involvement of all the interested actors** is a fundamental principle of ICZM.

The main assumption of ICZM is the involvement of all the responsible of local, regional, national and european politics and more in general local populations, ONG, companies etc.

RECOMMENDATION OF THE EU PARLIAMENT AND OF THE COUNCIL

30 May 2002, concerning the implementation of Integrated Coastal
Zone Management in Europe (2002/413/EC) (see text enclosed)

Strategic approach

Member States take into account the sustainable development strategy and the Decision of the European Parliament laying down the sixth Community environment action programme (3), and take a strategic approach to the management of their coastal zones, based on:

- (a) protection of the coastal environment, based on an ecosystem approach preserving its integrity and functioning, and sustainable management of the natural resources of both the marine and terrestrial components of the coastal zone;
- (b) recognition of the threat to coastal zones posed by climate change and of the dangers entailed by the rise in sea level and the increasing frequency and violence of storms;
- (c) appropriate and ecologically responsible coastal protection measures, including protection of coastal settlements and their cultural heritage;
- (d) sustainable economic opportunities and employment options;
- (e) a functioning social and cultural system in local communities;
- (f) adequate accessible land for the public, both for recreational purposes and aesthetic reasons;
- (g) in the case of remote coastal communities, maintenance or promotion of their cohesion;
- (h) Improved coordination of the actions taken by all the authorities concerned both at sea and on land, in managing the sea-land interaction.

Eight Principles of Good ICZM

- 1: A broad overall perspective (thematic and geographic) which will take into account the interdependence and disparity of natural systems and human activities on coastal areas.
- 2: A long-term perspective which will take into account the precautionary principle and the needs of present and future generations.
- 3: Adaptive management during a gradual process which will facilitate adjustment as problems and knowledge develop. This implies the need for a sound scientific basis concerning the evolution of the coastal zone.
- 4: Local specificity and the great diversity of European coastal zones, which will make it possible to respond to their practical needs with specific solutions and flexible measures.
- 5: Working with natural processes and respecting the carrying capacity of ecosystems, which will make human activities more environmentally friendly, socially responsible and economically sound.
- 6: Involving all the parties concerned (economic and social partners, the organisations representing coastal zone residents, non-governmental organisations and the business sector) in the management process, for example by means of agreements and based on shared responsibility.
- 7: Support and involvement of relevant administrative bodies at national, regional and local level between which appropriate links or partnership should be established and maintained coordinating existing policies.
- 8: Use of a combination of instruments designed to facilitate coherence between sectoral policy objectives and between planning and management.

National strategies

Member State should develop a national strategy to implement the principles for integrated management of the coastal zone. These strategies might be specific to the coastal zone, or might be part of a geographically broader strategy or programme.

- (a) identify the roles of the different administrative actors within the country or region whose competence includes activities or resources related to the coastal zone, as well as mechanisms for their coordination.
- (b) identify the appropriate mix of instruments for implementation of the principles, within the national, regional or local legal and administrative context.
 - (i) ensuring, *inter alia*, the control of additional urbanisation and of the exploitation of non-urban areas while respecting natural features of the coastal environment;
 - (ii) Land purchase mechanisms and declarations of public domain to ensure public access for recreational purposes protecting sensitive areas;
 - (iii) developing contractual or voluntary agreements with coastal zone users, including environmental agreements with industry;
 - (iv) harnessing economic and fiscal incentives,
 - (v) working through regional development mechanisms;
- (c) develop or maintain national and, where appropriate, regional or local legislation or policies and programmes which address both the marine and terrestrial areas of coastal zones together;

National strategies

- (d) particularly, identify measures to promote bottom-up initiatives and public participation in integrated management of the coastal zone and its resources;
- (e) identify sources of durable financing for integrated coastal zone management initiatives where needed, and examine how to make the best use of existing financing mechanisms both at Community and at national level;
- (f) identify mechanisms to ensure full and coordinated implementation and application of Community legislation and policies that have an impact on coastal areas, including when reviewing Community policies;
- (g) include adequate systems for monitoring and disseminating information to the public about their coastal zone. These systems should collect and provide information in appropriate and compatible formats to decision makers at national, regional and local levels to facilitate integrated management. The work of the European Environment Agency can serve *inter alia* as a basis for this purpose. These data should be publicly available in accordance with relevant Community legislation, in particular with the Directive of the European Parliament and of the Council on public access to environmental information and repealing Council Directive 90/313/EEC (1);
- (h) determine how appropriate national training and education programmes can support implementation of integrated management principles in the coastal zone.

Common Problems

At the interface between sea and land, life forms adapted to the special environmental conditions have evolved.

The natural habitats of the shoreline are very varied but also very small in area, and have been shrinking fast for several decades.

Eight of the forty priority habitats listed in the Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora are coastal.

Approximately a third of the Union's wetlands are located on the coast, as well as more than thirty per cent of the Special Protection Areas designated under the Directive on the Conservation of Wild Birds.

Coastal ecosystems tend to have very high biological productivity.

The reproduction and nursery grounds of most fish and shellfish species of economic value are in the coastal strip, and a significant proportion of the catch of these species comes from this area, which accounts for almost half of the jobs in the fisheries sector.

Common Problems

The quality of coastal waters is a major cause for concern.

The two most spectacular phenomena in recent years, oil slicks and algal blooms, are illustrations of the fact that coastal communities frequently suffer the consequences of events or developments occurring inland or offshore and therefore beyond their control.

Human settlement of the coastal zones and utilisation of their natural resources since early times has created unique forms of rural and urban landscapes, reflecting cultures centred on trade and largely oriented towards the outside.

Unfortunately, urbanisation and uniform agricultural and industrial developments have considerably reduced the biological diversity and cultural distinctness of the landscapes in most parts of Europe.

Common Problems

These known problems are likely to be compounded in future as a result of the general trend in environmental and socioeconomic conditions.

Recent research shows that climate change could involve a rise in sea level of several millimetres per year, and an increase in the frequency and intensity of coastal storms.

