MED MARITIME INTEGRATED PROJECTS

Med-IAMER

Integrated Actions to Mitigate Environmental Risks in the Mediterranean Sea

Med-IAMER provides recommendations on integrated trans-boundary actions required to mitigate environmental risks in the Mediterranean Sea by putting together knowledge on regional Coastal and Maritime Environmental Pressures (CMEP) and by assessing their gaps. It proposes data integration and analysis approaches and maps the condition of existing trans-boundary mechanisms to mitigate these risks, focusing on cooperation and conflicts and involving regional stakeholders.

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Med-IAMER Objectives

- Improve the knowledge and spatial information on the intensity and distribution of Coastal and Maritime Environmental Pressures (CMEP) of the study areas, drawing on a baseline understanding on data availability of the descriptors of ecosystem functioning.

- Provide a spatial overview of the protection measures of marine ecosystems in the study areas and on the effectiveness of their implementation.

- Identify the level of environmental pressures on marine protected areas and relevant coastal and marine ecosystems in the study areas through an analysis of the a) intensity of pressures and b) effectiveness of the protection measures.

- Categorize the main gaps, conflicts and cooperation opportunities in planning and management of Mediterranean coastal and marine areas in the context of CMEP and the trans-boundary cooperation mechanisms.
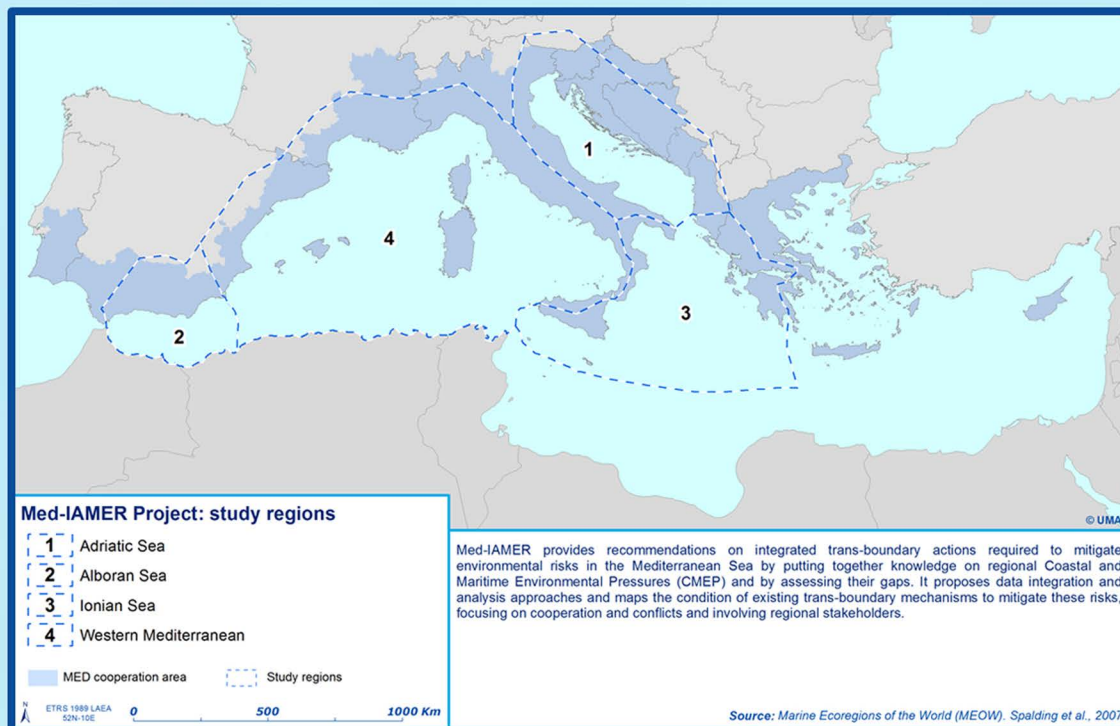
To reach these set objectives, regional stakeholders' consultations are scheduled to validate the available knowledge used for the assessment and to judge the effectiveness of cooperation mechanisms put in place to overcome trans-boundary conflicts in the region.

Med-IAMER Project: study regions
1 Adriatic Sea
2 Albanian Sea
3 Ionian Sea
4 Western Mediterranean

Combined pressure of climate change

Land pressure High / Low
Sea pressure High / Low
No data
MED cooperation area
Study regions

The pressure on marine ecosystems due to climate change was determined by a composite indicator based on the combined influence of two variables: sea surface temperature (SST) anomalies, where the temperature exceeds a threshold value like the long-term mean (differences in anomaly frequency between 2000-2005 and 1985-1990), and sea level rise (SLR), which show the sea level rise trends in mm/year.
The assessment of climate change pressure on coastal areas correspond to ESPON Climate indicator 'Aggregate impact of climate change on Europe's regions'. It is based on a weighted combination of physical, environmental, social, economic and cultural potential impacts of climate change.

