Coastal area management in the Mediterranean Basin

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Integrated Coastal Zone Management (ICZM) in the Mediterranean

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Outline

Mediterranean Action Plan, Quèsaco?
Overview on Mediterranean Coasts and Sea
Integrated Coastal Zone Management (ICZM)
Mediterranean marine ecosystems: an economic valuation
What next?!
Mediterranean Action Plan

Centres d’activités régionales du PAM

Parties contractantes à la Convention de Barcelone (21 pays riverains et la Commission européenne)

Centres d’Activités Régionales du Plan d’action pour la Méditerranée
Sustainable development milestones at global and Mediterranean levels

**SD Milestones Worldwide**
- **1972**: Stockholm Conference, UNEP creation
- **1992**: Earth Summit, Rio Conference
- **2000**: Millennium Summit (MDG)
- **2002**: Johannesburg Summit
- **2012**: Rio + 20 Conference

**SD Milestones in the Mediterranean**
- **1975**: Barcelona Convention, MAP creation
- **1994**: Tunis Conference: MED 21
- **1995**: Barcelona Convention Revision (MAP II): Extension of MAP scope to SD
- **1996**: Mediterranean Commission on SD creation (MCSD)
- **2005**: Mediterranean Strategy for SD (MSSD)

**Euro-Mediterranean Political Context**
- **1990**: 5 + 5 Dialogue
- **1995**: Euro-Mediterranean Partnership: Barcelona Process
- **2003**: European Neighbourhood Policy (ENP)
- **2008**: Union for the Mediterranean (UfM) / H2020 initiative

SD = Sustainable Development; MAP = Mediterranean Action Plan
Mediterranean Action Plan (MAP) Objectives

- to ensure sustainable management of natural marine and land resources and to integrate the environment in social and economic development, and land-use policies,

- to protect the marine environment and coastal zones through prevention of pollution, and by reduction and, as far as possible, elimination of pollutant inputs, whether chronic or accidental;

- to protect nature, and protect and enhance sites and landscapes of ecological or cultural value;

- to strengthen solidarity among Mediterranean coastal States in managing their common heritage and resources for the benefit of present and future generations; and

- to contribute to improvement of the quality of life.
Timeline of Barcelona Convention and its Protocols

BARCELONA CONVENTION

Dumping Protocol

Emergency Protocol

Prevention and Emergency Protocol

LBS Protocol

SPA Protocol

SPA & Biodiversity Protocol

Offshore Protocol

Hazardous Wastes Protocol

ICZM Protocol


1 Adoption 2 Entry into force 3 Adoption of amendments 4 Entry into force of amendments

Source: UNEP Mediterranean Action Plan (MAP)
The Mediterranean

A large and complex marine and coastal ecosystem…
Mediterranean area(s): …of all the world's continents only the Mediterranean is liquid (Jean Cocteau)
Mediterranean area(s): Administrative units
Mediterranean area(s): bioclimatic limits
Mediterranean area(s): watersheds
Mediterranean area(s): nexus between Africa, Asia and Europe
Coastal erosion and fragile coastal ecosystem
Rivers play a key role in terms of sustaining marine production, water balance, sea water quality and salinity.
Population dynamics and economic pressures have a major incidence.
Urban development in the Mediterranean has been rapidly increasing.
Agriculture and population in the Mediterranean basin

Agricultural land
- Dry cereal farming
- Pastureland or natural areas
- Hill and mountain farming
- Olive growing areas
- Viticulture areas
- Irrigated areas

People employed in agriculture
Per 10,000 people living in rural areas

- 1990
- 2011
- Decreasing from 1990
- Stable or increasing from 1990
- Trend not available

Chemical contamination

Industrial hazardous waste in the Mediterranean countries

Wastewater treatment in Mediterranean coastal cities

Wastewater treatment plants in coastal cities

- Cities with treatment
- Cities without treatment
- Cities with plant planned or under construction
- Cities with plant temporarily out of operations or no information available

Industrial hazardous waste production
Tonnage per million Euros of Industrial GDP

GDP from industry
Millions Euro
- More than 500,000
- 150 to 500
- Less than 50

Chemical contamination

Maritime transportation routes in the Mediterranean

- **Maritime accidents**: 2005-2007
  - Oil spills occurred
  - Serious pollution spills occurred

- **Main shipping routes**
  - Very high intensity
  - Lower intensity

- **Container traffic**, 2005
  - Thousand containers: 1000-3000
  - 1000-2000
  - 500-1000
  - 300-500

- **Possible oil slicks detected by satellites**

- **Oil spilled in the Mediterranean**
  - Thousands tonnes, 2000-2009
  - Western Mediterranean: 0.1
  - Adriatic Sea: 4.2
  - Central Mediterranean: 5.5
  - Eastern Mediterranean: 19.2