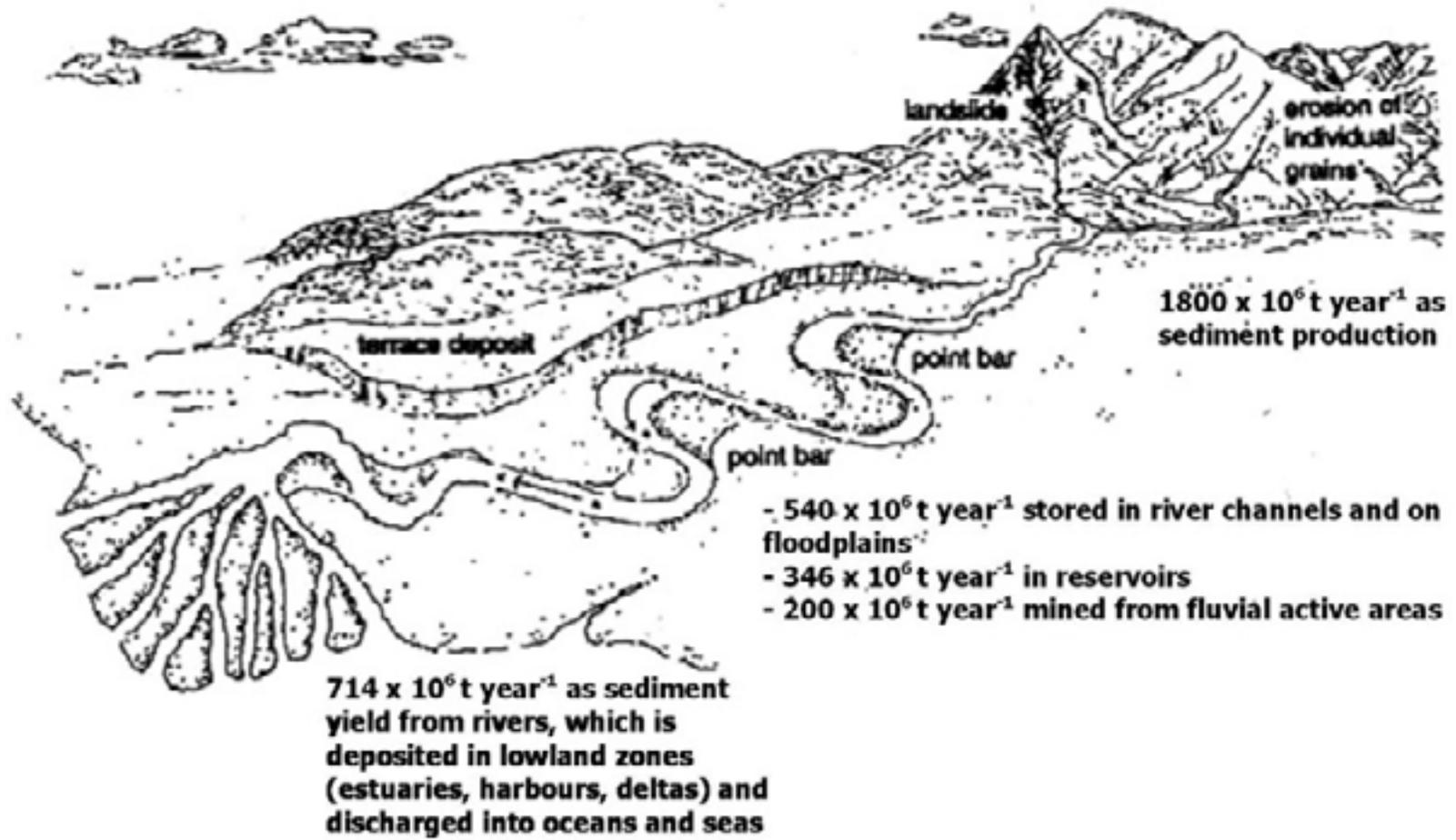
Depending on where they occur, the combined effects of these two phenomena will have serious repercussions, such as major floods.

At the same time, the expected growth, in tourism in particular, will increase human pressure on natural, rural and urban environments.

A wide range of human activities takes place in the coastal zones (industry, tourism, fishing, aquaculture, etc).

Although not necessarily more diverse than in other areas. When these activities develop together on the narrow coastal strip, problems tend to arise, creating conflicts between activities and with the goal of conservation of the nature

Common Problems



Common Problems

However, experience with environmental action programmes and regional planning work has clearly shown that sustainable development is being implemented too slowly in relation to the gravity and complexity of the problems of the coastal zones.

Specific joint action by the Union and the Member States is therefore required in order to improve the effectiveness of legislation and of the existing financial and planning tools.

Summary of Findings for the Mediterranean Region

- There are five major groups of stakeholders: i) government institutions, ii) private sector actors, iii) non-governmental organizations, iv) researchers and experts, and finally v) coastal citizens. The interests of these groups vary to a great deal, between groups as well as within groups. Some are very much focused towards coastal environmental goals, others want to achieve economic growth, often neglecting long-term considerations.
- From nine countries the following six: Cyprus, France, Greece, Malta, Slovenia and Spain delivered a national ICZM report to EU that has been assessed, while Croatia, Italy and Turkey did not do so.
- The most pronounced common problem to the majority of the countries along the Mediterranean is the artificialisation of the coast driven by an ever expanding tourism: urban sprawling, building up of second homes, sealing of soils, etc. Other common issues are: the change of coastal dynamics; a dwindling of the traditional fishery industry; the degradation of ecosystems and habitats; environmental risks along the coast; the loss and degradation of landscape; and environmental problems due to aquaculture, water sports activities and maritime transport.

Summary of Findings for the Mediterranean Region

- There is a multitude of laws, however, a consistent set of laws directing coastal governance and management is usually lacking. The main legislative and policy frameworks governing the development in the coast are usually planning instruments that have a physical preponderance and little room for needs of integration of different sectors and participation of stakeholders.
- Interregional organizations and cooperation structures do not yet feature high in the reports of the countries.
- Implementation of national ICZM strategies or equivalent has been going on since a few years in Malta and Slovenia, while it has started in 2006 for France and Spain.
- The observance of principles of good ICZM vary to a great deal among countries. Long-term sustainable development intentions, local-specific orientation and a holistic approach are incorporated in quite a number of national strategies or equivalent, at least nominally. Much more problems appear in participation of stakeholders, application of adaptive planning and management procedures, working with natural processes, proper integration of various administrative bodies and the use of a balanced combination of instruments in planning and management

Summary of Findings for the Mediterranean Region

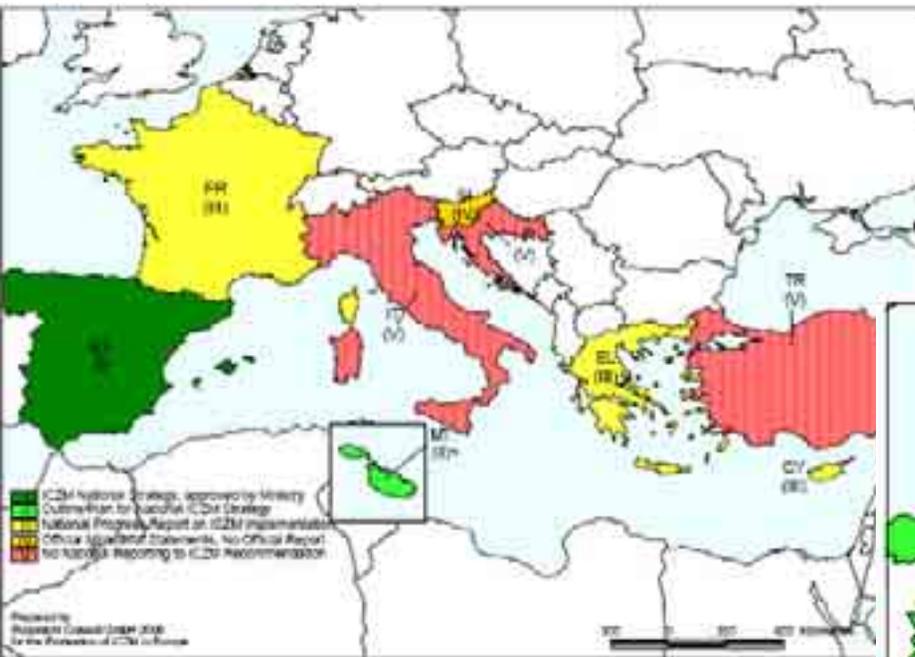


Figure 18: National Reporting to EU ICZM Recommendation (2002/413/EC) for the Mediterranean Countries

