Challenges and opportunities for maritime spatial planning of the Black Sea in Romania and Bulgaria

Final Conference of the MARSPLAN-BS project

EFORE - CASE STUDY

Bucharest,
11th of January 2018
Introduction

EFORIE Case Study

Cross Border Maritime Spatial Planning in the Black Sea – Romania and Bulgaria
MARSPLAN–BS Project

This project is funded by the European Union through the European Maritime and Fisheries Fund
Aim of EFORIE Study Case selection

The coastal and marine zone of Romania is experiencing increasing pressures mainly due to population increase, urbanization, agriculture growth, fisheries, and industry.

The coast is subject to erosion, water pollution, decline of renewable resources, loss of biological diversity, wetlands losses and destruction of landscape. The need to deal in the future with the impacts of climate change in combination with finding adaptive responses is also an issue.
Settlements development

**EFORE Case Study** (PP3 NIMRD GA):

In Eforie Case Study it is aimed to:

- follow coastal erosion with a special focus on the land-sea interactions;
- identify the main uses and their impacts on marine areas (ex. tourism, urban development, the tertiary sector of services as trade);
- identify the impact of induced coastal erosion by built environment/land infrastructure/ coastal protection structures, tourism development, ICZM space on maritime environment;
- find out interactions, conflicts and impacts between uses, sectors and interests both terrestrial and marine, in a challenging way;
Land uses classes Eforie sector

Legend

Uses classes - 200 m coastal strip

- Industrial construction
- Residential/commercial construction
- Roads
- Railway
- Coastal protection works
- Beach
- Nourishment 2015
- Silicas cobble
- Bare rock
- Shoreline/riparian
- Dumps
- Emerging/Herbaceous wetlands
- Channel
- Lakes and natural wetlands
- Parks
- Unsuitable sands
- Artificial vegetation
- Agriculture
- Degraded and unproductive land
- Leisure activities
- Bushes and branches
- Forest
- Part_Costantea

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Key aspects of the system include the following information themes:

- **Biological**: type and extent of ecosystem, primary productivity, species diversity and abundance, nursery grounds and life cycles;

- **Physical**: topography, geology, temperature, salinity, nutrients, tides, sea level and current, meteorology, sediment types and distribution, flooding and erosion/accretion;

- **Socio-economic**: human population distribution and growth, economic activities and land use;

- **Legal and institutional**: land tenure system, resource use rights, relevant laws and regulations, responsible agencies and availability of financial and human resources.
Increasing the impact on the marine environment

- Natura 2000 sites (2 under Habitats Directive and 1 under Birds Directive) - coastal protection works, beach nourishment, the increasing demand for space for touristic activities, nautical sports, new constructions, increasing port traffic negatively influenced the functions of natural habitats and species.

More than 1.2 km of shore was already subject to coastal protection works (more than 1 km of new or rehabilitated dams/dikes and beach nourishment) which impacts on the marine habitats and species/aquatic ecosystems

- morphological change,
- physical parameter change (increase of turbidity level),
- pollution,
- change in sediment composition (change of medium-littoral texture),

Future coastal protection works will extend to another 4.5 km, including the Natura 2000 site Eforie submerged beach (ROSCI0197), (only place Donacilla cornea and Donax trunculus).
Natura 2000 marine habitat types from the Eforie area classification

- **1110** Sandbanks which are slightly covered by sea water all the time
- **1110-4** Well-sorted sands
  - It is well represented in the sandy areas of the southern coast: Eforie, Costinesti, Mangalia. The upper part is contiguous with the shallow fine sands (3 – 4 m); from there the habitat extends down to 20 - 25 m. The characteristic species are the mollusks Chamelea gallina, Donax trunculus, Cerastoderma glaucum, Tellina tenuis, Anadara inaequivalvis, Cyclope neritea, Nassarius nitidus, the crustaceans Polybius vernalis and Diogenes pugilator, the fishes Gymnammodytes cicerelus, Trachinus draco, Uranoscopus scaber, Callionymus sp., Pomatoschistus sp.
- **1110-8** Shallow sands bioturbated by Arenicola and Callianassa
- **1140-2** Supralittoral slow-drying drift lines
- **1140-3** Midlittoral sands
- **1170** Reefs
  - **1170-5** Supralittoral rock
  - **1170-6** Upper midlittoral rock
  - **1170-7** Lower midlittoral rock
  - **1170-8** Infracrilltoral rock with photophylic algae
  - **1170-9** Infralittoral rock with Mytilus galloprovincialis

