

# **ESaTDOR**

## European Seas and Territorial Development, Opportunities and Risks

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### **SCIENTIFIC REPORT**



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## List of authors

**Dave Shaw, Sue Kidd, Lynne McGowan and Stephen Jay**  
School of Environmental Sciences, University of Liverpool, UK

With Contributions From

**Dania Abdul-Malak, Alberto Lorenzo Alonso, Antonio Sánchez Espinosa, Andreas Littkopf, Ana Luisa Barbosa, Emanuele Mancosu and Christoph Schröder**  
ETC-SIA, University of Malaga, Spain

**Oriol Biosca, Marta Calvet and Andreu Ulied**  
MCRIT Ltd., Spain

**Joaquín Farinós-Dasí**  
University of Valencia, Spain

**Holger Janßen**  
Leibniz Institute for Baltic Sea Research, Germany

**Alison Gilbert, Ron Janssen, Fritz Hellmann and Nicolien van der Grijp**  
Vrije Universiteit Amsterdam, Netherlands

**Ove Langeland and Torunn Kvinge**  
Norwegian Institute for Urban and Regional Research (NIBR), Norway

**Costel Stanca and Ramona Bejan**  
Constanta Maritime University, Romania

**Dora Papatheochari and Haris Coccossis,**  
University of Thessaly, Greece

**Louis Wassenhoven**  
National Technical University of Athens, Greece

**Kalliopi Sapountzaki**  
Harokopion University of Athens, Greece

**Tim-Ake Pentz**  
University of Rostock, Germany

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## List of Abbreviations and Acronyms

ASP	Adriatic Sea Partnership
CAFF	Conservation of Arctic Flora and Fauna
CEC	Commission of the European Communities
CFP	Common Fisheries Policy
CIS	Commonwealth of Independent States
CPMR	Conference of Peripheral Maritime Regions
CSF	Common Strategic framework
DG	Directorate General
EEA	European Environment Agency
ECC	European Cruise Council
EEZ	Exclusive Economic Zones
ESPON	European Spatial Planning Observation Network
EU	European Union
GIS	Geographic Information System
GOOS	Global Ocean Observing Systems
GPS	Global Positioning System
GVA	Gross Value Added
ICZM	Integrated Coastal Zone Management
IMP	Integrated Maritime Policy
LA	Local Authority
LAU	Local Area Unit
MSFD	Marine Strategic Framework Directive
MSP	Marin Spatial Planning
NUTS	Nomenclature of Units of Territorial Space
SST	Sea Surface Temperatures
TEU	Twenty foot Equivalent Units
UN	United Nations
UNEP	United Nations Environment Programme
UNCLOS	United Nations Convention of the Laws of the Sea
VASAB	Vision and Strategies for the Baltic Sea Region
WFD	Water Framework Directive

# 1. Introduction

## 1.1 Context

The *Treaty of Lisbon*, which entered into force in 2009, added a new goal of territorial cohesion to the twin EU objectives of social and economic cohesion. The need to promote for territorial cohesion, based around the potentials of a place based approach as advocated in the Barca Report (2009) has become of growing importance as Europe strives to achieve growth that addresses the many challenges the EU faces, including recovery from the global economic crisis; structural reforms in the Euro zone; growing interdependencies between regions, both between EU member states and with emerging global economies; changing demographic, and social contexts; environmental change (mitigating and adapting to climate change, protecting biodiversity and natural and cultural landscapes) and concern for energy security. Some of these challenges are longstanding in nature and character, whilst with others the significance and implications for social, economic, environmental and territorial cohesion across the whole of the EU territory is promoting a re-appraisal, re-thinking and re-affirmation of the EU's strategic priorities.

'*Europe 2020*' (CEC2010a) the EU's economic growth strategy advocates smart, sustainable and inclusive growth as the key direction of growth. However, whilst the Fifth Cohesion Report '*Investing in Europe's Future*' (CEC 2010b), suggested that regional disparities were diminishing, if the goals of Europe were to be achieved then better co-ordination and integration between regional development and national policies was required.

This focus on territorial cohesion, was until relatively recently, almost exclusively geared towards the terrestrial (or land based) environment. Much has been written about the need for horizontal and vertical integration of policy makers at all levels of governance, local, regional, national, cross border and transnational, and that there needs to be strong partnerships between public, private, and civil society. This led to the concept of spatial planning, and to a large extent has been very land based and land focused (see for example ESPON project 2.3.2, *Governance of Territorial and Urban Policies*). But in recent years there has been a renewed interest in the maritime or marine environment and how there is a mutual interdependency between the land and sea. Initial concerns, at least in European terms around the maritime environment were focused on ensuring the environmental integrity of these ecosystems were maintained, preserved, protected and where necessary restored. However, in more recent years there has been a growing realisation that the seas are becoming a context which helps governments realise their development aspirations, as Maria Damanaki, EU Commissioner for Maritime Affairs and Fisheries, in a speech to the European Parliament in December 2011, said:

*"Governments are waking up to the fact that we have just about reached the limit of what can be squeezed from the 29% of the planet that is land. Therefore, it becomes clear that we need to look even more to the sea".*

Hence there is a growing interest in the way that the marine resources can be managed and where appropriate, exploited. This then leads to ongoing discussions and dispute about which nation state (or states) has jurisdictional competence over maritime resources. It is also evident that national governments are looking to take ownership and managerial responsibility for the new maritime environments. So for some countries a greater proportion of the area under their sovereign jurisdiction is sea rather than land based (for example Ireland, Portugal and the UK) (DG Mare, 2010). This then begins to change the conceptualisation of “territorial” and the extent to which it should be focused not exclusively on land, but rather the land sea interactions and interdependencies.

Taking a slightly different perspective, land sea interactions are not just confined to those countries that have a maritime border, as land locked countries also often have a mutual dependence on the sea in terms of providing connectivity to the rest of the world through the shipping of goods and services, and by affecting the environment through discharge into the marine environment via rivers. From this perspective it is clear from Map 1 that the large sea basins of Europe have an impact on the regional seas into which they discharge. Managing these cross boundary and transnational environments requires co-operative and collaborative effort. The key point to note is that land sea interactions are critically important to territorial cohesion, although for coastal regions mutual interdependence will be of greater significance than inland regions.

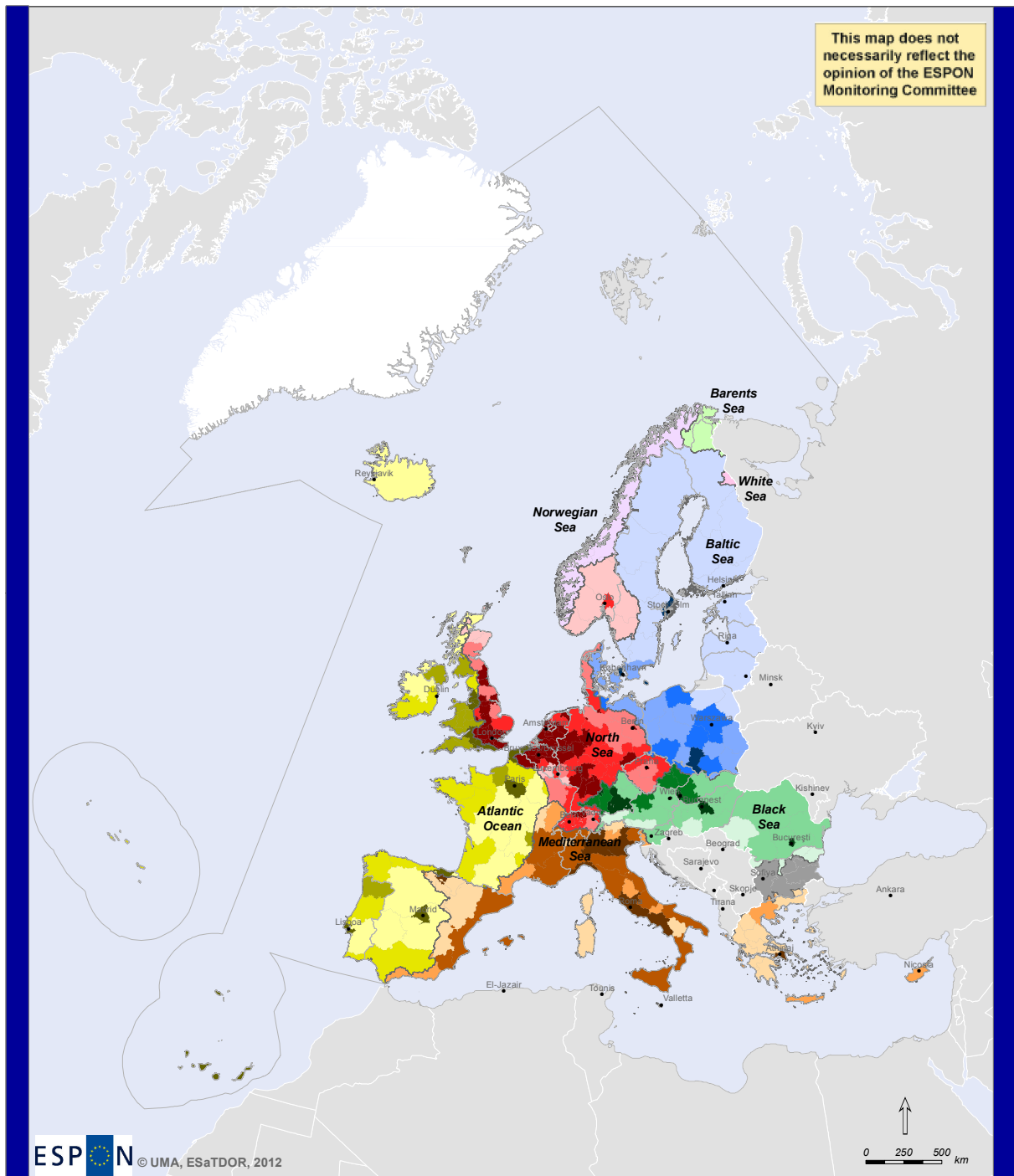
It was within this context that the EU’s Integrated Maritime Policy (IMP) was proposed in 2007 to “enhance the optimal development of all-sea related activities in a sustainable manner.” This sought a balance between harnessing the significant economic and social benefits that the sea can provide whilst ensuring that a good environmental quality and integrity within Europe’s marine environment was maintained. This proposal recognised the need for greater integration between fragmented sectoral policies and frameworks of action that operate at a variety of different scales, from local to regional, national and transnational within EU space, regional seas and with countries beyond the EU and globally.

