

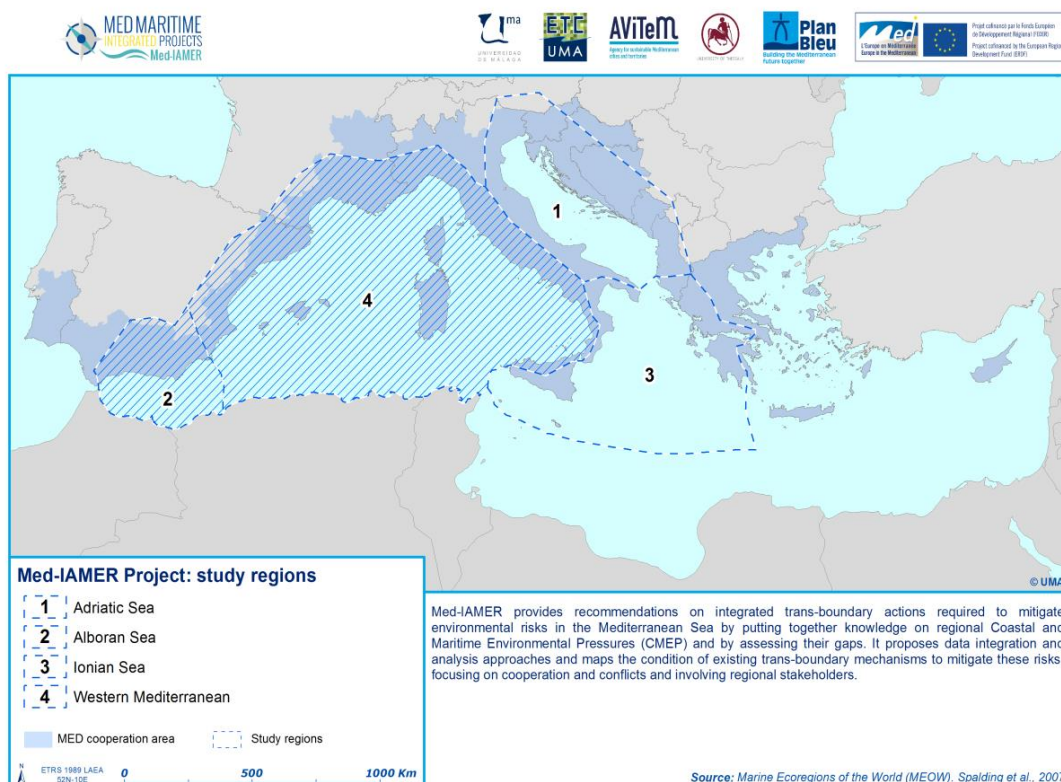
# MED MARITIME INTEGRATED PROJECTS Med-IAMER

## Western Mediterranean ecoregion General Factsheet

### Definition

The Western Mediterranean ecoregion is composed of three major geographical and maritime groups: the Alboran Sea is the part of the Mediterranean Sea located furthest West, the Algerian-Provencal Basin is the central basin, the Tyrrhenian Sea is an inland sea that forms a triangle (boundaries are described in the map below). The Western Mediterranean waters border the shores of Europe and North Africa, which makes the region particularly complex in political, economic and geographical terms, but also unique and diverse in terms of environment.

### Map of Western Mediterranean ecoregion boundaries



## Justification of the choice

The Western Mediterranean is one of the regions of the world where urbanization, suburbanization and agriculture uses have the most important effects on natural resources, with direct impacts in terms of artificialisation, fragmentation, soil erosion and destruction of natural habitats. As a result, anthropic risks are very intense in the Western Mediterranean area, as commercial transportation, recreational, tourism, fisheries, coastal urbanization, harbours, resorts, etc. generate environmental and socio-economic pressures.