*Oceanographic parameters*
*Sedimentary parameters*
*Hydrochemical conditions, essential as marine organisms environment*
*Organic pollutants*
  - Total petroleum hydrocarbons (TPHs)
  - Polycyclic aromatic hydrocarbons – PAHs
  - Organochlorine pesticides and polychlorinated biphenyls
  - Heavy metals
*Nutrients*
Natura 2000 marine habitat types from the Eforie area classification

Natural living resources

• Phytoplankton
• Phytobenthos
• Zooplankton
• Zooplankton
• Ichthyofauna
• Marine mammals

Versus Economic Activities and their pressures
Pressures on marine environment

- **Chemical / biological effects:**
  - **Contamination of sea water:** eg. Nutrients, pesticides; heavy metals, chemical substances, hydrocarbons in case of incidents
  - **2007-2011** was recorded a total of **39 pollution incidents** from both ashore and sea: discharges from ships, deficiency at operation systems, accidents during the loading - unloading, sunken vessels – it consisted mainly oil products,
  - **Oil and hydrocarbons products** - although impact the entire marine ecosystem most affected are seabirds and marine mammals

- **Ships** generate movements of water masses that changes the flow of nutrients into the water column amplifying eutrophication
- **structural changes and decreased of fish resources in coastal areas**
- **Increase quantities of marine litter**
- **Introduction of non-indigenous invasive species** (fouling and ballast water and sedimenst) – ex. *Rapana venosa*
- **Noise pollution** – can affect the dolphin behavior, especially *Phocena phocena*
Increasing environmental risks

- increasing of extreme storms,
- coastal erosion,
- increase of seawater temperature,
- changes of salinity and biological diversity reduction

Erosion of beaches and cliffs degradation

(infiltration of surface water wave abrasion on the base of the cliffs):
- caused the shore to retreat with about 40 - 60 m in the last 75-100 years, in parallel with the gradual collapse of the cliffs.
- this landloss threatens locals and tourists and the stability of the buildings located at the top of the cliffs, thus preventing the socio-economic development of the entire area (the constructions carried out at less than 100 meters from the shoreline, in some cases even less, and are heavily damaged during storms).
Pressures on marine environment

Interaction matrix

Legend
- River port
- Anchorage
- Sea ports
- Recommended navigation routes
- SCI_marine
- SPA_marine
• The conflict between activities
for coastal protection works and touristic navigation/port activities case of the Belona Marina - the inner part of the marina is filled by the adjacent sediment deposits driven by waves and currents.

* Dredging works are required every year, but often they are not effective as a result of redistribution enforced by longshore sediment transport now massively supplied by the new local soft protections works.

Decrease of biotic resources together with the alteration of key ecological processes:

• The fisheries contributed to the worsening of the ecological status and fish stocks diminishing and also was the most affected sector by the dramatic changes produced in the Black Sea ecosystem.

[Diagram showing coastal protection and tourism activities]
Stakeholder meeting

*Economy Group

**Ecology Group

This project is funded by the European Union through the European Maritime and Fisheries Fund
Working Group 1 – Spatial planning and Socio-economic Development