Hence there has been a growing call for an integrated approach to marine or maritime spatial planning (MSP) throughout the territories of the EU;

*“Increased activity on Europe’s seas leads to competition between sectoral interests, such as shipping and maritime transport, offshore energy, ports development, fisheries and aquaculture and environmental concerns. Climate change, in particular the rise of sea levels, acidification, increasing water temperatures, and frequency of extreme weather events is likely to cause a shift in economic activities in maritime areas and to alter marine ecosystems. Maritime Spatial Planning (MSP) can play an important role in mitigation, by promoting the efficient use of maritime space and renewable energy, and in cost-efficient adaptation to the impact of climate change in maritime areas and coastal waters. MSP is a tool for improved decision-making. It provides a framework for arbitrating between competing human activities and managing their impact on the marine environment”*

(Commission Communication, 2008, 2)

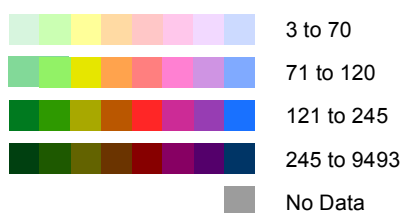
# Population Density at NUTS2 Level




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Thematic data: Water catchments, UNEP; EUROSTAT, 2008.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Population density per NUTS2 within catchment (persons/km<sup>2</sup>)



**Map 1** Population density (at NUTS2 level, 2009) within Europe's sea basins.

Whilst some progress has been made, in different country contexts (e.g. in England the Marine and Coastal Access Act) and indeed within some regional seas (notably in the Baltic Sea), to deal with this agenda, a recent “*Progress Report on the EU’s Integrated Maritime Policy*” (DG Maritime Affairs and Fisheries, 2010) has been published assessing developments since the IMP was first introduced. The report sets out key orientations for future development including:

- The enhancement of integrated maritime governance and cross-cutting policy tools;
- The implementation of sea basin strategies;
- The definition of the boundaries of maritime sustainability;
- The development of the international dimension of IMP, and
- A renewed focus on sustainable economic growth, employment and innovation.

While MSP is being promoted by DG Mare (Commission Communication 2008), there is still uncertainty as to whether this will take the route of a formal instrument such as a Directive. But there is a growing recognition of the significant inter-linkages between marine and terrestrial areas and that the opportunities and risks presented by the marine environment can have an important role in delivering the wider European goals of social, economic and territorial cohesion. This has led to recognition that maritime policy has an important and integral role to play in cohesion policy.

Recent developments related to the EU’s territorial agenda now make explicit reference to the marine environment as being integral to the territorial agenda of the EU. For example in the background document to the recently revised Territorial Agenda for the EU, recommendations included: the introduction of some form of regulatory mechanism similar to spatial planning to avoid random and excessive sea space allocation to some interests; the inclusion of sea space as an integral part of national, regional and local spatial policy; close alignment of Maritime policy with territorial agendas, objectives and priorities; the integration of maritime space into relevant EU macro strategies; and developing EU maritime policy as a prominent part of Cohesion policy (Drafting Team set up for the update of the Territorial State and Perspectives of the EU 2011).

This has led to the new *Territorial Agenda of the European Union 2020* that was agreed in Gödöllő, Hungary in May 2011. For the first time this EU document explicitly includes maritime considerations as part of the territorial agenda:

‘Maritime activities are essential for territorial cohesion in Europe. Economic activities such as energy production and transport are increasing rapidly in European marine environments. There is a need to solve user conflicts and balance various interests by cooperation in maritime spatial planning. The Marine Strategy Framework Directive and EU Integrated Maritime Policy call for coordinated actions from Member States on maritime spatial planning. Such planning should be integrated into the existing planning systems to enable harmonious and sustainable development of a land-sea continuum.’ (Informal Ministerial Meeting of Ministers responsible for Spatial Planning and Territorial Development, 2011, para55).



Clearly the marine environment is increasingly being seen, at least from a European perspective, as offering some potential for growth, but that until recently there has been a disconnect in the way that the land and marine environments have been viewed. The land has been much researched and seen as a focus for territorial cohesion. The maritime focus has tended to be on the promotion and protection of ecosystems integrity. The interface between the land and the sea, perhaps with the exception of the activities in Integrated Coastal Zone Management (ICZM) has been largely ignored, although ICZM has been encouraged by the EU as a tool for the management of these interfacing land and sea environments.

In terms of future EU developments relating to territorial cohesion, the Common Strategic Framework (CSF) seeks to draw together a range of different European funding packages into an integrated pot for the 2014-2020 funding period to promote integrated investment priorities. In this context sea basins are identified explicitly as suitable arenas for policy investment. With Europe's regional seas, the Baltic is hailed as the regional sea where collaborative ventures between nation states, leading to integrated management are the most advanced. But DG Mare is going beyond governance to explore support for growth in the maritime sector and contribute to the aims of *Europe 2020* through a "Blue Growth" strategy, which is thus defined as "*smart, sustainable and inclusive economic and employment growth from the oceans, seas and coasts*". Blue Growth aims to identify and tackle challenges (economic, environmental and social) affecting all sectors of the maritime economy, including those sectors which support maritime activity but may be based far inland. It focuses on existing, emerging and potential activities such as short-sea shipping, coastal tourism, offshore wind energy, desalination, use of marine resources in the pharmaceutical and cosmetics industries.

These ideas are being operationalised through sea basin approaches. The first of these to be launched is the Atlantic Strategy, whereby partners in the Atlantic will through the Atlantic Forum seek to influence and gain access to integrated structural fund resources as proposed through the CSF (CEC, 2011). By the end of 2013 the Forum will have created an Action Plan, which will be part funded through the CSF. It seems likely that other regional seas or sub-regional seas will follow this proposal with the Adriatic Sea now beginning to prepare its own macro-regional strategy.

The interactions between the land and sea, not just in the immediate interface of the coast are increasingly being recognised as being important spaces that need careful consideration. The intensity, nature and extent of sea use and these interactions with the land have created a complex web of governance arrangements at a variety of different scales (global, regional seas, European, bilateral and transnational, national, regional and local as well as sectoral depending on particular interests that want to use sea space). Clearly maritime considerations are increasingly linked to territorial cohesion agendas and therefore policies need to be framed in ways that relate to place-specific risks and opportunities.

Within this context this is the first applied policy research project which explores Europe's regional seas, not as an entity in their own right, but important as part of the territorial agenda. In other words a key focus of the work is to explore much more fully and explicitly land sea interactions.

## 1.2 Defining the Regional Seas

Whilst the research specifically and exclusively focused on six European seas (other maritime areas surrounding European territories have not been considered as they were explicitly excluded from the EsaTDOR project specification), the first task was to pragmatically define the boundaries of these regional seas for analytical purposes. One of the early findings from the research was that unlike on land national boundaries, at least within Europe, are reasonably well defined and fixed, in maritime environment there is a complex arrangements of the way that maritime boundaries are defined, and these vary depending on which regime is being described. All nation states have declared territorial waters that can extend up to 12 nautical miles from the coast, and some have declared exploitation rights based on either Exclusive Economic Zones (EEZ) (up to 200 miles from the shore) or the limits of the continental shelf, which have been declared under the provisions of the UN Convention on the Laws of the Sea (UNCLOS). In European policy terms the Marine Strategic Framework Directive (MSFD) has divided Europe's seas into three broad marine regions and nine sub-regions based on an ecosystems services approach. Such an approach excludes two regional seas, the Arctic and the Black Sea, and focuses on seas which loosely fall within the jurisdiction of the EU. Other boundaries such as those defined for the EU's Integrated maritime Policy initiative, or related to the multilateral agreement of the OSPAR Convention do not align with MSFD boundaries, but reflect other thematic interests. Hence these examples illustrate the complexity of maritime boundaries and the potential disadvantages of trying to apply one particular set of boundaries across all of the regional seas. Instead, the research has adopted a pragmatic and iterative approach, and in most cases the definition of boundaries of regional seas has tried to take advantage of a variety of regional sea conventions such as OSPAR, HELCOM, the Barcelona and Black Sea Conventions, to try and make best use of the data that has already been collected by regional seas secretariats, although this brings with it challenges of consistency between regional seas. The agreed boundaries for each of the regional seas is shown in Map 2 and explained for each regional sea in the following paragraphs.

*Arctic Sea Boundaries.* The boundaries here are consistent with those for the OSPAR region 1: The Arctic Sea. By using OSPAR boundaries, Norway is bordered by only two regional seas (the Arctic and the North Sea, which will ease the data collection phase).

*Atlantic Ocean Boundaries.* OSPAR boundaries are used to delimit the northern edge of the Atlantic, and the boundaries between the North Sea, Arctic and Atlantic. The western edge of the Atlantic was defined by the western limits of the EU's Integrated Maritime Policy Areas, following a line of longitude at 18° W. In this instance it was decided to use IMP boundaries rather than extend the boundary further west to cover the entire OSPAR Wider Atlantic region as this covers a large area which, with the exception of Portugal's EEZ surrounding the Azores is beyond the jurisdiction of any European nation. The southern boundary of the Atlantic combines the southernmost extent of the OSPAR region with EEZs of the Canary Islands and Madeira. Between the UK and mainland Europe the eastern limits of the Atlantic are defined using the line between the English Channel and the North Sea. This coincides with the IMP boundary of the Celtic Seas and is appropriate given the

Channel's importance in providing a strategic link between North West Europe with the Atlantic Ocean and the rest of the world.

*Baltic Sea Boundaries.* This is largely an enclosed sea and the key boundary concern relates to the area of transition between the Baltic and the North Sea. A line between the Skaggeak and Kattegat water bodies is adopted here, following the definitions adopted by HELCOM.

*Black Sea Boundaries.* The area covered by the Convention on the Protection of the Black sea Against Pollution (Black Sea or Bucharest Convention) is suggested as the maritime region. This excludes the Sea of Azov to the north. This is controlled by Russian and Ukrainian authorities and is hence not part of ESPON space, and thus northern limit of the Black Sea is defined as the Kerch Strait. The Bosphorus Strait, which connects the Black Sea to the Mediterranean via the Sea of Marmara, defines the southern edge of the Black Sea.

*Mediterranean Sea Boundaries.* The Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention), provides a basis for defining the western limit of the Mediterranean. However the Dardanelles Strait which, through the Sea of Marmara provides a link to the Black Sea, falls neither within the Barcelona or Black Sea Convention boundaries. In this case this space has been allocated as part of the Mediterranean maritime region.

*North Sea Boundaries* These boundaries have to a large degree been determined by the boundaries of its neighbouring maritime regions. To the north and west the Greater North Sea OSPAR boundaries separate this maritime region from the Arctic and the Atlantic. To the east HELCOM boundaries separate the North Sea from the Baltic and to the south the IMP boundary separating the English Channel from the North Sea completes the maritime extent of the North Sea region.