Source: REMPEC
Synthesis: Drivers / Pressions

35% of population live in the coastal zone
- 285 M in 1970 → 428 M in 2000 → 523 M by 2025
- in 30 years until 2000 the average population density growth was 49%

growing urban population
- 378 M by 2025

built-up areas
- 25% more than in the hinterland
- in the most developed countries: up to 45% within 1 km from the shoreline

31% of international tourist arrivals
- 246 M of tourists in 2005 → 312 M by 2025
Synthesis: Impacts

- Degradation of fragile ecosystems & biodiversity loss
- Loss of agricultural land and forests, forest fires
- Change of traditional landscape
- Coastal erosion
- Increased fresh water demand, particularly in the South and East
- Exposure of deltas and lowlands to the impacts of climate change
ICZM Cycle

- ICZM is a process
- ICZM is in service of the sustainable development
- ICZM needs specific tools to be efficient
ICZM’s track record before 2008

• Undeniable improvement of the coastal management practice

However:

• Not strategic – more often driven by funding priorities than by strategic priorities

• Short-term, project-based

• Not widely understood or recognised

• Non-statutory, no legal basis
A new push: Mediterranean ICZM Protocol
ICZM Protocol

- Signed in January 2008
- Entered into force in March 2011
- 15 signatories
- 9 ratifications
Structure of the Protocol

• Part I - General Provisions
• Part II - Elements of Integrated Coastal Zone Management
• Part III - Instruments for Integrated Coastal Zone Management
• Part IV - Risks Affecting the Coastal Zone
• Part V - International Co-operation
• Part VI - Institutional Provisions
• Part VII - Final Provisions

✓ Innovative ✓ Future oriented and proactive ✓ Comprehensive ✓ Integrated ✓ Binding
Protocol is precise with regard to:

- the definition of the coastal zone (territorial sea + competent coastal units)
- the definition of the Integrated Coastal Zone Management
- the definition of the coastal setback
- the formulation and development of coastal strategies
- the formulation of Environmental Impact Assessment and Strategic Environmental Assessment
- the developing policies for preventing natural hazards, particularly those resulting from the climate change
- the application of the ecosystems approach to coastal planning and management
- the reporting on the implementation of the Protocol
ICZM means a *dynamic process* for the sustainable management and use of coastal zones, taking into account at the same time the *fragility* of coastal *ecosystems* and *landscapes*, the *diversity* of activities and uses, their *interactions*, the maritime orientation of certain activities and uses and their *impact* on both the *marine and land parts*. 
Boundaries pertaining to the delineation of coastal areas: the physical, administrative and legal contexts

**Property Rights**
- Private/Public
- Public
- Public/common

**De Facto Control**
- Predominant private sector control
- Extensive government control
- Predominant government control
- Weak Control by Government of Coast Nation

**Planning Management Levels**
- Local Community District/Municipality
- Province/State
- National

**Geophysical Boundaries**
- Continental margin
  - Continental slope
  - Plain rise
- Coastal Uplands
- Shorelands
- Mean high tide
- Mean low tide
- Inlands or non-coastal
Ecosystem-based management
Protection and sustainable use of the coastal zone

Article 8:

✓ Setback zone of 100 m (exceptions, official notification)

✓ Integration into national legal instruments of provisions related to:
  • the restriction of linear extension of urban development
  • free access to the sea and along the shore
  • restricting/prohibiting movement/parking/anchoring of land vehicles and marine vessels in fragile natural areas on land and sea

Article 9: Economic activities

Articles 10-13: Specific ecosystems and cultural heritage
Mediterranean marine ecosystems: an economic valuation

Objectives

Enhance awareness of the benefits to society provided by marine ecosystems in the Mediterranean,

Offer policy makers a common metric for better management of environmental issues

Contribute to ECAP, preliminary study for the implementation of the Ecosystem approach in the Mediterranean

Contribute to the economic analysis of ecosystems in line with:

Millennium Ecosystem Assessment (MEA, 2000-2005);

Accounting for Economic Activities in Large Marine Ecosystems and Regional Seas (UNEP, 2006);

System of Environmental and Economic Accounting (UN, 2003);

The Economics of Ecosystem and Biodiversity (EC, UNEP, 2007-2010) ...
Contribution of ecosystems services to human well-being

- Macroeconomic approach at regional scale
- Ecosystems: abiotic + biotic elements. Ecosystem service = interaction of the two (links to biodiversity, resilience, human capacity to protect and restore) imply to exclude economic activities based on abiotic structures such as maritime transport, granulate extraction, offshore wind power..
- Excluding non sustainable uses of ecosystem services
Mediterranean marine ecosystems: an economic valuation
Methodology