Source: Increase in Sea Surface Temperature (SST), NCEAS, 2008
Trends in absolute sea level, CNES/LEGOS/CLS, 1993-2013
ESPON Climate, ESPON, 2011

Aquaculture production: fish farms influence

Pressure Index High / Low
Aquaculture production: tonnes 67.000
Area influenced by lack of data
MED cooperation area
Study regions

Map presents the distribution of aquaculture fish farms (Trujillo et al., 2012 and EMODnet, 2014) and the total aquaculture production by km of coast (kg/km of coast) in the Mediterranean Sea for year 2012. Only Mediterranean production and coast are considered for country data. Influence area of fish farms (self calculation) is based on the theoretical maximum distance at which they produce pressure (20 km according to 'Human uses, pressures and impacts in the eastern North Sea, HELCOM, 2012').

Source: Fish Farms at Mediterranean Sea (Trujillo et al., 2012)
Shellfish production areas, EMODnet Human Activities, 2014
Aquaculture production, FAO FishStat database, 2012

Intensity of pollution by maritime transport

Pressure Index High / Low
Area influenced by lack of data
MED cooperation area
Study regions

The map represents the degree of pressure based on the intensity of transport in the Mediterranean Sea. Three variables were taken into account: vessels traffic, port activity and oil spills.
Shipping data (Halpern et al., 2008) provide an estimate of the occurrence of ships at a particular location, and therefore an estimate of the amount of pollution they produce (via fuel leaks, oil discharge, waste disposal, etc.), under the assumption that traveling ships primarily affect their immediate waters. The dispersal of port-derived pollution was modeled as a diffusive plume based on data of transport of goods (thousand tonnes) and passengers (thousand passengers). Pressures generated by oil spills and other pollution releases are represented as a density layer based on data registered by the REMPEC, and also the oil spills map generated by Cinirella et al, 2012 (based on JRC 2009 data).

Source: Eurostat, 2012
Ocean-Based Pollution, NCEAS, 2008
REMPEC, 1977-2014; Cinirella et al, 2012

Potential fishing pressure along the Mediterranean Sea coast

High : 10 / Low : 0
Area influenced by lack of data
MED cooperation area
Study regions

The indicator shows the potential pressure generate by fishing activity in regions close to the coast (maximun distance considered is 100 km). Three variables were taken into account to produce this indicator: fishing effort, calculated by a classification of ports according to their fishing fleet tonnage, average vessel length overall and number of trawlers, using the DG MARE database on ports and fishing fleet; soft bottoms above 1 000 meters depth, and main resident endangered species of cetaceans, turtles, sharks and rays threatened by bycatch according to the IUCN Red List and reports.

Source: Fishing fleet stats, DG MARE, 2014
Ecosystem layers, NCEAS, 2008
Bathymetry, GEBCO, 2014
EMODnet, Biology Portal, 2014

Marine litter by population influence

Pressure Index High / Low
MED cooperation area
Study regions

This indicator represents the degree of accumulation of marine litter produced by coastal population density, based on data modelled by a Lagrangian particle tracking model to simulate 30 years of input and transport floating debris in the world ocean. The relative contribution of different sources to the total amount was taken into account. This maps shows the marine litter accumulation after 30 years of inputs related to coastal population density.
Data from IFREMER were integrated in order to enrich the indicator in the area of the Gulf of Lion and Corsica (marine litter density average over 15 years).

Source: Lebreton et al., 2012
IFREMER, 2014

Marinas in the Mediterranean Sea

Moorings per km coastline
< 10
10 - 35
35 - 60
60 -100
> 100
Pressure intensity High / Low
MED cooperation area
Study regions

The main map shows the number of moorings in marina ports per kilometre of coastline for each NUTS3 region.The insert maps highlight the most striking cases of high intensity marina pressure on marine ecosystems.
The dispersal of yachting port-derived pollution was modeled as a diffusive plume up to 20 km based on the data on mooring capacity of each yachting port. The spatial proximity of yachting ports increases the overall pressures.

Source: Plan Bleu,2014
Spanish Yachting Port Federation, 2014
Portbooker.com, 2014
EEA, 2014