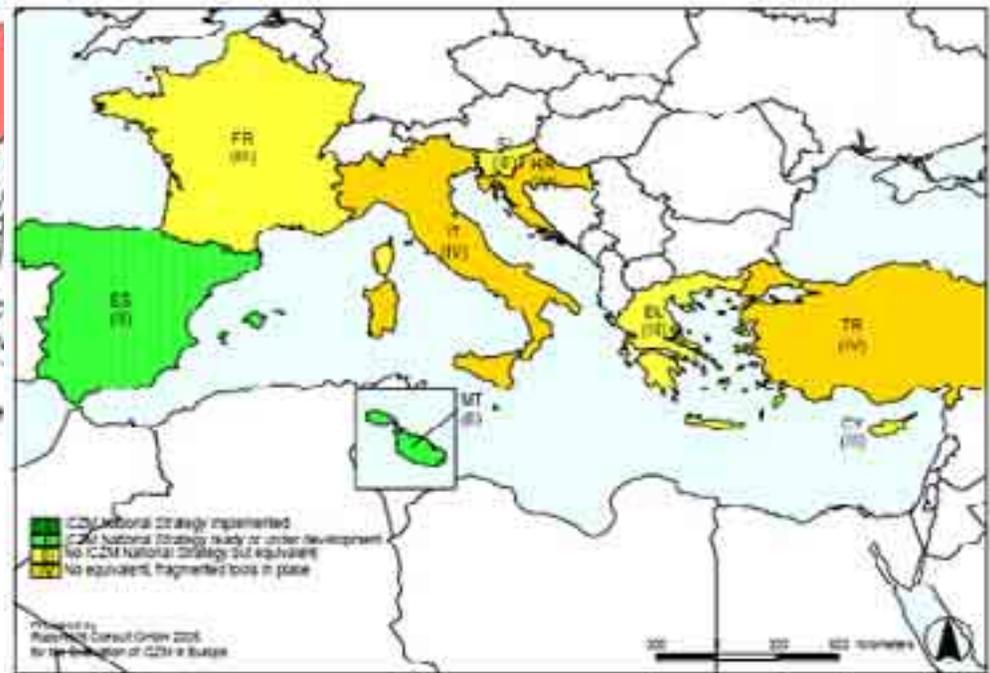


Figure 22: Status of ICZM Implementation for the Mediterranean Countries

Summary of Findings for the Mediterranean Region

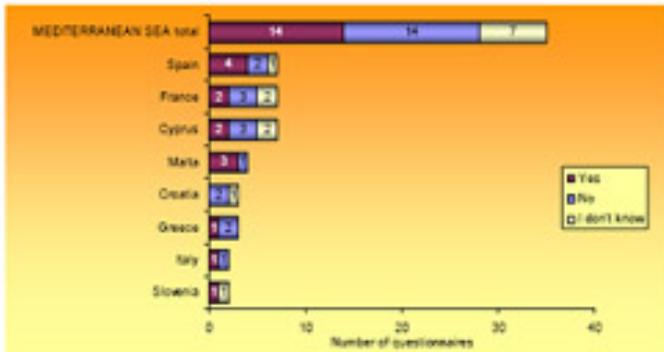


Figure 19: Response to the ICZM Evaluation Questionnaire (Mediterranean Sea): Do you think these important laws/regulations or policies are sufficiently considered in the ICZM strategy?

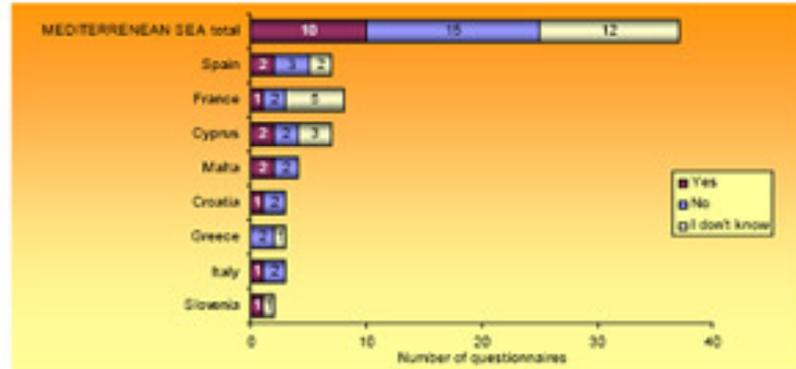


Figure 20: Response to the ICZM Evaluation Questionnaire (Mediterranean Sea): Are the levels of government rightly approached in the national coastal management policies of your country?

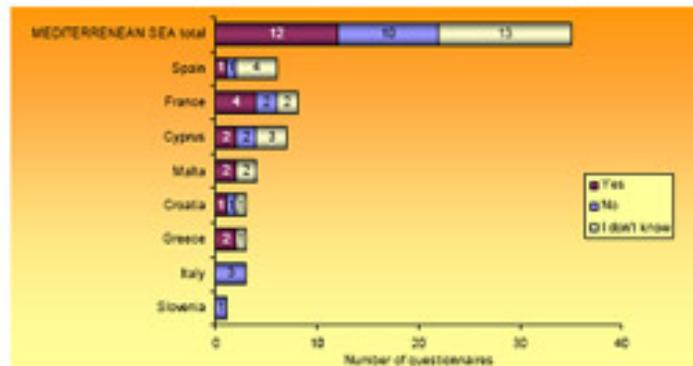


Figure 21: Response to the ICZM Evaluation Questionnaire (Mediterranean Sea): In your opinion, have the main interests of the above stakeholder groups been considered in the preparation of your country's ICZM strategy?

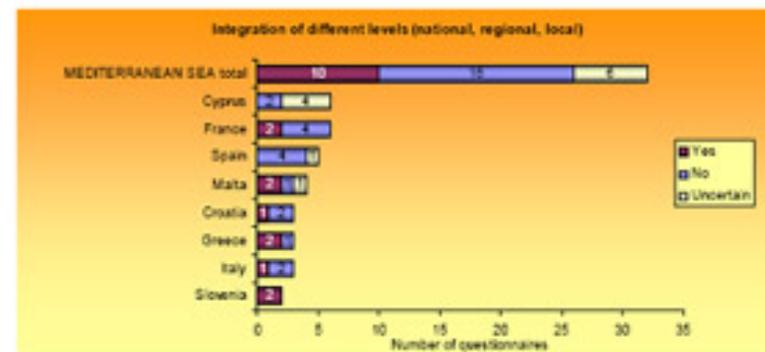


Figure 23: Response to the ICZM Evaluation Questionnaire (Mediterranean Sea): Do you feel your country's approach for coastal management in general sufficiently covers the following principles: Integration of different levels (national, regional, local)?