First exploration study at the scale of the Mediterranean sea
Implementation of a quantitative analysis of the economic value of ecosystem services
Benefits provided by marine ecosystems to riparian countries
Focused on direct benefits issued e.g. fishing excluding sea food processing
Estimation of the benefits based on proxy values
Methodology and preliminary results constrained by existing data availability
Audited by an ad’hoc advisory committee (environmental economists, Mediterranean marine ecosystem experts...).
Mediterranean marine ecosystems: an economic valuation
Annual value of direct benefits in 2005

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Proxy</th>
<th>Value (million €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing and aquaculture</td>
<td>VA * SC (=0.8)</td>
<td>2 895</td>
</tr>
<tr>
<td>Hotels and restaurants</td>
<td>5% VA&lt;sub&gt;CA&lt;/sub&gt;</td>
<td>4 138</td>
</tr>
<tr>
<td>Int. Tourism</td>
<td>5% VA&lt;sub&gt;CA&lt;/sub&gt;</td>
<td>2 717</td>
</tr>
<tr>
<td>Real estate</td>
<td>5% housing expenditures in CA</td>
<td>11 198</td>
</tr>
<tr>
<td>Coastal protection from erosion</td>
<td>Protection expenditures * threatened artificialized CA * presence of Posidonia meadows</td>
<td>527</td>
</tr>
<tr>
<td>Global climate regulation</td>
<td>Sequestrated CO&lt;sub&gt;2&lt;/sub&gt; value</td>
<td>2 214</td>
</tr>
<tr>
<td>Waste treatment</td>
<td>CA sewage * compensation fee in sustainable situation</td>
<td>2 703</td>
</tr>
<tr>
<td>Total benefits</td>
<td><strong>Tentative aggregation</strong></td>
<td><strong>26 406</strong></td>
</tr>
</tbody>
</table>

26,4 billion € represent 15% of the Greek GNI and 1,3 times the Tunisian GNI.

**Regional climate regulation**

Recorded rainfall in catchment area * water shadow price

2 490

VA: Value Added / SC: Sustainability Coefficient / CA: Coastal Areas
The results:

- Illustrate the importance of services provided by marine and coastal ecosystem

- Provide a low estimation of all benefits included:
  - Valuation limited to some direct benefits (data limitation...);
  - Valuation doesn’t count indirect benefits (spread in the different linked activities, ex: benefits to the fishing branch...);
  - This valuation doesn’t reflect the value of the stock (natural capital) but only the flows for one year (benefits provided)

- Need to be comforted, reinforced.
Mediterranean marine ecosystems: an economic valuation

Discussions

Implications of the methodology used:

- Restriction to sustainable uses of services provided by biodiversity based ecosystems results in a low estimate of the benefits provided.

- Application of the SEEA framework to marine and coastal ecosystems requires extensive data generation, collection, and dissemination

- This estimation at the macro level should be cross checked with results of local studies (existing and on-going).
Mediterranean marine ecosystems: an economic valuation

Study implications

Possible improvements:

✓ Promote acquisition of ecological and economic data
✓ Implementation of studies at national or sub national scale
✓ Local studies required to assess the benefits provided by remarkable ecosystems such as Posidonia meadows

✓ Identify key issues with Mediterranean stakeholders:
  • Economic dependency on natural assets?
  • Case of economic activities using abiotic natural structures (as marine transportation, aggregate extraction, ...)
  • Cost of ecosystem degradation?
  • Benefits of conservation?
  • Introduction of economic incentives (e.g Payment for Ecosystem Services)?
  • Green accounting? Etc.
Mediterranean marine ecosystems: an economic valuation
Usefulness of such studies

Highlight our economic dependency on ecosystem services
✓ Linked to the abundance, quality, and resilience of natural assets
✓ Warn against a possible “Tragedy of the commons” (Hardin, 1968).
✓ Stress the pros and cons of introducing incentives to limit opportunistic behaviors in the exploitation of natural resource, and the risks of environmental impacts detrimental to ecosystem services.

Balance between benefits provided and environmental impacts: policy implications
✓ Identification of environmental functioning and impacts, and quantification of physical flows
✓ Quantitative assessment of the costs of environmental degradation (TEEB running project) and the benefits of conservation.
✓ Inclusion of environmental assets and flows in national economic assessments of riparian countries (using the SEEA approach).
Opportunities / Hindrances for ICZM

**Opportunities**
- Availability of tools
- Problems are salient
- Real estate bubble showed the limits of "NO ICZM"
- Consistant with greenbelt and bluebelt
- Marine energy
- ...

**Hindrances**
- Integration is not usual...
- Existing mechanisms and institutions are not ready to share their legitimacy
- Two many concepts
Possible roles for evaluators and/or Suprem Audit Institutions

Use ICZM Protocol as a reference in their evaluation

Possible follow-up for

Adopt holistic/systemic approach, basic example: Assessment of a PPP to build a coastal road would need to pay particular attention to traffic forecast: if there are high, it will be needed to look at its impact beyond the road itself.

Contribute to measure assets that are difficult to assess.