# Regional Sea Boundaries



Map 2 European Regional Sea Boundaries used in ESaTDOR

## 2. Methodology

### 2.1 Overview

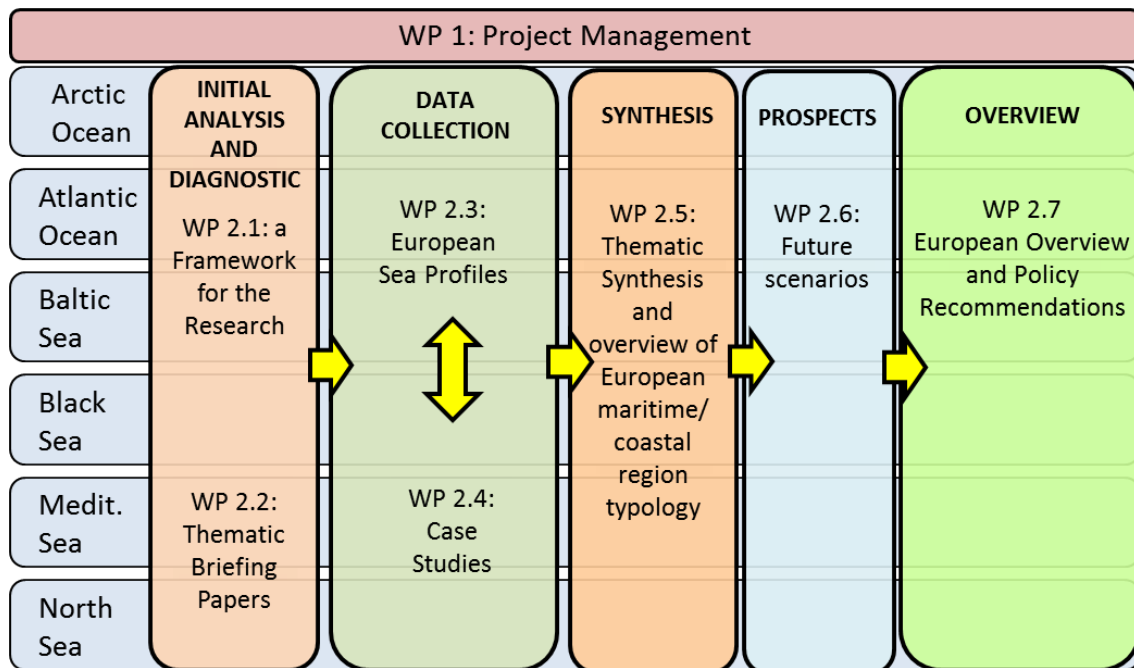
This ESPON applied research project seeks to contribute to the emerging policy debate on territorial cohesion by exploring in greater detail the land sea inter-actions and the extent to which various marine based activities can contribute to economic growth and societal wellbeing, whilst at the same time ensuring that critical environmental assets are effectively managed and where necessary protected. More particularly this research seeks to:

- Map the different types of sea use across Europe with the objective of creating a typology (or typologies) of different types of coastal/sea regions drawing upon existing ESPON terrestrial typologies as appropriate;
- Identify various development opportunities (and constraints) for different types of sea/coastal region;
- Explore best practice examples of terrestrial-marine and maritime governance to provide advice and guidance on how these critical assets can be efficiently, effectively and democratically managed; and
- Make policy recommendations and identify further areas for applied policy research designed to maximize the opportunities of and minimize the human impacts on the critical marine assets of Europe.

The analytical approach follows a five step process (see Figure 1):

- Stage 1 is an **initial analysis and diagnostic phase** exploring what is already known about both the European seas, but also thematic priorities around which the research is focused. This will inform the production of more detailed briefs for the next stage
- Stage 2 is a period of intense **data collection**, both in terms of collating existing data sets for the European seas, but also through case studies providing an evaluation of how various existing governance arrangements have been working in practice
- Stage 3 is a period of **synthesis** and reflection as the information is consolidated into digestible elements
- Stage 4 considers future **prospects** and is a period of scenario building and testing, based on an understanding of the opportunities and challenges facing the European seas
- Stage 5 involves the development of an **overview** including clear policy recommendations, and suggestions for further prioritisation of research.

**Figure 1** The Analytical Approach.



Whilst this framework suggests a sequential approach, development of policy recommendations and reflections on the importance of the European seas in meeting the Territorial Agenda will be a key consideration throughout and will inform the focus and approach at each stage. Furthermore as this is the first time ESPON has ‘stepped into the water’ the approach is necessarily integrated, iterative and experimental although following the trajectory outlined above.

## 2.2 Methodology and Hypothesis for Further Investigation

In addressing the five stages of the research, as Figure 2.1 indicates a series of work packages have been developed and the objectives, methodology and outputs for each of these are outlined below.

### **WP 2.1: A Framework for the Research/Inception Report**

**Objective:** To refine and extend the framework for the research

**Tasks:**

- Identification of key literature / data sources in relation to each European sea
- Development of an initial typological framework for maritime/coastal regions
- Selection of case study areas
- Development of the research approach and methodology
- Refinement of project management arrangements and risk assessment

**Key Outputs:** Inception Report

This work stream forms part of the initial Analysis and Diagnostic stage of the project and is designed to provide a more in-depth framework for the research upon which subsequent work packages will build. The outputs are reflected in this Inception Report with its associated annexes.

A key aspect has been the development of a baseline understanding of data availability in line with the overall project specifications. Using a standard checklist, partners with designated European sea responsibilities have been charged with undertaking an initial assessment of sea boundary considerations, data sources in relation to each thematic area, other European Union funded projects which may be relevant to the research, and existing sea level and sub-sea level governance arrangements which may be explored in more detail as case studies in WP2.4. Partners with thematic responsibilities have undertaken a similar thematic assessment. In addition guidance on data collection and case study selection was produced. WP2.1 has also entailed reflection upon the possibility of establishing an initial typology of maritime/coastal regions drawing upon existing ESPON typologies which could be tested and refined through subsequent stages of the project.

### ***WP 2.2: Initial Thematic Briefing Papers***

**Objective:** To specify detailed data collection requirements

**Tasks:**

- Initial thematic review of data availability across each European sea drawing upon output of WP2.1 to identify the potential to produce common data sets recognising inter-linkages where appropriate
- Initial thematic overview of relevant policy frameworks and identification of key trends and future development considerations
- Preparation of thematic briefing papers and data collection templates

**Outputs:** Briefing papers and data collection templates on General Data Protocols and Mapping Requirements, Economic Use; Energy, Cables and Pipelines; Transport and Shipping; Coastal and Marine Environment; Coastal and Marine Governance Case Studies

WP2.2 is the second work stream that forms part of the initial Analysis and Diagnostic stage of the project. Building upon the work undertaken in WP2.1 this will start with refinement of the draft General Data Protocols and Mapping Briefing Paper which will address generic issues and confirm approaches including matters related sea boundaries for the project. This will then guide the definition a robust set of thematic indicators which are compatible with a map-making facility and would be able to provide a consistent, homogenous, reliable and up-datable European database. These more detailed requirements related to the key sectoral aspects of the project specification will be set out in individual briefing papers covering: Coastal and Marine Environment, Economic Use (including fishing, aggregate extraction, tourism etc.); Energy, Cables and Pipelines; Transport and Shipping. These papers will also be informed by an associated overview of relevant policy frameworks and the identification of key trends and future development considerations that might need to be reflected in data gathering activities. Inter-linkages between each of the areas will also be considered to maximise efficiencies and synergies in data gathering and with an eye to the development of new complex/ multifaceted indicators which could be used to distinguish the socio-economic

situation, development potential, and competitiveness of different types of maritime/coastal region. In addition, further attention will be given to data collection requirements of the Case Studies

### ***Work Package 2.3: European Sea Profiles***

**Objective:** To collect data for each European sea according to the guidance set out in W2.1 and WP2.2

**Tasks:**

- Collect data related to the existing situation and trends in relation to each theme
- Identify key spatial inter-linkages
- Identify current conflicts and challenges
- Identify and characterise existing clusters of maritime industries
- Identify development opportunities
- Distinguish different types of maritime/coastal region
- Produce a summary profile of each European sea

**Outputs:** Interim Report and European Sea Profiles

Using the guidance set out WP2.1 and WP2.2, WP 2.3 forms the most substantial part of the Data Collection stage of the project. Here partners with designated European Sea responsibilities will lead the collection of information on: the existing situation and trends in relation to each theme; key spatial linkages; and current conflicts and challenges. This will provide the basis for an assessment of the present state of development of clusters of maritime industries and of future development opportunities associated with each sea. In turn this will inform the definition of the spatial distribution of different types of maritime/coastal region and the initial development of an associated typology. The activities in this work stream will be closely aligned with WP2.4 related to the case studies and towards the end of the Data Collection phase, a stakeholder from each sea area will be invited to consider the findings of both work streams and contribute to a SWOT analysis. The outputs will be mapped and together with an associated commentary and summaries of the case studies will be collated into a series of European Sea Profiles.



## **WP 2.4 Case Studies**

**Objective:** To provide a more in depth assessment of the governance experience of different maritime/coastal regions and the potential transferability of good practice.

### **Tasks: (For each case study)**

- Documentary analysis and data collection related to each thematic area in order to develop and understanding of spatial structure and dynamics of environmental/human interactions and relationships
- Identification of maritime related policies, plans, agreements, conventions and relationships to territorial planning
- Identification of actors and stakeholders involved and their role, influence, participation and contribution to decision making
- Identification of future opportunities, threats, conflicts and obstacles to action
- Development of conclusions and recommendations related to lessons and potential transferability of good practice.

**Outputs:** Contributions to European Sea Profiles and Case Study Synthesis Report

The second component of the Data Collection phase of the project, and running in parallel with WP2.3, is WP2.4 which concerns the case studies. These are intended to provide a more in depth analysis of existing governance arrangements related to the key themes of the research project and a more detailed understanding of the specific development opportunities and challenges in different types of maritime/coastal region. It is envisaged that 3 case studies will be undertaken in each European sea area and the basis for case study. Each case study will entail a combination of documentary analysis, data collection and analysis and stakeholder interviews and round table discussions where appropriate. The particular emphasis will be on collating more qualitative data that complements the greater emphasis on quantitative data in WP2.3. A key focus will be upon the identification of potentially transferable lessons and good practice related to maritime development and governance.

Outputs from the case studies will flow in two directions. Firstly, as noted above, case study summaries will be incorporated within the relevant European sea profile. Secondly, the summaries will appear in the case study synthesis report that will be produced as part of WP2.5.