Summary of Findings for the Mediterranean Region

Table 16: Observing the Principles of Good ICZM in the Mediterranean.

Principles of Good ICZM	Croatia	Cyprus	France	Greece	Italy	Malta	Slovenia	Spain	Turkey
1) Is there a holistic thematic and geographic perspective in the process?									
2) Is there a long term perspective envisaged?									
3) Is an adaptive management approach applied during a gradual process?									
4) Is the process local-context specific?									
5) Does the ICZM respect and work with natural processes?									
6) Is the process based on participatory planning and management?									
7) Does the process support and involve all relevant administrative bodies?									
8) Is there a balanced combination of instruments in planning and management?									

Level of Observance

- Yes, fully: The principle is fully covered by the strategy/equivalent and in place (or close to).
- Partly fulfilled: Essential aspects of the principle are covered by the strategy/equivalent and in place. Serious initiatives for implementation are taken or foreseen.
- Significant gaps: Only some aspects of the principle are covered or implementation is foreseen.
- Not fulfilled: The principle is not or only marginally covered.
- Insufficient information: Insufficient information available for assessment.

Italy	 (IV)	<ul style="list-style-type: none"> Positive examples of ICZM can be found in regional and local efforts with some regions elaborating guidelines for integrated coastal management (e.g. in the Emilia-Romagna Region). Non-governmental organizations play an important role for environmental safeguard. Among them the Italian branch of the World Wildlife Fund, the Lega per l'Ambiente and Italia Nostra are the prominent ones. 	<ul style="list-style-type: none"> Italy did not submit a national report and there is no national ICZM strategy. This is possibly so because of a highly decentralized government system that sees ICZM functions to be executed by regional and/or local governments instead of the central, national government. Some regions offer supporting programmes of training, education and communication for ICZM, but these programmes are lacking especially at national level.
-------	---	--	--

Summary of Findings for Italy

Italy	
1) Is there a holistic thematic and geographic perspective in the process?	There is no report from Italy, other than some alternative information. There is no national ICZM strategy or equivalent approach. Geographically there are some positive examples from some Regions (especially from Emilia Romagna, also Liguria and Toscana to some extent), however, these are isolated and not connected to the national level.
2) Is there a long-term perspective envisaged?	The Interministerial Committee for Economic Planning (deliberation n. 57/2002) approved a "Strategy for environmental actions for sustainable development in Italy. The document only foresees a time frame from 2000 to 2010. This is deemed to short-termed.
3) Is an adaptive management approach applied during a gradual process?	There are no adaptive management processes in place or planned that look at ICZM in a coordinated way involving national, regional and lower level entities.
4) Is the process local-context specific?	There is no effort of the national level to involve itself into local specific coastal problems. These are left to the Regions and lower level authorities.
5) Does the ICZM respect and work with natural processes?	Law 14 of 1987 is still in force looking on „coastal defense“ foremost as a protection of settlements from the marine effects intending to protect settlements without necessary consideration of environmental effects. 42.5% of the Italian beaches are in erosion. Many shorelines are only considered stable because of the presence of defence structures that have determined landscape degradation and a reduction of the beach economic value.
6) Is the process based on participatory planning and management?	There is no indication that there is an effort from the national level to enhance stakeholder involvement in coastal zone management. In some regions (Emilia Romagna, Liguria and Toscana) some systematic efforts are made.
7) Does the process support and involve all relevant administrative bodies?	There are various different administrative levels responsible for coastal affairs (e.g. national government, Ministry of Environment for environmental and territorial protection; regional administration for maritime state property; local and provincial authorities for spatial and development planning); however, these do not work together in a systematic and consistent way to promote ICZM matters.
8) Is there a balanced combination of instruments in planning and management?	Regional and local approaches are mostly of a sectoral nature. There is no connection or no proper connection to the national level visibly in place and no plans to develop such.

UNEP MAP - DRAFT PROTOCOL ON INTEGRATED COASTAL ZONE MANAGEMENT IN THE MEDITERRANEAN

Geographical coverage

1. The area to which the Protocol applies shall be the Mediterranean Sea area:

- (a) the seaward limit of the coastal zone, which shall be the external limit of the territorial sea of States Parties;
- (b) (b) the landward limit of the coastal zone, which shall be the limit of the competent coastal units as defined by the States Parties, in order to apply, *inter alia*, the ecosystem approach and economic and social criteria and to consider the specific needs of islands related to geomorphological characteristics and to take into account the negative effects of climate change.

Principles

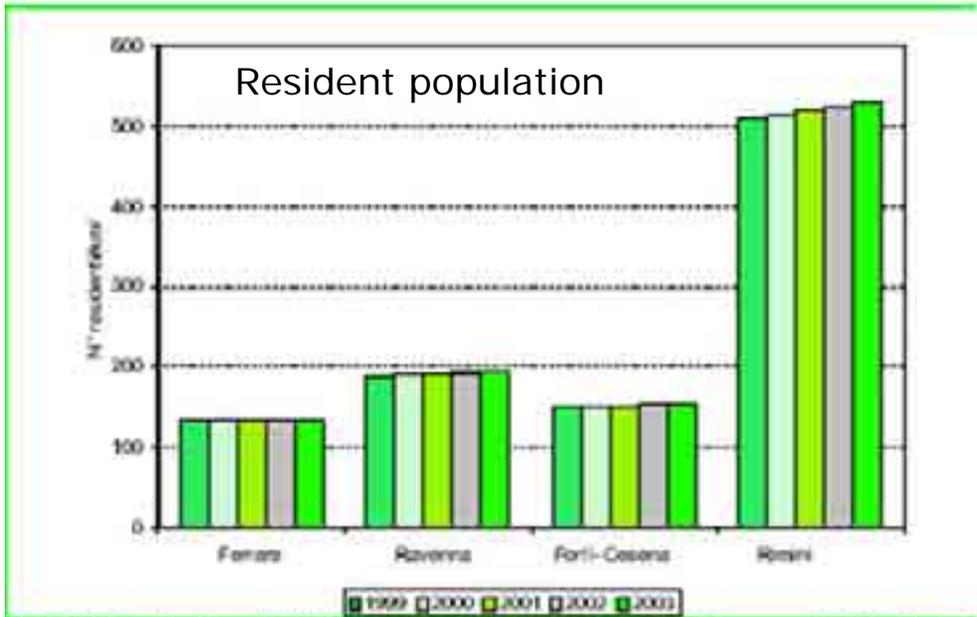
Almost the same as EU approach

(see the enclosed text of the draft protocol)

THE EXPERIENCE OF EMILIA ROMAGNA REGION

General organisation and description of problems

ANTHROPISTATION OF COASTAL SYSTEM



Fonte: Elaborazione Arpa Emilia-Romagna su dati della Regione Emilia-Romagna e delle Province