The Western Mediterranean sub-region accounts for almost 200 ports and terminals (Keller et al., 2011); which are located in Spain (Malaga, Algeiras, Ceuta, Melilla, Almeria, Valencia, Barcelona); France (Marseilles, Nice); Italy (Genoa, La Spezia); Morocco (Tanger, Tetuan, Nador, AlHoceima, Saidia); Algeria (Algiers, Oran, Annaba, first mining town in the Mediterranean); Tunisia (Tunis). They represent a third of total ports of the Mediterranean Sea, and the greatest level of vessel activity, that is concentrated around western and central Mediterranean ports (Lloyd's MIU, 2008). The Strait of Gibraltar – major passageway for international commerce - fixes the major trade flows and coastal activities, and is the second most used sea lane in the world after the Channel, as it is annually borrowed by about 100,000 vessels, an average of 265 ships per day.

Maritime transport activities in the Western Mediterranean are intense, as

transport of goods represents more than 700 million tons in the Western Mediterranean and more than 40% of total transport in the Mediterranean region. Finally, the Strait separates Europe from Africa; it is as such a crossing point for exchanges between North and South in the Western Mediterranean, and a hotspot of illegal immigration to Europe, as it is an area of intense migration. The Western Mediterranean sub-region is a traditional tourist destination. The added value of total tourism in the Western Mediterranean sub-region accounts for 50% of the total Mediterranean added value, while the added value in the Western Mediterranean coastal areas accounts for more than 30% of the coastal Mediterranean

The Western Mediterranean political framework is organized through the 5+5 Dialogue. This Western Mediterranean Forum is the oldest meeting framework between Mediterranean countries. The 5+5 Dialogue comprises Algeria, France, Italy, Libya, Malta, Mauritania, Morocco, Portugal, Spain and Tunisia. As a trans-Mediterranean cooperation initiative, the rationale of the 5+5 Dialogue is to provide an informal forum in which the five EU member states and the five Maghreb countries have the chance to discuss subjects of topical interest for the region and to identify new areas for practical cooperation. The 5+5 emerged as a meeting point where member states could find common solutions to shared problems reflecting the specificity of the Western Mediterranean, through this informal dialogue.

## List of socio-economic drivers

The socio-economic value of each driver is being measured in terms of their contribution to Gross Added Value and employment. Out of the 7 drivers identified for the region, only two, namely urbanization and climate change do not have a direct and measurable socio-economic contribution and therefore have been included as important drivers for the region only for their environmental impact.

Socio-economic and environmental value of each driver for the Western Mediterranean ecoregion

Driver	Relevant contribution (%) to total GVA	Relevant contribution (%) to total employment	Intensity of environmental pressure (%)	Total %
Coastal and maritime Tourism	66,30	74,77	37,84	59,64
Maritime transport	25,05	13,35	27,03	21,81
Fisheries & aquaculture	8,65	11,88	27,03	15,85
Renewable energy	0,00	0,00	8,11	2,70
Total	100	100	100	100

\*Data for the Western Italian coast missing

Source: EU/EUNETMAR, 2014; Own elaboration

In order to measure the drivers' socio-economic value, the percentage of their relevant contribution (percentage % among the total of the 4 drivers excluding urbanization and climate change) to the GVA and employment according to the data provided by EU/EUNETMAR (2014) has been estimated. Similarly, according to the produced matrix of drivers and pressures, an estimation of the relevant intensity of their environmental pressures has been conducted by setting a score of 10 to pressures with significant importance and 5 to those with low importance. Their

total score stressing the environmental intensity has then been calculated as a percentage % among the total of the 4 drivers. Finally, the total percentage including the socio-economic value and environmental pressure has been summarized and re-measured in order to provide a total percentage of importance for each of the drivers. According to the results, the drivers with the highest priority for the Western Mediterranean ecoregion are coastal and maritime tourism (59.64%), maritime transport (21.81%) and fisheries and aquaculture (15.85%).

## List of environmental/ human/ coastal and marine pressures

In order to identify the most important drivers and pressures in the ecoregion a set of criteria has been established focusing particularly on the environmental and socio-economic aspects of the Western Mediterranean coastal and maritime environment.