## **WP 2.5: Thematic Synthesis Reports**

**Objective:** To synthesise the outputs of WP 2.3 and WP2.4

### **Tasks:**

- Production of a series of thematic synthesis reports for the EU
- Review and refinement of European sea region typology
- Mapping of key inter-linkages at the EU scale

**Outputs:** European Thematic Profiles and Data Overview

Based upon the outputs of WP2.3 and WP2.4, WP 2.5 will draw together material at the EU scale.

Following on from the Thematic Briefing Papers produced in WP2.2, partners with thematic responsibilities will produce a series of Thematic Synthesis Reports which will provide an EU wide overview of findings in relation to Economic Use; Energy, Cables and Pipelines; Transport and Shipping; Coastal and Marine Environment; Coastal and Marine Governance and the Case Studies. The reports will include maps and a commentary covering the existing position, potential development trajectories and key opportunities and recommendations for future data collection, policy options and research.

In addition, a separate report will be produced reflecting upon the Data Protocols and Mapping Briefing Paper produced in WP2.2. This will synthesise results related to the application of the maritime/coastal region typology and findings related to key maritime/coastal relationships and interlinkages. The report will include maps and a commentary together with associated recommendations related to future data collection, issues.

***Work Package 2.6: Future Scenarios***

**Objective:** To create spatially explicit policy scenarios for the sustainable development of European Maritime/Coastal Regions.

**Tasks:**

- Undertake and overview of existing scenarios on Maritime/Coastal areas
- Identify the determining driving factors on Maritime and Coastal Areas
- Explore the impact on maritime/coastal areas related to the thematic development trajectories identified on WP 2.5
- Identify sustainable development scenarios for different Maritime/Coastal Regions
- Identify opportunities for new forms of integrated planning and development between inland and coastal regions of Europe and with wider non EU areas.

**Outputs:** Future Scenario Report

WP2.6 provides an opportunity to step back and reflect upon the overall picture that has emerged and also to think more radically about future scenarios for the sustainable development of European maritime/coastal regions. This will be undertaken initially through a EU level expert/stakeholder workshop which will explore how the development trajectories and opportunities identified in the various thematic synthesis reports and previous maritime/coastal related scenario building exercises (e.g. IPCC-SRES) might inform the future planning of different types of maritime/coastal region and create opportunities for new forms of integrated planning and development between inland and coastal regions of Europe and with wider non EU areas. In this work the DPSIR approach (Driver, Pressure, State,

Impact and Response) could be used as a framework and links will be made to a range of research projects being undertaken as part of the EU's Maritime Affairs research programme. These scenarios will then be 'road tested' in each of the sea area. The output will be summarised in a Future Scenario Report.

### ***WP2.7: European Overview and Policy Recommendations***

**Objective:** To draw together the main results of the project and identify policy recommendations in support of integrated maritime policy development in the EU.

**Tasks:**

- Produce a summary document showcasing the main result of the project
- Produce a short executive summary
- Produce a scientific report

**Outputs:** Final Report, Executive Summary and Scientific Report

WP2.7 will draw together the main findings of the project through a family of three documents.

The first is the main report which is aimed at key European and national policy makers and researchers with a strong interest in territorial development and the rapidly growing areas of integrated coastal zone management and marine planning and management. The report will draw upon the outputs of WPs 2.3, 2.5 and 2.6 and will provide a selected overview of the existing characteristics of Europe's maritime/coastal regions, thematic development trajectories and potential future development scenarios. In addition it will highlight examples of transferrable good practice and set out clear policy options for policy makers consistent with the ambitions of Europe 2020.

Accompanying this report will be a short executive summary which will be designed for circulation to a wider audience of stakeholders.

Finally a scientific report will be produced detailing the research methodology, definitions and data protocols used. A particular feature will be discussion of the rationale behind the maritime/coastal region typology. A complete set of maps produced by the project will be included and recommendations for future data collection and updating and priorities for research will be set out.

## 2.3 Dissemination of Results

Dissemination of the outputs from the research has been identified as a separate work package (WP3). This is conceived as this being an ongoing process whereby the research team engages proactively with the scientific and practitioner community throughout the research. It will primarily involve the Lead Partner and other Project Partners working in various regional and international contexts.

Whilst most of the dissemination will take place towards the end of the project this work package will involve:

- Presentation and discussion of the methodology and interim results at various internal and external ESPON seminars during the project itself
- Specific activities organized by the TPG during the project in the form of project workshops involving with interested stakeholders.
- Recurring articles about the project and its results in a well established international coastal and marine e-newsletter such as EUCC Coastal News.
- Looking for interaction and feedback between the project and decision makers and politicians towards the end of the project to feed into policy recommendations but also guides and handbooks. In this context it will be important to look for innovative ways of engagement
- Presentation and discussion of the methodology and results at various scientific meetings and international conferences. This will be an ongoing dissemination that can involve all of the project partners
- Production of various academic journal articles targeted at different types of academic and practice communities e.g. Town Planning Review, Marine Policy etc.
- Presentation of the results at a national level, co-operating with relevant ESPON co-ordinating points to provide national and trans-national seminars to deal with the specifics of particular regional seas, or sectoral priorities and to learn from experiences elsewhere.
- Creation of a Spatial Data Infrastructure (SDI) for integrated spatial data information and knowledge. The SDI will harmonize and normalise data coming from WP 2.2, WP 2.3, WP 2.4, WP 2.5 and WP 2.6, as well as those data from external sources. This will provide a data platform /data network for making available the data, information and tools that we have used for developing maps, statistics and analysis.

Annex 1 to the Scientific Report provides a list of outputs resulting from the project to date, such as publications and conference presentations.

### 3. Data Collection and Mapping

#### 3.1 Introduction – Mapping in New Dimensions

Quality mapping depends on several factors, such as quality of the original data, processing methodologies and communication capacities. Even though mapping is one of the main tools in ESPON projects, so far they have been mainly land based and ESPON projects considering marine space as integral to European territory have been lacking. Hence, while a wide range of precise regional land related datasets are already widely used, the presence of sea related datasets is not evident.

ESaTDOR, being the first ESPON project to consider marine space as integral to European territories, faced some challenges related to the quantity and quality of available data to be included in the mapping of European sea typologies. The ESaTDOR project consists of multidisciplinary teams including thematic experts (Energy, Transport, Environment, and Economy), sea experts (for each of the European seas), and mapping experts.

The mapping part of ESaTDOR has included different implementation phases, being: 1) data scoping, gathering and quality control; 2) data integration 3) data processing and analysis; 4) simple data mapping; 5) composite and typology mapping.

The data scoping and gathering phase was mainly conducted by thematic experts, based on their knowledge about the necessities for the project. However, the identified data collection did not always fulfill the required quality, resolution or extent to be used in further analysis. Some challenges related to the availability of regional datasets and their reliability. The datasets relevant to the aim of ESaTDOR, whenever present, were in some cases not able to provide a real picture of the Sea, Sea-Land, and Land-Sea interactions. Furthermore, some datasets were only partially present for some Seas and not others, or even for some parts of a Sea leading to gaps in the datasets.

In order to overcome these challenges and to identify the datasets and key variables to describe the main themes covered by ESaTDOR, data gathering was followed by a quality control phase. This consisted of several thematic discussions between each of the thematic partners and the mapping team. The main problems encountered were: **incompatible geographical extent**, i.e. data gaps or datasets not available for the whole ESPON space extent; **incompatible datasets**, i.e. datasets that lacked adequate reference sources and which results were not deemed credible by the thematic experts; **incompatible resolution**, i.e. data for which the resolution was not compatible with the resolution decided for the project, or data for which calculation procedures were not clear or considered not good enough by the mapping team. The outcomes of the discussions provided a final short- list of 'best available' regional data covering the ESPON extent and being of an adequate quality to be used in the analysis phase of the project.

The short-list of datasets went through data integration (whenever datasets from different sources were used), processing and analysis. We integrated multi-sourced datasets and then harmonized them into thematic layers covering the ESaTDOR space. Organization of data was one of the first decisions to be taken: the traditional 1km grid of ESPON was far too precise for the data available for the sea, according to the first analysis of data available. An alternative approach was finally taken based on a 10km grid for the sea fully compatible with

the grid of 1km for land. Data processing mainly consisted of the conversion between the original format of the data and the resulting format, regarding reference systems, projection and resolution. Finally, the map design tried to emphasize the thoughts and views expressed by the rest of ESaTDOR team.

From the initial set of selected themes to be mapped, a final list was produced:

- On maritime economy, the indicator selected was the number of employees dedicated to marine activities (clusters of specific activities were grouped as fisheries, shipbuilding, tourism, transport, other maritime traditional sectors and other sector associated with the maritime cluster) as well as number of bed places in tourist establishments per square kilometer.
- For maritime transport, the most relevant themes identified in ESaTDOR were freight transport (shipping routes and traffics at ports, for different sorts of commodities), passenger transport (cruise and ferry routes and traffic at ports), Short Sea Shipping (traffic), and additionally maritime contamination, fishing (fleet and volume of catches) and sailing (fleet and ports).
- On energy and undersea infrastructure the final themes depicted were: oil and gas platforms, wind farm capacity, wind power potential and undersea cables, together with employment in the oil and gas sector on the land side.
- On environment, maps include protected areas, invasive species (introduced through shipping), organic and inorganic inputs, bathing sites (according to Bathing Water Directive) and sea surface temperature (increase of the values through the years).
- In addition to these a number of general context datasets were used to create another sub-set of maps: population (by catchment area and density in coastal regions), marine eco-regions, gross domestic product in coastal regions and sea depth.

The map production phase consisted of identifying the right layout and template to be used for the project. This phase was done in close collaboration with the ESPON mapping unit. Series of simple data maps (showing one dataset only) were created at the European (regional) level and at each regional sea level. After the elaboration of the simple maps, key datasets were agreed with the thematic experts in order to be included in the elaboration of the composite thematic maps. These composite maps provided an overview of the main stressors present in each theme covered by ESaTDOR.

The final stage included the Typology map creation, being a combination of the different composite maps agreed in order to provide an overview of the cumulative human impacts in the European marine environment.

### 3.2 Review of Existing Mapping Procedures and the INSPIRE Directive

Though different initiatives exist in relation to marine mapping in EU Seas, a common approach to marine data collection protocols has yet to be established. The ESaTDOR project reviewed several regional mapping protocols (some of which are specific to the Sea) with the aim of establishing a better perspective of the current status of mapping in EU/ESPON Seas. Furthermore, ESaTDOR assessed several relevant regional initiatives in order to provide an insight into the situation of marine data resources and on the organizational level of marine knowledge (in terms of available data) present within Europe. More specifically, we went through a review of several mapping procedures so to build on existing knowledge and mapping procedures for the development of this project.