Elabor. Arpa Emilia-Romagna

Land use





Natural processes

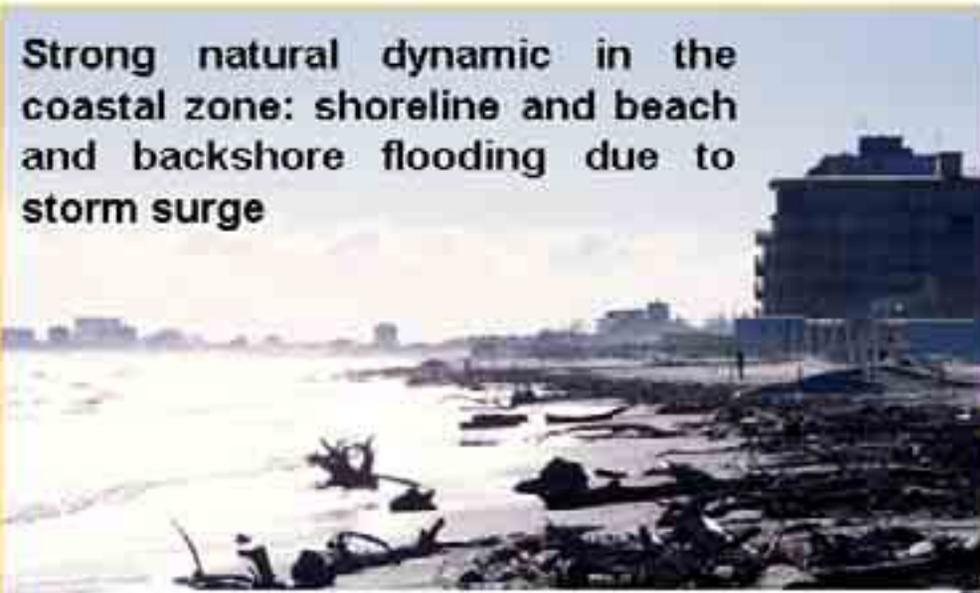
- Sea action
- River sediment transport
- subsidence
- eustatism

Human impact

- Fluids extraction from subsoil (water and gas)
- Dune destruction
- Port infrastructures (offshore breakwaters)
- Hard protection works (barriers)

General organisation and description of problems

MAIN CRITICALITY



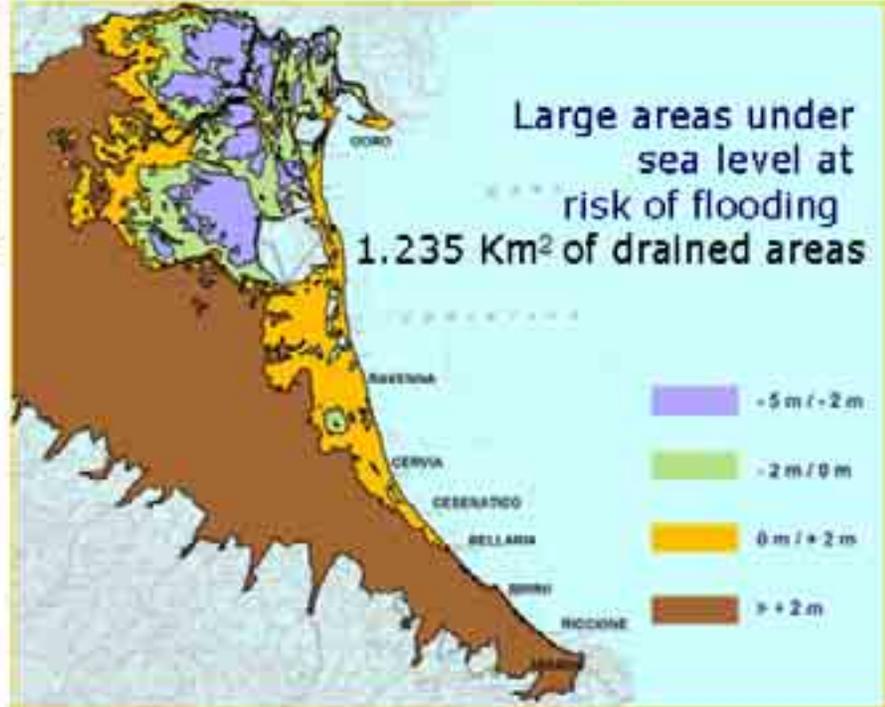
Strong natural dynamic in the coastal zone: shoreline and beach and backshore flooding due to storm surge



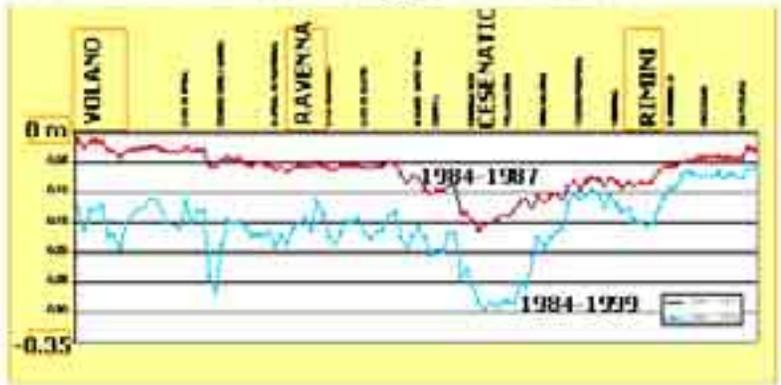
40% of coastline is affected by marine erosion