Working Group 2 – Plenary session of ecology group results for spatial planning.
<table>
<thead>
<tr>
<th>Items</th>
<th>Identified problems</th>
<th>Proposed solutions and opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NATURA 2000 marine protected areas</strong></td>
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<tr>
<td>Fishery Activities</td>
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<tr>
<td>Techirghiol Lake</td>
<td>is a nature reserve, including attractiveness of the area / landscape diversity / areas reclaimed as protected areas: Natura 2000 sites, Techirghiol Lake – Ramsar site</td>
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<td>is an internationally well-known as balneary resort for health, due to the therapeutic mud produced under peloidogenesis processes</td>
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<td>Belona Lake</td>
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<td>Surprisingly, it is a freshwater lake located between Black Sea and Techirghiol Lake (hypersaline), due to freshwater internal springs</td>
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<td>North and South Eforie Beaches</td>
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<td>Ports activities and infrastructure. Belona marina/port</td>
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<tr>
<td>Others</td>
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</table>
| **Sailing routes**                         | - location for fisheries tools installing  
  o with landing sites  
  • at Agigea near the southern port dike,  
  • children camp Eforie South,  
  • beach near Turk Cape and Tuzla)  
  o on navigation routes of leisure vessels  
  • Regatta departing of Belona Port  
  - areas in front of port entrance cannot be overlaid with another activities | - seasonal fishing activities conducted outside shallow waters should have specific routes to/from fishing grounds  
 water sports should be regulated on the marine area, not only in the beach area - eg. skyjets, activity that runs until 20 meters depth in the Eforie area  
 it was proposed to create corridors for each activity on the sea- leisure and fishing activities and search / lives rescue vessel the need to condition all activities regarding sea transport by the obtaining of navigation permits |
Results: Spatial Plan

Phase 1. Current situation analysis:
- Complex Analysis;
- Stakeholder meeting with Mairs/coastal Municipalities was held in August 2016;
- Main impacts of the built environment on land infrastructure (port development, tourism infrastructure, coastal works) on marine environment, MPAs, tourism;
- Map of land and sea human uses in Eforie study area;
- Map of natural resources (both terrestrial and marine) of Eforie study area;
- Main land-sea interactions (between environment protection, fisheries, coastal erosion, tourism impact, new building areas, etc.) have been provided on a matrix of interactions;
- Overlapping is being completed and main conflicts are currently identified: groups of conflicts after meting with stakeholders (8-12 November 2016).

Phase 2. Analysis of the future evolution is under elaboration.
<table>
<thead>
<tr>
<th>Activities</th>
<th>Achievement</th>
<th>Challenge</th>
<th>Problems/Succes</th>
<th>Impact</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eforie Area</strong></td>
<td>The baseline study of all MSP aspects involved for a <strong>touristic sector</strong> in the adjacent area of a <strong>major port</strong> of Constanta related <strong>coastal erosion</strong>, as well as of certain <strong>MPAs</strong> and <strong>Natura 2000 sites</strong></td>
<td>The approach of the MSP in the area emphasised that a <strong>sustainable development</strong> of this shore sector is <strong>spatial planning realized from the coast to the sea</strong>.</td>
<td><strong>Harmonization</strong> of socio-economic activities pressures from the coastal area are still high and need a proper and specific management; <strong>The area remains under the risk of coastal erosion and need to be continued the initiatives to identify ways and possibilities for natural protection / coast consolidation.</strong></td>
<td>Even the touristic /investment pressures are exceeding high levels, the study has important results: - was considering the <strong>relocations</strong> of the small marina and certain habitats - as well the <strong>delimitation of setbacks of coastal development.</strong> The local landscape is affected as well the natural attractiveness of the Eforie’s coastal areas - due to is coastal arrangements, and its - insurmountable issues related to unbalanced sediment situation.</td>
<td><strong>Impact limitation of -coastal constructions and works</strong> Promoting the tourism industry at big scale (all-inclusive complexes...) Sustaining the aquaculture in the sheltered area of the Constanta – Agigea Port</td>
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## Lessons Learnt

<table>
<thead>
<tr>
<th>Activities</th>
<th>Environmental aspects</th>
<th>Nature and species conservation sites and protected areas</th>
<th>Safety</th>
<th>Economical and social aspects</th>
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<tr>
<td>Land-Sea Interaction</td>
<td>Raw material extraction areas gas, coils, mineral resources, soils and forest, balneal water resources, gravel and sands, renewable energy etc.) and its areas for exploration / exploitation</td>
<td>Safety Scientific research</td>
<td>Organizing the use of the best available data</td>
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Thank you for your attention!