#### INSPIRE:

Despite the fact that the full implementation of the INSPIRE Directive (Directive 2007/2/EC, of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community) is expected to take place by 2019, this Directive is already considered a European Union (EU) spatial data infrastructure and is facilitating the sharing of environmental spatial information among public sector organizations. At present, INSPIRE provides the legal foundation for common standards of European geographical data and is facilitating public access to spatial information across Europe due to its spatial extension (across Europe) and the extensive list of spatial information it includes (great variety of topics and thematic areas).

INSPIRE is based on a number of common principles that aim at harmonizing datasets in Europe in addition to using and analyzing them efficiently. Here we state the principles that are most relevant to ESaTDOR scale of work:

- Data should be collected only once and kept where it can be maintained most effectively.
- It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications.
- It should be possible for information collected at one level/scale to be shared with all levels/scales; detailed for thorough investigations, general for strategic purposes.
- Geographic information needed for good governance at all levels should be readily and transparently available.
- Easy to find what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

Hence, after a scoping exercise of data availability and data management procedures relevant to ESaTDOR, we decided to use the INSPIRE Directive as an overarching framework for setting the data protocol for the project. The decision was taken in order to guarantee the provision of relevant, harmonized and good quality geographic information. The resulting information of this project is made available as a ready to use knowledge to the formulation, implementation, monitoring and evaluation of European Community policy-making.

In Annex 14 of the Scientific Report (Annex 11 of the ESaTDOR Interim Report), we provide the guidelines that were used in ESaTDOR for the collection and management of data specific to European coastal and marine questions of the different seas in order to enable a coherent and harmonized assessment for an entire EU Marine Region.

Some considerations had to be made in reference to the approach of sea-related datasets that ESaTDOR will deliver. Therefore, some adaptations were done for Annex 3 of the INSPIRE Directive where we considered two new additional themes, relevant to the aims of ESaTDOR, and not covered by the themes of INSPIRE (Further details can be checked in the ESaTDOR Interim report).

Further to the framework provided by the INSPIRE Directive and its application in this project; within ESaTDOR we developed a review of some of the existing EU protocols related to Sea mapping which are considered in this report as they provide insights and a better understanding of the EU seas behavior.

#### EU Marine Knowledge 2020 strategy:

EU Marine Knowledge 2020 is the marine data and observation strategy for smart and sustainable growth. This strategy envisages that marine datasets will be available to scientists and engineers on a prototype website. EU Marine Knowledge 2020 identifies three phases of data processing:

- Collection of Data, largely a responsibility of Member States – although the EU supports the collection of data to support the Common Fisheries Policy and contributes towards the cost of satellite observations of the ocean,
- Assembly of Data, to facilitate access to data layers of comparable and compatible parameters.
- Application of Data, where support at EU level is limited to those areas where the EU itself needs a specific answer.

#### EMODnet Initiative:

Back in 2007 and in response to the EU Green Paper on Future Maritime Policy, the European Marine Strategy Framework Directive (MSFD) identified the need of an overarching European data network center specific to the European Seas in order to get rid of the negative consequences of the poor access to marine environmental data that are fragmented, incoherent in many cases, and incomplete. As a response, the European Commission initiated the European Marine Observation and Data Network (EMODnet) which aimed at creating pilot studies that assemble fragmented and inaccessible marine data into interoperable, contiguous and publicly available datasets for whole maritime basins. EMODnet follows the basic principles of the “Marine Knowledge 2020” agenda, being consistent with the INSPIRE Directive. In other words, EMODnet uses a similar data architecture as the one set by INSPIRE, ensuring the use of the same standards for



metadata and covers different types and coverage of marine datasets. (Further information on the types of datasets covered by EMODnet is present in Annex 14).

### GMES:

The Global Monitoring for Environment and Security (GMES) is the European programme for the establishment of a European capacity for Earth Observation. Its primary objective is the provision of information services giving access to accurate information and data in the field of environment and security tailored to the users' needs. Among other themes, GMES supports the GMES marine environment monitoring service being implemented by the EU-funded projects MyOcean and MyOcean2, which provides regular and systematic reference information on:

- the state of physical ocean including information on sea surface temperature, currents, salinity, sea level, ice monitoring, and bio-/geochemistry,
- marine ecosystems for the global ocean as well as the European regional areas in terms of observations and forecasts,

Since 2010, MyOcean/MyOcean2 has provided a combination of space and in-situ observations and data assimilation on the worldwide ocean and regional scales, mainly on European basins and seas. The products are accessible through [www.myocean.eu](http://www.myocean.eu) webportal. The application areas of these services cover four main domains being:

- Marine safety addressing marine operations, oil spill combat, defense, search and rescue, ship routing, among others.
- Marine and coastal environment including water quality, pollution, coastal activities, among others.
- Marine resources including fish stock management.
- Climate and seasonal forecasting including climate change monitoring, seasonal forecasting, ice survey, among others.

### ISIS:

The Integrated Sea Information System (ISIS) is a proposed data management system specific to the offshore wind farm industry in European Seas. ISIS aims at building upon existing EU data management programs such as ICES, GMES, INSPIRE, and especially EMODnet. ISIS is expected to become a collaborative technology platform that aggregates multiple discrete data sources, providing visualization in technological platforms to decision makers within the offshore renewables and marine industries. ISIS aims at 1) reducing project risk by setting data standards, aligning policies and centralising data collection, storage and analysis; 2) Bringing the latest IT innovation to offshore wind development through visualization and advanced predictive analysis; and 3) Aligning fully with the EC Marine Knowledge 2020 Directive and will be developed in phases as the offshore wind industry expands. Further details on ISIS are present in Annex 14 of the Scientific Report.

### SEIS and WISE-marine

The Shared Environmental Information System SEIS<sup>1</sup> is an approach that is supported by the European Commission and the European Environment Agency (EEA). Its main objective is the modernisation and the coherence of the availability, exchange and use of the datasets required for the design and implementation of environmental policy. SEIS is expected to progressively replace centralised systems for reporting by web based systems based on access, sharing and interoperability. WISE-marine is the marine environmental component of SEIS intended to fulfil the requirements of implementation of the reporting obligations of the Marine Strategy Framework Directive 2008/56/EC and to inform the European public on implementation of marine strategies. It will be an extension of the current Water Information System for Europe (WISE) system, covering near coastal waters, towards the marine environment.

### **3.3 Data Collection for the ESaTDOR Project**

#### Selection criteria

The dataset selection criteria were partially guided by the thematic experts. Four areas of expertise were considered: Transport, Environment, Energy and Economy. Additionally, five series of general context maps were selected with the objective of providing a better overview of the situation of the European Seas.

According to the thematic experts, the main selection criteria were the datasets' availability and their relevance. This process included a review of information availability from reference sources and identification of most relevant datasets from a wide range of datasets of main organizations, agencies and projects, including global and Europe wide, such as Eurostat, the Worldbank, UNCTAD, OECD, etc.

The datasets selected by the thematic experts were then discussed with the mapping team and a short-list of datasets to finally consider in the analysis was agreed based on technical criteria to consider being: data quality, geographical coverage /completeness and temporal coverage.

One of the main issues for data collection was to have complete data in order to have comparable datasets among European Seas. At the beginning of the project, thematic experts searched for regional datasets for consideration. Later on, the mapping team went through a quality control phase where they analyzed the available datasets, by evaluating the geographical coverage and the datasets' technical characteristics. After this process, the number of valid datasets decreased considerably. The decision on keeping a small number of valid and complete datasets was taken after team discussions, as ESaTDOR did not

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<sup>1</sup>Towards a Shared Environmental Information System (SEIS) COM(2008) 46 final Brussels, 1 February 2008

consider creating any new datasets but rather using valid data to provide a European Sea typology.

### *Data Inconsistencies*

Within the quality control phase of the available datasets, data that registered substantial errors were directly discarded; in that case, whenever available, relevant data substitutes were used.

One of the main sources of occurring error within data was methodological; i.e. multi-sourced sub datasets constituting one regional dataset using different methodologies. This was the case of fishery data, considered by the project of main interest from the beginning but not available for the whole region with the same methodologies (ICES data and FAO data had to be merged and evident problems of coherence of the dataset emerged).

### *Completeness*

Data gaps are considered one of the main challenges of ESaTDOR. Even though the objective of the mapping team was not the systematic detection of gaps, the work done with the data gathering resulted in this direction. This issue was common in the case of important datasets considered key for the project from a thematic point of view as well as in the case of specific data gaps in several datasets used for the project.

Incompleteness of data was a major criterion used to discard data. The frequent situation was the case of available datasets covering only part of the regional Seas or even part of a single Sea, a common case being the Mediterranean Sea where the datasets included information on the Euro-Mediterranean side of the Sea only. Many agencies, commissions and conventions are dedicated to collecting and analyzing data of a given sea. Only global organizations are dedicated to collecting data with no sea limits. The number of datasets available with these characteristics is huge. The main problems encountered are: local conventions that work only with local sea data and continental organizations providing continental data, only covering their space. Most of the complete datasets with a comprehensive geographical extension were satellite born information or data provided by models, such as the Environmental data.

Furthermore, a high amount of the used data originated from EUROSTAT, and was complemented in some topics by data provided by TRANS-TOOLS (mostly ferry routes) and National Centre for Ecological Analysis and Synthesis (Shipping lanes). Regarding time scope of identified datasets, only those European-wide and available series in the last 10 years were considered for further analysis.

### 3.4 Procedures for Mapping

#### Reference system and projection changes: Extension changes.

The coordinate system used for all the datasets used and the new datasets generated within ESaTDOR is the ETRS89 and projection is Lambert Azimuthal Equal Area, standard in Europe for pan-European mapping.

All the data managed in this project were converted to this reference system from their original coordinate system. Besides, all the data available were cut with the maximum extension of the ESPON space considered for this project.

#### Grid scheme

The selected mesh size is a convention to be able to integrate data of different resolutions in a common scheme, bearing in mind that high seas will normally have coarser data than coastal zones, and that coastal zones are not homogeneous along the coastline (specially comparing European with non-European coasts).