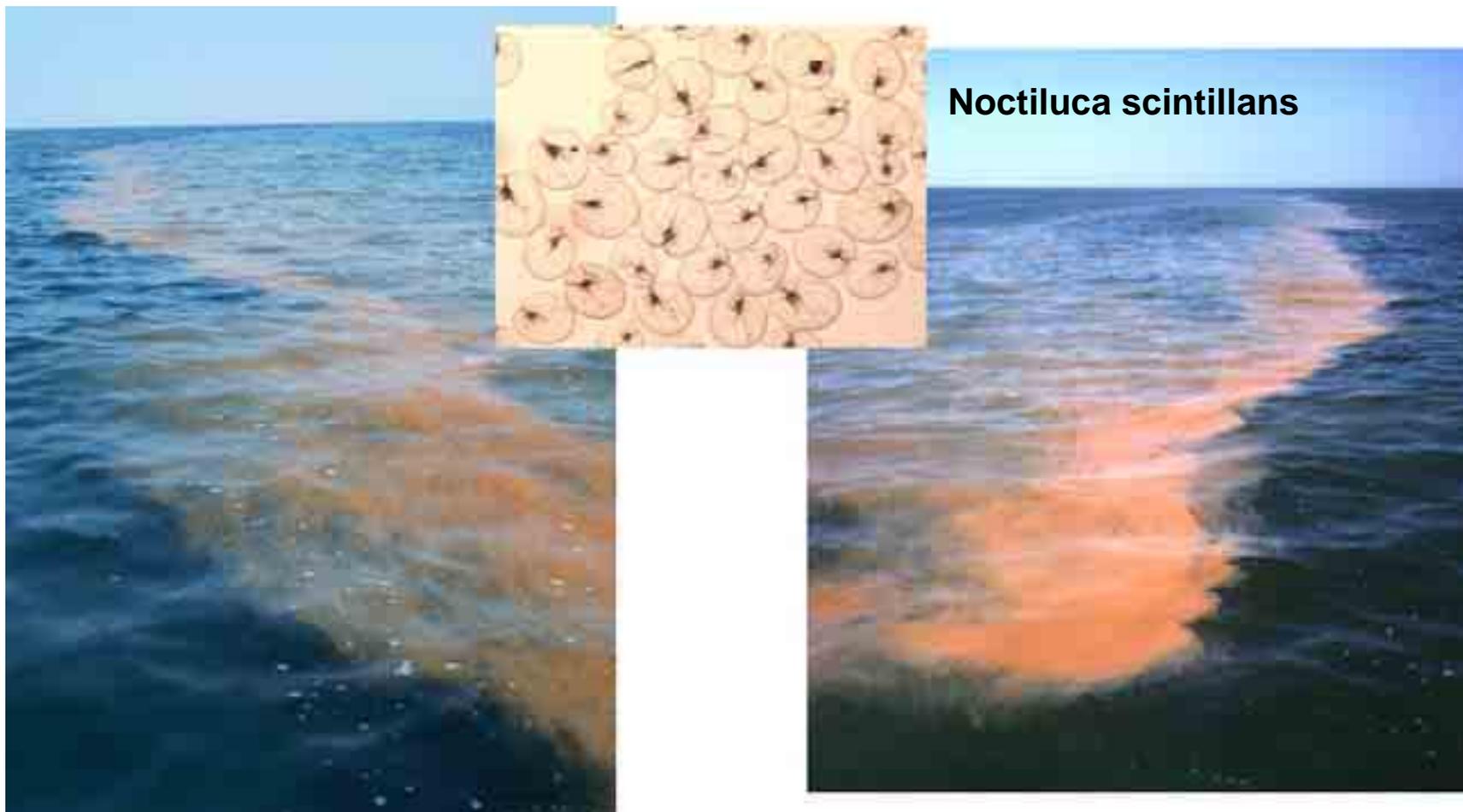


Almost complete absence of natural defence systems (dunes) and strong urbanisation

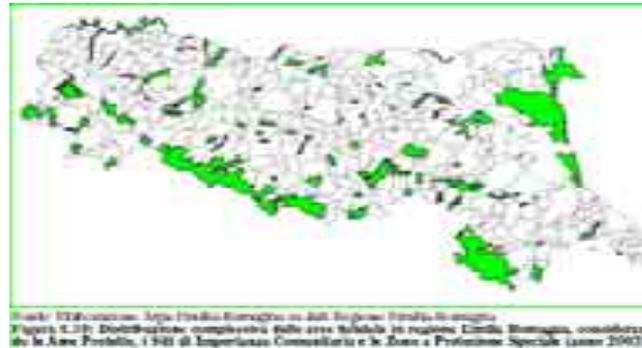


Subsidence of soil (more than 1cm/year) due to intense water and gas extraction





Coastal protected areas



	Area (HA)
PR _ Regional Park	52.285
RNO_ Oriented natural reserve	45
RNO_ZPS Special natural reserve – Special protection zone	60
RNO_SIC Oriented natural reserve – EU importance site	274
ZPS_ Special protection zone	21.973
SIC_ EU importance site	2.232
Total	76.869

Threats to biodiversity and habitats

- drained in Italy 600.000 Ha of lagoons and coastal wetlands on 700.000 existing at the beginning of '900
- drained in Emilia-Romagna 80% of lagoons and wetlands existing at the beginning of '900
- Destroyed the most part of dune systems existing at the beginning of '900
- Animal species of EU interest threated in Emilia-Romagna:



General organisation and description of problems

PORTS, ACTIVITIES AND COMMERCE



Boats and ships permanently present in the 13 regional ports

- fishing	1.279
- pleasure	4.800
- Passenger ships	35
(800.000 - 1 mil./anno)	

Ravenna Port (2001)

- Total goods	23.931.873 t/a
Dangerous goods:	
- Oil products	4.864.857 t/a
- Chemicals	1.390.328 t/a
- Fuels	398.049 t/a





Boats	1.279
Mussel Breeding	23
Operators	2.800
Catch	50.570 t/a
53% tot. bivalve mussels	
• mussels	18.313 t/a
• clams	8.914 t/a
30% tot. Blue fish	

General organisation and description of problems

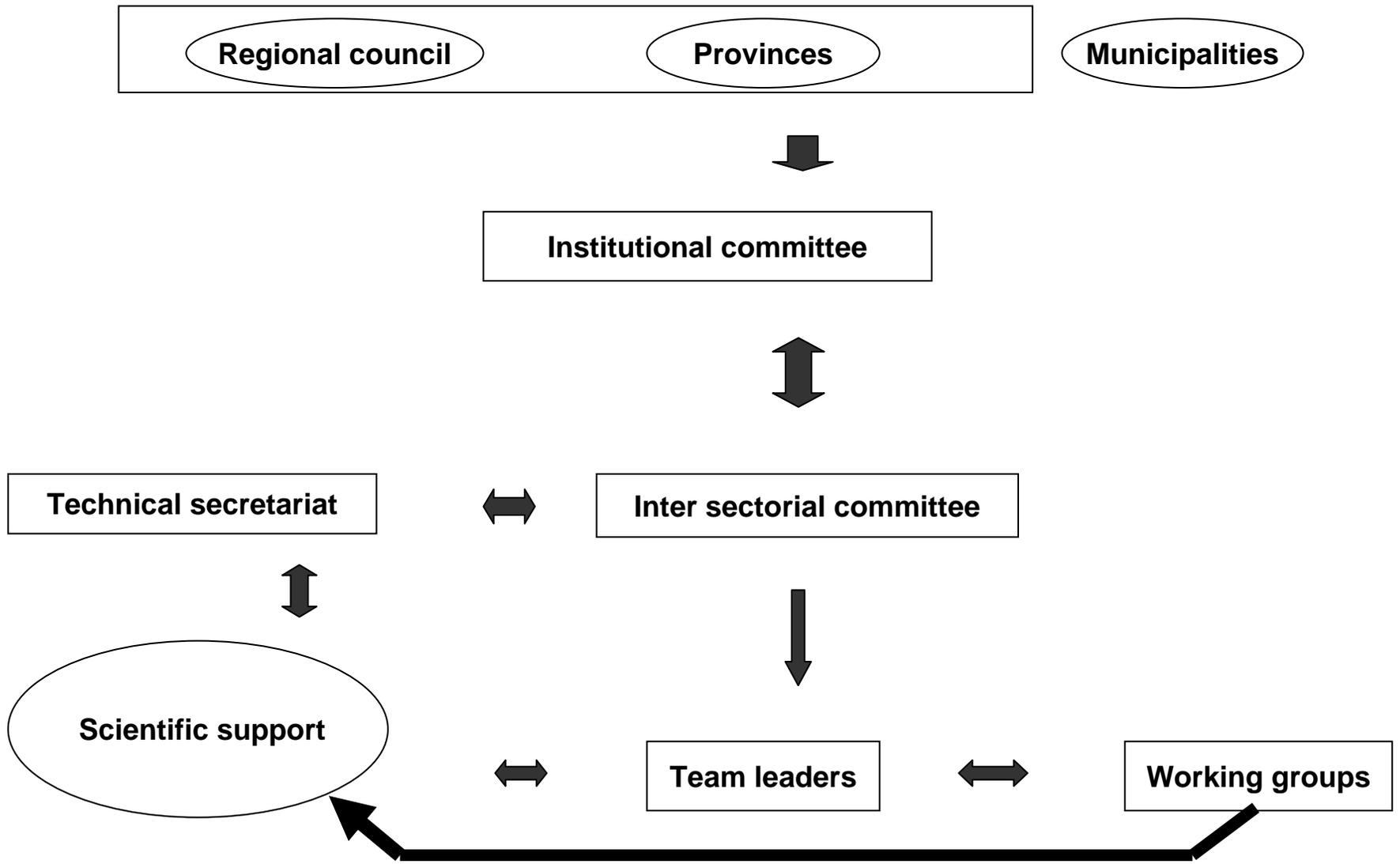
TURISM



Presences	43.500.000
Hotels	3.520
Bar	3.700
Bathing establishments	1.420
Operators (waiters, services)	65.000