Socio-economic driver	Associated pressures
Coastal and maritime tourism	<ul style="list-style-type: none"> <li>• A major pressure generated by this human coastal occupation is the erosion of coastlines due to the retention of sediments.</li> <li>• A specific pressure of coastal tourism is the physical damage to the seafloor generated by beach nourishment needed to maintain beaches functionality, and which alters marine water quality and disturbs benthic communities.</li> <li>• Recreational boating activities cause damage to habitats and species, particularly due to collisions and water noise; boat anchors, especially in sites containing meadows or coralligenous formations; pollution by oil, wastes and wastewater discharges; release of antifouling substances; and the voluntary or involuntary introduction of non-indigenous species stuck to the hulls of the boats or hanging to their anchors (UNEP/MAP/Plan Bleu 2014).</li> <li>• Shoreline and recreational activities also generate approximately 50 percent of the marine litter in the Mediterranean, with smoking-related activities representing 40% of total marine litter.</li> <li>• The production of wastewater and solid waste in tourist areas often exceeds the carrying capacity of local infrastructures due high seasonal demand.</li> <li>• Pollution negatively affects water quality in beach areas and drinking water supplies, with human health severe implications (UNEP/MAP 2009).</li> <li>• Urbanization is the main cause for the introduction of non-synthetic substances and compounds.</li> <li>• Urban and industrial wastewaters, atmospheric deposition and run-off from metal contaminated sites constitute the major sources of toxic metals.</li> <li>• Lead levels are high in sediments in the area of Marseille-Fos and Toulon (France), Cartagena (Spain), along the western Italian coast, around Naples and in the Gulf of Genoa (UNEP/MAP 2012).</li> </ul>
Maritime transport	<ul style="list-style-type: none"> <li>• Abrasion (grounding and anchor damage; UNEP/MAP/Plan Bleu 2014)</li> <li>• Underwater Noise maritime traffic is an important sources of anthropogenic noise especially in the Ligurian Sea.</li> <li>• Introduction of non-indigenous species and translocations: Maritime transportation and aquaculture are the main ways non-indigenous species enter the Western Basin of the Mediterranean.</li> <li>• Introduction of synthetic compounds: biocides (mainly organotin compounds such as tributyltin, known as TBT) used in antifouling paints and polycyclic aromatic hydrocarbons (PAHs) resulting from hydrocarbon oil discharges and accidental spills.</li> <li>• Introduction of non-synthetic substances and compounds as marine transport is a main source of petroleum hydrocarbon (oil) and PAH pollution in the Mediterranean Sea.</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>• Rising of the sea level: this is considered as one of the variables related to climate changes that cause significant impacts on coastal ecosystems. <ul style="list-style-type: none"> <li>➢ aggravated flooding on low-lying coasts, especially areas deltas, coastal lagoons in the salt marshes and some islands;</li> <li>➢ accelerated erosion of cliffs and beaches;</li> <li>➢ Increased salination in estuaries;</li> <li>➢ reducing the amount of fresh water aquifers</li> </ul> </li> <li>• Changes in thermal regime and salinity regime</li> <li>• Decline of biodiversity Mediterranean ecosystems are among the most threatened on Earth.</li> <li>• Introduction of non-indigenous species and translocations: Shifts in the distribution of marine populations are the most commonly reported effects associated with changing climate conditions.</li> </ul>



Socio-economic driver	Associated pressures
Fisheries and Aquaculture	<ul style="list-style-type: none"> <li>Physical damage to the sea floor as benthic trawling alters benthic habitats, modifies and destroys the structure of seagrass meadows (particularly important for <i>Posidonia oceanica</i> beds) and their associated faunal assemblages, and reduces the number of species and the area of suitable habitat.</li> <li>In addition to physical damage, trawling impacts also include excessive suspended sediments.</li> <li>Underwater noise</li> <li>Marine litter, issued both from fishing vessels and lost or abandoned gears, which is also a major problem causing entanglement or ingestion by seabirds, turtles, marine mammals and others</li> <li>Oil releases from vessels</li> <li>Introduction of non-indigenous species and translocations, as aquaculture is one of the main ways non-indigenous species enter the Western Basin of Mediterranean</li> <li>Over exploitation of fish stocks, mainly due to the increasingly efficient fishing methods used, as more than 65% of commercial stocks in the Mediterranean are beyond sustainable limit.</li> </ul>

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