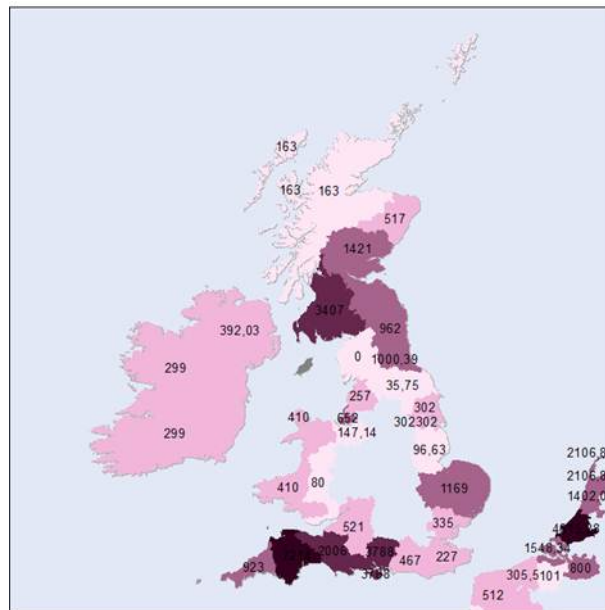
The main innovation in this project in relation to data organization is the use of a grid of square cells of 10 kilometers x 10 kilometers (10 x 10 km). This grid is consistent with the common grid used in other ESPON projects with cells of 1 kilometer x 1 kilometer which fits exactly to it. The decision of using the 10 x 10 km grid was based on the nature of the original data to be used in ESaTDOR. Most of the data have a resolution coarser than the selected grid although in other cases the resolution is finer.

For land data, the same scheme was firstly proposed. However, land data used in this project was always referred to administrative layers. As far as the 10 x 10 km grid is a convention to harmonize data and data on land was already harmonized at NUTs level, the conversion represented a source of error. On the other hand, land data on ESPON projects usually has NUTS based information. Moreover, NUTS sometimes are not homogeneous. In some cases, the statistical units of NUTS are not regions but countries (i.e. Cyprus, Estonia, Iceland, Latvia and Lithuania). In these cases, the official figure of namely total employment of the country was considered instead of the figure given for the region. In other cases, no information was available for the regions, so national data was used (i.e. Denmark, Ireland and Slovenia).

### Land data: procedures

The data that was used for land features is the layer of NUTS available in Eurostat. This layer was populated with alphanumeric data from the European Cluster Observatory. Figure below shows how this land data is applied to land based coastal regions. European Cluster Observatory data offers employees dedicated to a number of sectors, organized into *clusters* or bigger sectors. This employment data was considered both as 1) number of employees and 2) a portion of total employment of the region or country considered. Providing these two figures, the total employment represented *the influence of the land on the sea*, and the proportion of employment of a given sector in the total employment of the region represents *the influence of the sea on land*.

**Figure 2** Land data applied to NUTS3 level.



The influence of land on the sea is also provided in further maps created for ESaTDOR such as the population and population density in coastal regions and within sea basin (water catchment) areas. The influence of the sea on the land is also represented by the Gross Domestic Product in Coastal Regions.

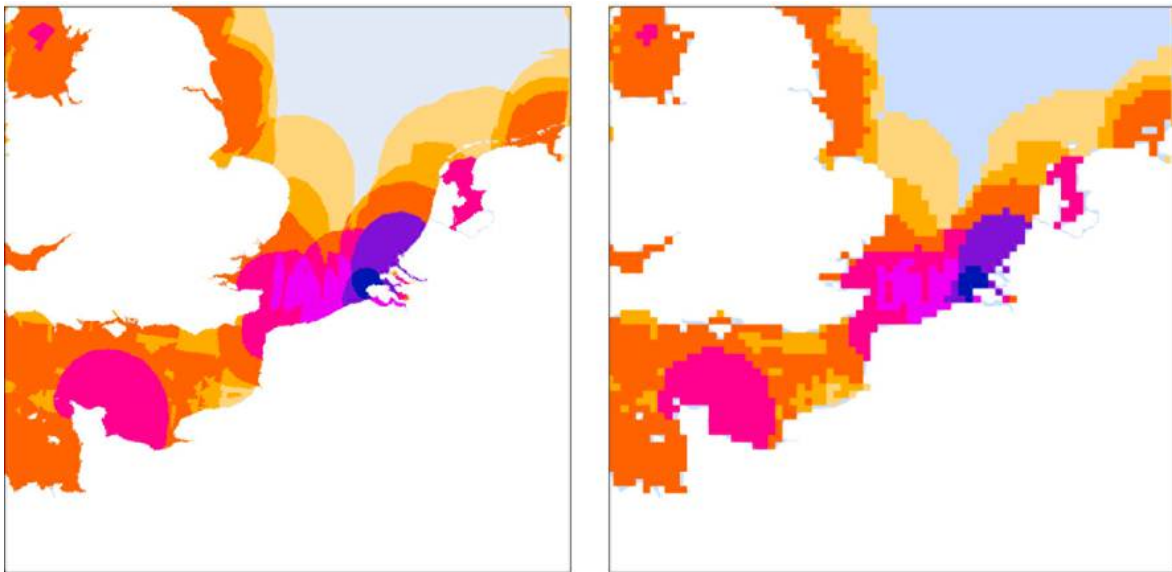
### Sea data: procedures

Sea data have different characteristics, based on which a different procedure was applied: raster data with coarser resolution than 10 x 10 km, raster data with finer resolution of 10 x 10 km, feature data type polygon and line, and finally point data with fixed figures.

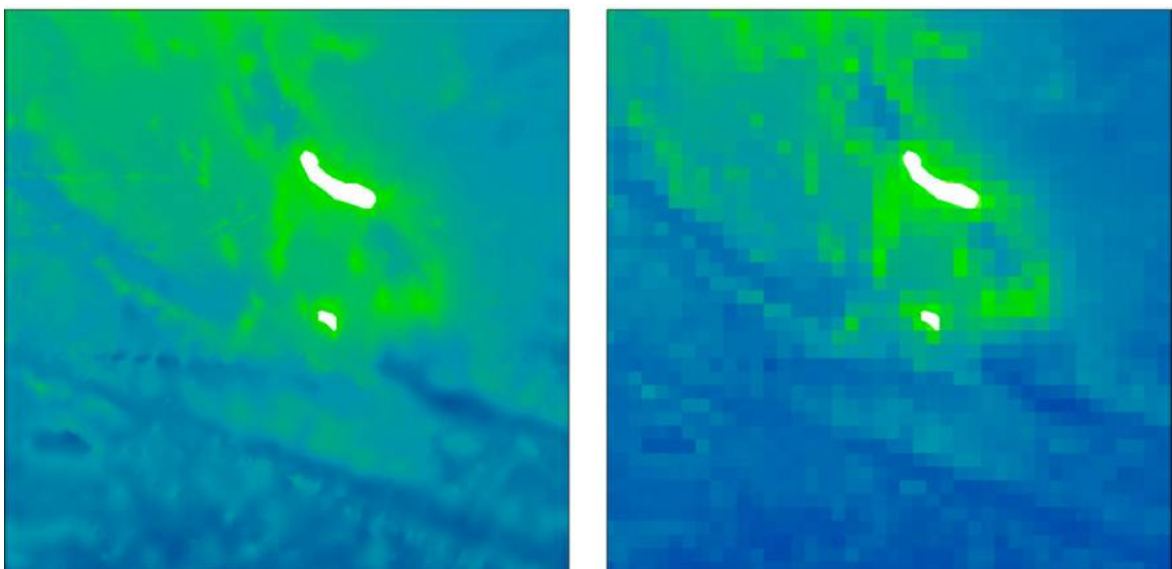
Raster transformations consisted of changing the resolution of the raster data into 10 x 10 km grid. The most common transformations are from a mesh size finer than 10 kilometers size. In these cases, the transformation consisted of statistical calculations based on the mean of the data in the majority of the cases. This is the method used for the following databases: oil rigs, sea depth, invasive species, organic and inorganic inputs and increase in sea surface temperature.

Transformations from polygons to raster imply the loss of precision in the borders, assumed in the utilization of this data model. Figures 3 and 4 illustrate this change in resolution for two different data sets. The only dataset converted from polygons to grid was marine ecoregions. Nevertheless, in some cases, a bridge resolution was used in order to ease the calculation of statistics. This process consisted of the transformation from polygons into a finer raster dataset of 1x1 kilometer squares and in the calculation of statistics of the 100 cells of 1 kilometer contained in the 10 kilometers square. This is the method used for protected sites and shown in Figure 5.

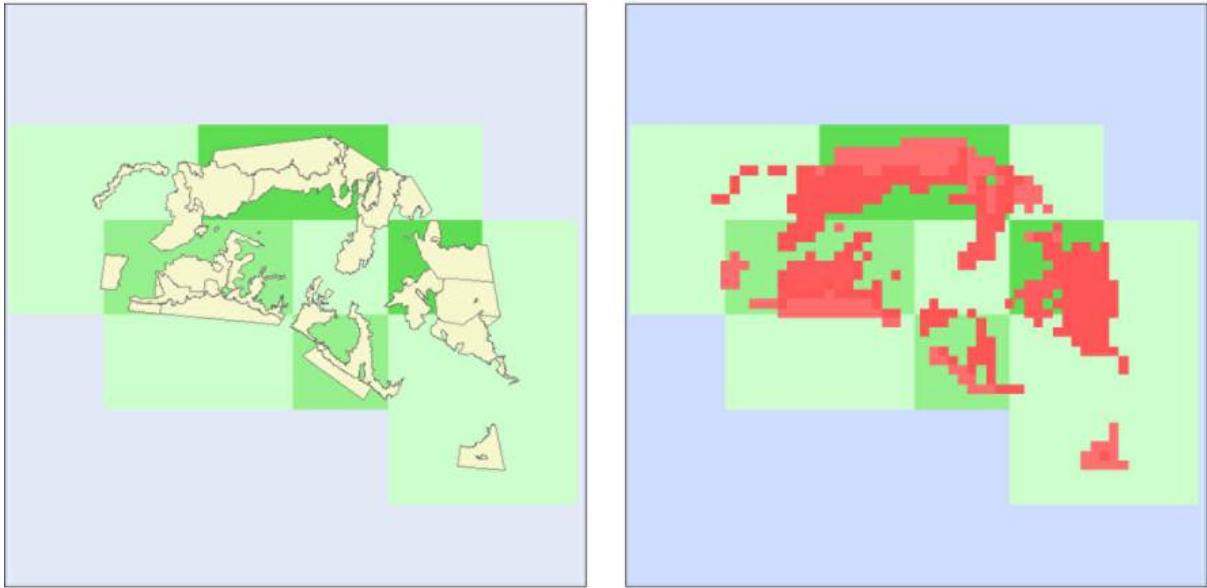
**Figure 3** Changes in resolution from finer to coarser grid sizes. Example with invasive species data.