The final answer: ICZM

FLUX OF ROLES AND COMPETENCIES



The final answer: ICZM

INSTITUTIONAL COMMITTEE

President: Environment Councillor

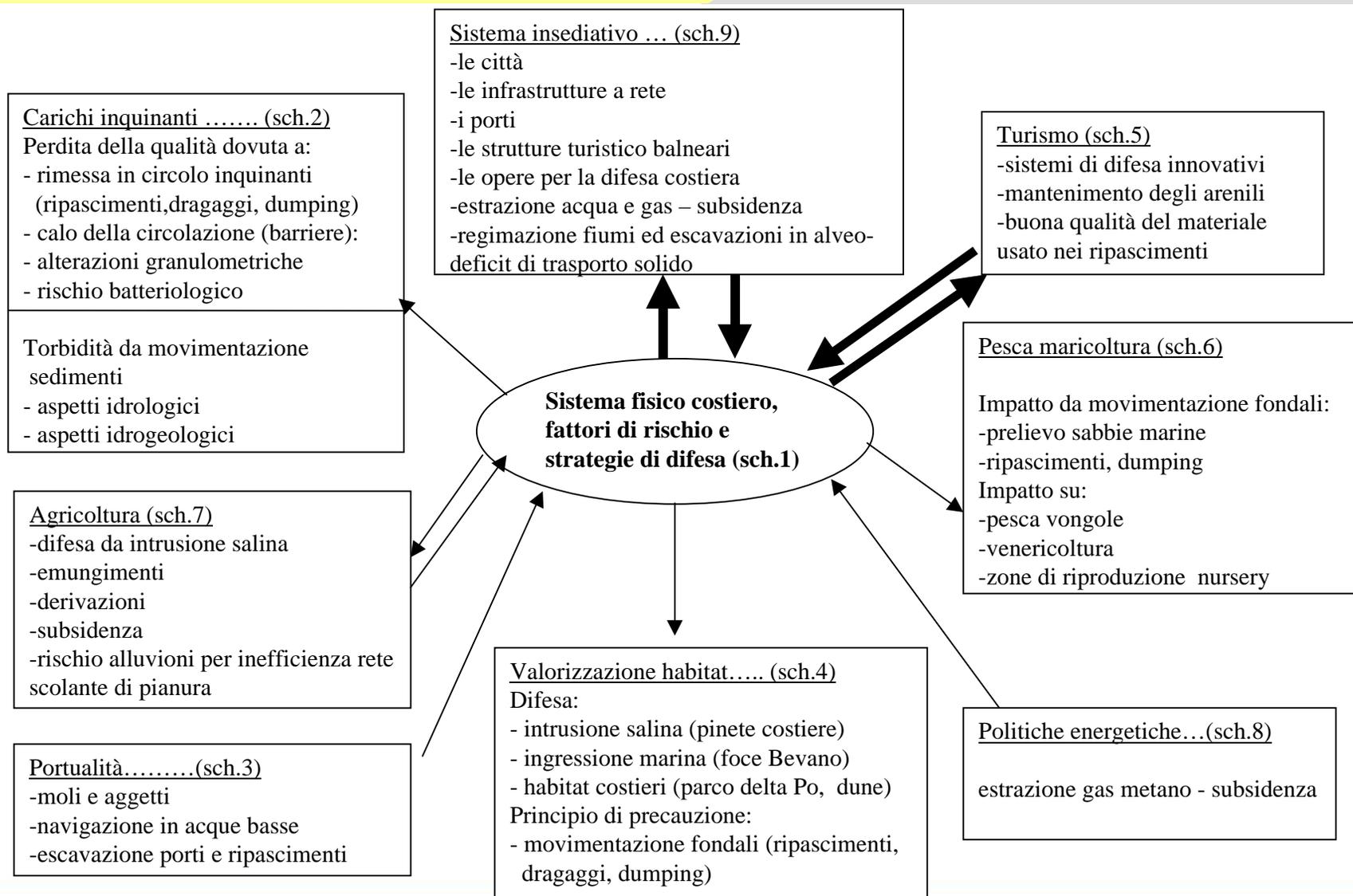
- Region 6 Regional Councillor
- Coastal Provinces 4 Presidents
- Coastal Municipalities 14 Majors

The final answer: ICZM**SECTORS AND WG FOR ICZM**

- 1- Coastal physical system, risk factors and protection strategies
- 2- Pollutant loads, management of water resources, monitoring
- 3- Ports, wastes from boats, marine transport risks
- 4- Improvement of habitats, biodiversity, landscape
- 5- Tourism
- 6- Fishing and aquaculture
- 7- Agriculture
- 8- Energy resources
- 9- Urbanisation and infrastructure
- 10-Communication and capacity building

The final answer: ICZM

SCHEME



The final answer: ICZM**GUIDELINES**

- **Operate with an unitary and integrated approach**
 - integration of plans
 - use subsidiary means
- **Favor river sediment transport**
 - Confirm the prohibition to exploit river sediments
 - Favor the sandy mountainsides erosion
 - Remove river stabilization works
- **Reduce to zero anthropic subsidence**
 - Reduce the drawing of groundwater
 - Favor the surface water drawing
 - complete the water distribution network
 - Reduce and regulate gas extraction from areas near the coast

The final answer: ICZM

Avoid the realisation of hard coastal protection works

Avoid

- mud in bathing zone
- bacteriological pollution
- landscape impact

Beach nourishment: type mo protection work to be privileged

- use marine sands:
- reduced costs and environmental impact

Operate a correct managgement of littoral sand deposits

- reuse of sand coming from port dredging
- reuse of sand coming from beach cleaning
- use of sand coming from littoral sand deposits

Apply safeguard regulations to already free beaches

- dunes construction and planting of littoral vegetation
- creation of wetlands (protection of biodiversity)

The final answer: ICZM

FIRST STEP

PRIORITY TYPE OF INTERVENTIONS:

- Rehabilitation of wetlands and costal green areas
- Coastal municipalities parks: biodiversity, sustainable mobility, purification, quality and reuse of water and multiple use of water resources
- Monitoring networks for mussels breeding and coastal wetlands
- Rehabilitation of hydrodynamic equilibrium of water resources in the coastal area
- Implementation of photovoltaic energy production and use
- Rehabilitation of river outfalls
- Monitoring of urban and infrastructural coastal system

1. Old protection works:

60 km of hard defences built since 1950 by central Government:

Detached breakwaters, naturali rocks groins and revetments

At present only 50% of the coastline is free from protection works

2. Nourishments :

5 million cubic meters of sand placed since 1983
coming from:

quarries (at present almost not used)

coastal deposits and port dredging

reuse and management of beach cleaning and
excavations for building constructions

offshore sand deposits



3. Regional regulation aimed to:

s

Better knowledge (first coastal plan) (L.R. n. 7/1979)

Reduction of groundwater extraction (C.R. n.72 /1983)

Prohibition of sediments extraction from rivers (C.R. n° 1300/1980; L.R. n. 17/1991)

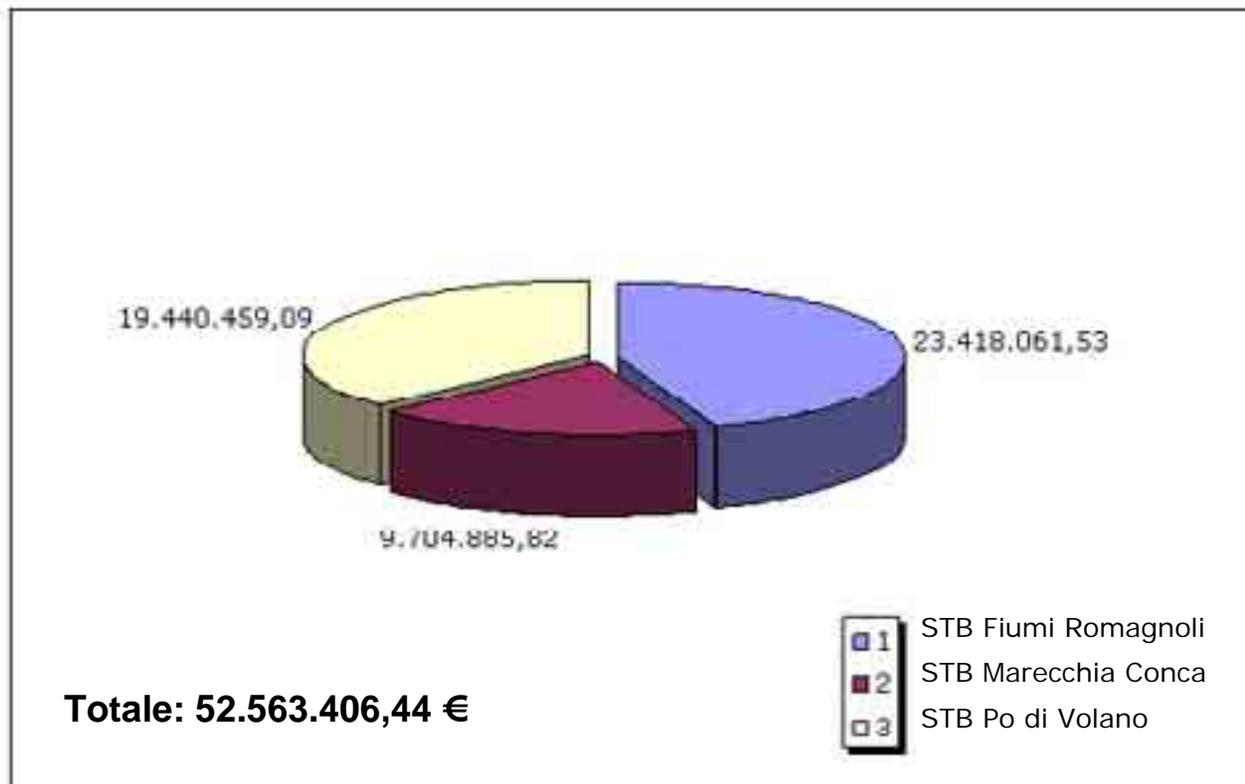
4. Monitoring of coastal dynamic:

- Topographic and bathimetric survey
- High precision levelling
- Periodical survey of coastline

5. Regional planning:

- Coastal Plan (1983)
- Updating of coastal plan (1996)
- ICZM – Guidelines 2005 (determination n. 645 del 20.1.2005)

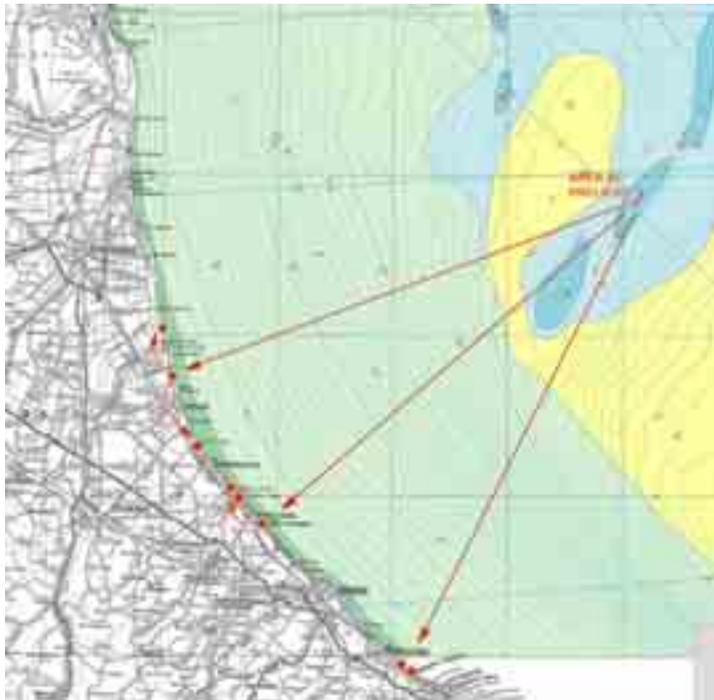
Financing for coastal protection works from 1989 to 2005



Coastal protection against erosion and flooding

THE NOURISHMENT OF 2002

**TOTAL AMOUNT
11.145.140 Euro**



Location	Lenght (m)	Volume (m ³)	Unit volume (m ³ /m)
Misano Adriatico	1.700	165.288	97
Riccione Sud	2.250	253.727	113
Igea Marina	1.125	65.212	58
San Mauro Savignano	450	20.946	46
Gatteo a Mare	550	28.090	51
Zadina	700	43.543	62
Milano Marittima	1.700	176.111	103
Lido di Classe - Foce Bevano	650	41.013	63
Total	9125	793.390	

**TOTAL AMOUNT
13.562.334 Euro**

Location	Length (m)	Volume (m ³)	Unit volume (m ³ /m)
Misano Adriatico	1.500	148.000	100
Riccione Sud	1.100	102.000	93
Rimini nord Igea Marina	1.600	92.000	58
Cesenatico nord	700	84.000	120
Milano Marittima	1.700	92.000	55
Ravenna Lido di Dante	1.000	112.000	112
Ravenna Punta marina	2.000	185.000	93
Total	8.900	815.000	