**Figure 4** Changes in resolution from finer to coarser grid sizes. Example with sea depth data.

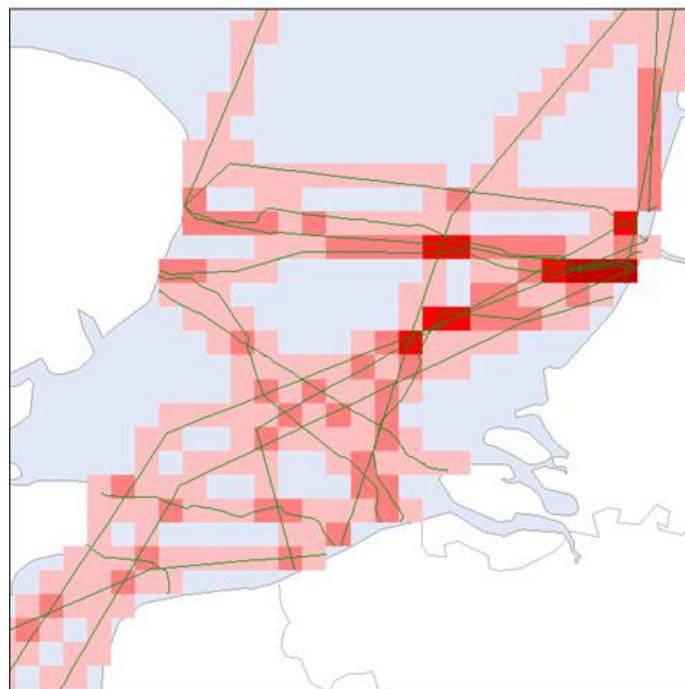


**Figure 5** Transformations from polygons to 1 kilometer grid in order to calculate statistics for protected areas.



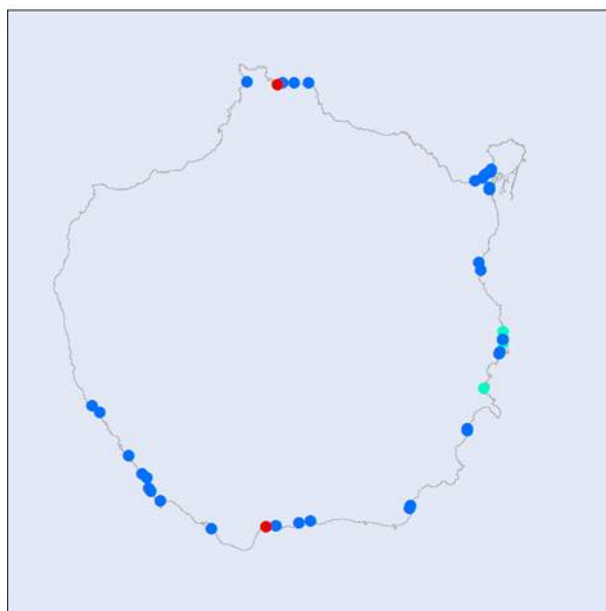
Transformations between lines and grid were made by calculating statistics for each of the lines contained in each cell. This is the method used for undersea information cables and demonstrated in Figure 6 below.

**Figure 6** Transformations from line to polygon and application to 10 x 10 km grid by length of cables.



In the case of point datasets, the methodology followed was to represent the entities as they are. This is the case for bathing sites (shown in Figure 7 below), wave power potential and existing wind farm capacity. However, for calculation purposes point data was assigned to grid cells, calculating statistics for the number of points contained each cell (either the number of points or a statistic calculated based on any value of the original dataset).

**Figure 7** Representation of points along the coastline. Statistics of points for every cell were also calculated.



Further details on the processes and methodologies used for the creation of each simple map used within ESaTDOR are specified in Annex 14.

### 3.5 Production of Composite Maps and Typology Maps

In order to provide a better assessment of the pressures and the land-sea interactions of the variables represented on the previous maps, it is necessary to produce a more complex series of datasets which gather their contents. By using the layer of NUTS regions and the 10 x 10 km grid it has been possible to compare the information of the different variables because all datasets have been previously adapted to these elements.

Composite maps use different variables to create a layer showing the interaction between them, making it possible to evaluate the combined effect of these variables in the territory. Maps have been produced for three thematic sets: The Maritime Economy, Environment and Transport. Briefly, the methodology combines the variables to create a layer with values from 1 to 5 according to the importance of an activity or environmental pressure. This information is classified by quintiles in five groups and the following category names are given from lower to higher: *Very low*, *Low*, *Medium*, *High* and *Very high*.



The typology map joins the information about the three thematic areas in one single map. This map tries to show the areas where overall pressures (the greatest intensities of land-sea interactions) are located. Since there are composite maps related to sea and land, the typology map represents both land and sea pressures. Intensity of pressure is given as in the composite maps, from lower to higher: *Very low, Low, Medium, High and Very high*.

## Composite maps

### *Economic Significance Composite Maps*

These composite maps were produced based on the employment datasets from the maritime economic cluster (European Cluster Observatory, 2011) to represent the weight of economic activities in the territory. There are two maps which show the data with different criteria. They bring together the information of the following 'The Maritime Economy' maps:

- Employment in fisheries
- Employment in shipbuilding
- Employment in other traditional maritime services
- Employment in other sectors associated with the maritime cluster
- Employment in the tourism sector
- Employment in the transport sector

### 1: Economic Use Composite Map (Total maritime cluster employees within each NUTS2 region).

This map shows the total number of employees involved in the maritime economy of each NUTS 2 region. Therefore, it is possible to understand the impact or pressure generated by people of a particular region in the sea. The layer was obtained by adding the numbers of employees in each maritime cluster in the different regions. As in the previous map, a classification based on quintiles was carried out and names were assigned (see Table 1 below).

**Table 1** Ranges selected for the classification of the composite map "Total maritime cluster employees" on land

<b>Total Employees</b>	<b>Category name</b>
8,005 - 51,861	Very Low
51,861 - 109,775	Low
109,775 - 162,63	Medium
162,923 - 263,461	High
263,461 - 674,442	Very High

## 2: Total Maritime Employment Composite Map (Percentage of total employment within each NUTS2 region)

The map represents the weight of a cluster within the economy of a given NUTS2 region, i.e. the importance of that maritime activity for local people. The calculation of this layer was performed by adding the percentage of total employment for the six maritime clusters in each NUTS 2 region. Then a classification into five groups based on quintiles was performed and category names were given according to Table 2:

**Table 2** Ranges selected for the classification of the composite map “Total maritime cluster employees (as a percentage of total employment)” on land

<b>Total Percentage</b>	<b>Category name</b>
5.42 - 15.52	Very Low
15.52 - 17.60	Low
17.60 - 21.06	Medium
21.06 - 24.69	High
24.69 - 36.35	Very High

### *Environmental Pressures Composite Map*

This data set is based on the most representative maps included in the pack of ‘Environment’ in order to show the environmental pressures in the territory. The variables included are:

- Invasive species
- Organic inputs (pesticides)
- Inorganic inputs (nutrients - fertilizers)

The methodology used for this map is to group the values of each variable in five categories according to different criteria (quintiles in most cases) which have been given a numerical figure from 1 to 5. Then the average (equal weight basis) of the layers has been calculated, and the result is a final layer with values from 1 to 5 which contains all the thematic information. The data thus obtained is grouped together in five categories based on quintiles to which names *Very low*, *Low*, *Medium*, *High* and *Very high* are assigned according to the magnitude of pressure that corresponds to the number of quintile.

It should be noted though that in the first classification null values (equal to 0) of the variables was categorized with a 0 instead of 1. This way, by joining the layers, these regions do not increase the pressure magnitude. Therefore, it would take into account the areas where there is at least a minimum impact.

The 'Environment Composite Map (organic + invasive species + inorganic)' represents the pressures suffered by coastal areas, including the information of Organic inputs, Invasive species and Inorganic inputs. Table 3 shows the ranges in which the initial classification is based (quintiles):

**Table 3** Ranges selected for the composite map on seas-coasts classification

<b>Organic inputs</b>	<b>Invasive Species</b>	<b>Inorganic Inputs</b>	<b>Group</b>
-	0	-	0
1 – 60	1 – 60	0.1 – 320	1
60 -120	60 -120	320 - 640	2
120 – 180	120 – 180	640 - 960	3
180 - 240	180 - 240	960 – 1,280	4
240 – 7,662	240 – 3,030	1,280 – 10,186	5

### *Flows Composite Map*

The aim of producing the Flows Composite Map is to identify the hottest spots or zones of European Maritime Flows. These usually are areas close to ports (land-sea interaction gateways) with high levels of activity. This map is based on the following datasets, which report the influence of different kinds of infrastructure (freight, passenger, energy, and information) on the seas that host them, at raster cells level. The determination of these influences has been determined by ESaTDOR based on a potential accessibility analysis to infrastructure (utility + impedances).

- Economic influence of container ports, based on port proximity and container volume (as an indicator of flows of goods)
- Economic influence of cruise ports, based on port proximity and cruise passenger volume (as an indicator of flows of people)
- Marine exposure due to port influence, based on port proximity and volume of energy products (as an indicator of flows of energy).
- Undersea cable influence, based on proximity to cable and length per grid square (as an indicator of flows of information).

For each of the datasets, and in each cell, the levels of influence of the different infrastructure have been determined, synthesised onto 5 different classes (*Very low, Low, Medium, High and Very high*).

Each of the datasets has been given a particular weight according to their relevance, based on expert judging (see Table 4). The average of previous datasets in each cell provides the final Flows Composite map.

Following the methodology adopted by ESaTDOR, the raster data has been classified into five categories and have been added according to defined weights.

**Table 4** Datasets used in Flows Composite Map and weight of each dataset.

<b>Map</b>	<b>Category</b>	<b>Weight</b>
Economic influence of container ports, based on port proximity and container volume		50%
Economic influence of cruise ports		30%
Marine exposure due to port influence, based on port proximity and volume of liquid energetic products		10%
Undersea cable influence		10%
<b>FLOWS COMPOSITE MAP</b>		<b>100%</b>

Source: Mcrit, 2012

### Typology Map

The typology map combines the information from some of the composite maps explained before to show the pressures of land and sea activities. Land and sea pressures are depicted together.

Land based activities are represented by the map of 'Total Maritime Employment Composite Map (percentage of total employment within each NUTS2 region)'. Data categorization is the same as in the original composite map (five classes based on quintiles), so the only additional process was to transform the old category names (*Very low, Low, etc.*) to the new classes (also *Very low, Low, Medium, High and Very high intensity*).

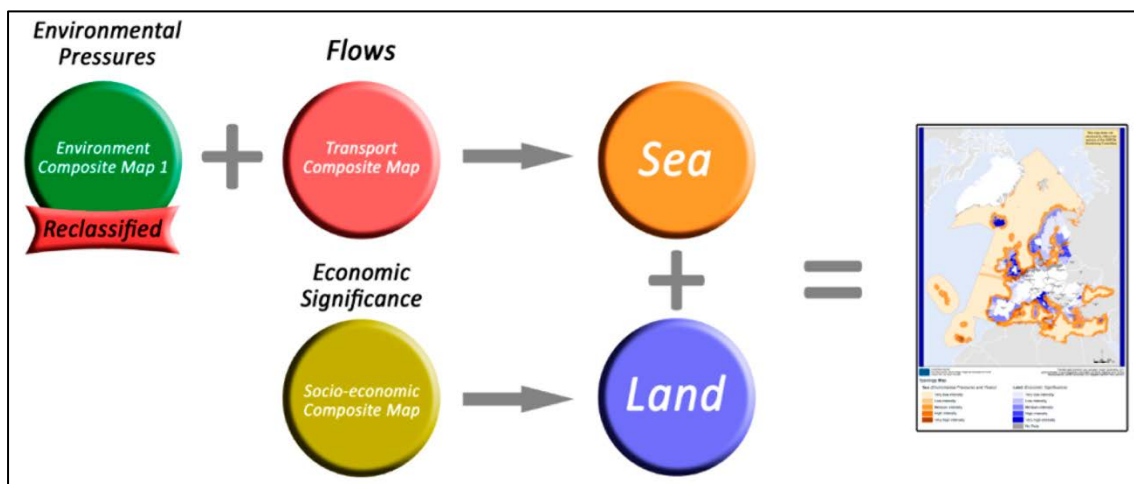
The union of data present in the 'Environmental Pressures Composite Map (organic + invasive species + inorganic)' and 'Flows Composite Map' shows the human impacts on and pressures suffered by the sea. The original five categories from the composite maps were converted to numbers from 1 to 5. Then the two layers were added and the values were classified into five groups with the new category names (*Very low, Low, Medium, High and Very high intensity*). The ranges used are represented in Table 5.

**Table 5** Ranges selected to represent typologies

Pressure value	Category
1	Very low intensity
2	Low intensity
3 to 4	Medium intensity
5 to 6	High intensity
7 to 10	Very high intensity

Figure 8 below provides an overall summary of the inputs that have been used to create the typology map.

**Figure 8** Production of the ESaTDOR Maritime Region typology



This synthesis of three composite indicators (economic significance, environmental pressures and flows) has enabled the production of four further typology maps. In the first instance, the “very low intensity” and “low intensity” values were used to create maps showing cold spots where the intensity of maritime activity is lowest (See Map xa later in this report). These largely correspond to high seas areas where there is a lack of suitable data. Subsequently “High intensity” and “Very high intensity” values were used to create a hot spots map, which shows greatest activity around port cities (Map xb). This data has been shown in one composite map with very low to very high values for maritime activities on land and at sea are displayed (Map xc).

Finally, using composite maps for economic significance, environmental pressures, flows, cold and hot spots, a schematic map of maritime regions has been produced (Map xd). This relates the different intensities of maritime activities to typology categories such as European

Core (most intense) to wilderness seas (least intense) and aims to provide a broader picture of the patterns of land-sea interactions across ESPON space and neighbouring regions.

### 3.6 Recommendations for Data Collection and Mapping

Despite recent advances in mapping cumulative impacts, many limitations remain. Nonetheless, preliminary spatial analyses such as the outcomes of ESaTDOR can provide information relevant to precautionary Europe wide management and conservation efforts.

Table 6 below identifies some major gaps in marine related knowledge as well as recommendations to the relevant stakeholders aiming at making key knowledge available in the future, thus feeding broader and deeper marine impact analysis.

**Table 6** Recommendations for data collection and mapping

<b>Audience</b>	<b>Recommendation</b>	<b>Justification for recommendation</b>
Conventions, global and regional decision makers	Coherence in Sea boundaries definition is key to provide reliable multi-thematic Sea maps. Reliable boundaries are key for supporting marine planners and decision makers in correct planning and decision making	Inconsistencies in the definition of sea boundaries adds complexity to mapping and data collection, as regions defined for example by Exclusive Economic Zones, Regional Sea Conventions, the Water Framework Directive, Marine Strategy Framework Directive Marine Regions and EU Integrated Maritime Policy do not necessarily correspond, being focused on either ecosystem functions or thematic interests such as transport and covering different sized geographical areas.
(Marine / maritime) Local, national, and regional decision makers and data managers	Sharing of reliable and consistent datasets is key to provide an overview of the status and trends of (European) marine space.	Within ESaTDOR, challenges on data availability and reliability were encountered and some highlighting of this issue is a major outcome from this project.  Across the different European seas, a lack of homogenous and harmonized thematic statistical information was very common.

**Table 6** *Continued*

<b>Audience</b>	<b>Recommendation</b>	<b>Justification for recommendation</b>
Regional decision makers	There is a need to work on a broader extent than the territorial and marine administrative delimitations for spatial management, and specifically Seascape management depends on many dynamic factors (fish stocks, ecosystems, pollution, boat flows,...) whose effects are broad (seawide or further) and cannot be fully captured in one space.	Uneven coverage of particular Seas within ESaTDOR, datasets corresponding to the North Sea are well represented through bodies such as Eurostat, the EEA and ICES, whereas for regions such as the Black Sea, the Mediterranean Sea, and Arctic Sea data sources are more scattered affecting the reliability of the project's outcomes in these regions.
Fisheries managers, marine stakeholders, and marine institutions.	Reliable and broad scale fisheries datasets need to become available publicly in order to be used in broad scale marine assessments.	The use of ocean resources is increasing, but by far, the single largest use of ocean resources worldwide is still Fisheries. <sup>i</sup> Reliable data on fisheries is still a major issue being the main stressor of Oceans biodiversity that is repeatedly unveiled in studies due to the lack of reliable datasets. The Sea combined impact outcomes (Sea typologies) from ESaTDOR project are still dwarfed by the lack of reliable fisheries data to use in the assessment.

## 4. The Maritime Economy

### Introduction

The most important economic activities connected with the European Seas are the traditional maritime sectors (like for instance shipbuilding), tourism and seafood. During the last decades, there has been much focus on the importance of industrial clusters for prosperous regional development.<sup>2</sup> Industrial clusters are characterized by related industries that are embedded within a supporting infrastructural and institutional environment. Backward and forward linkages, technological externalities and sunk costs are assumed to generate the self-reinforcing agglomeration of economic activities.<sup>3</sup> For example, the higher the demand for a certain type of intermediate good, the easier it is for suppliers to reach the necessary critical mass to exploit internal economies of scale, which in turn may lower prices and thereby create advantages for producers who use these intermediates. Another example of economic externalities—that may be connected with industrial clusters—is knowledge diffusion; that is, one firm gains access to another firm's competence without paying for it. A common labour pool facilitates such knowledge diffusion. In this thematic report we will have a closer look at the possible industrial clusters connected with the European seas. In addition to the activities located in the sea or at the coast, different kinds of production and services, which might be considered as part of the utilization of resources attributable to the sea, are taking place in the hinterland. The study will also include the significance of the seas for the broader economy.

### 4.1 Key Issues for Economic Uses of the Seas

The risks and opportunities regarding economic use of the regional seas are mainly connected to globalisation, climate changes and overexploitation of resources. Globalisation is associated with diminishing geographical distance—as the time necessary to connect distinct geographical locations is reduced<sup>4</sup>—as well as with relatively recent political changes in large regions (as for instance Central Eastern Europe and China). Climate change will especially affect shipping routes and access to natural resource exploitation in the Arctic, but may also have consequences for fisheries and tourism across the different European seas. Overexploitation of resources may furthermore result in the loss of biodiversity and particularly within fishing and tourism it may have a detrimental effect. Below, we will first provide a brief review of the key legislation, policies and programs guiding development. Thereafter, we will elaborate on risks and opportunities connected with economic globalisation, climate change and overexploitation of resources.

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<sup>2</sup> Porter 1990, 1998.

<sup>3</sup> See, for example, Fujita et al. 1999; Henderson et al. 2001.

<sup>4</sup>Krugman 1991. Stanford Encyclopaedia of Philosophy.



### Key legislation, policies and programmes guiding economic use

The general guidelines for economic use related to marine and maritime policies in Europe are to be found in several documents such as the Lisbon and Gothenburg Agenda, Europe 2020, the Territorial Agenda of the European Union 2020 (TA2020), The Marine Strategy Framework Directive<sup>5</sup> and EU Integrated Maritime Policy<sup>6</sup> (IMP). With IMP the Commission proposed a policy combining measures aimed at enhancing competitiveness and sustainable development, following the Lisbon and Gothenburg strategies.

The ministers responsible for spatial planning and territorial development (in cooperation with the European Commission and with the support of the Committee of the Regions) state that the Territorial Agenda 2020 is an action-oriented policy framework to support territorial cohesion in Europe as a new goal of the European Union introduced by the Treaty of Lisbon. This is, among others, based on the belief "that the objectives of the EU defined in the Europe 2020 Strategy for smart, sustainable and inclusive growth can only be achieved if the territorial dimension of the strategy is taken into account, as the development opportunities of the different regions vary".

The EU Commission launched in 2006 a *Green Paper for an Integrated Maritime Policy* for the European Union, which covers sectors such as shipping, shipbuilding, tourism, fisheries and offshore oil and gas production<sup>7</sup>. The *Agenda for a sustainable and competitive European tourism* represents a further contribution to the implementation of the renewed Lisbon Strategy for Growth and Jobs and on the renewed Sustainable Development Strategy<sup>8</sup>. The Commission has also proposed a reform on the *Common Fishery Policy* (CFP) against the background on overfished stocks and the difficult economic situation in the sector<sup>9</sup>.

Furthermore, the EU Commission has enhanced focus on the significance of industrial clusters for development with EU<sup>10</sup>. This has partly to do with an assumed relationship between clusters and increased innovation. In COM (2008) 652 are the findings from several empirical cluster studies referred to.<sup>11</sup>

### Risks and opportunities regarding economic globalisation

Economic globalisation is to a large extent connected with foreign direct investments (FDI). During the past two decades multinational enterprises (MNEs) have been playing a significant role in the world economy as they stand behind a large part of trade as well as FDI.<sup>12</sup> Globalisation gives enhanced competition among different locations across the globe. Nevertheless, FDI principally also involves the transfer of technology and skills.<sup>13</sup> FDI of

<sup>5</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008L0056:EN:NOT>.

<sup>6</sup> COM(2007) 575 final. See, also [http://ec.europa.eu/maritimeaffairs/policy/index\\_en.htm](http://ec.europa.eu/maritimeaffairs/policy/index_en.htm).

<sup>7</sup> <http://ec.europa.eu/maritimeaffairs>.

<sup>8</sup> See, COM (2007) 621 final.

<sup>9</sup> See, COM (2011) 417 final.

<sup>10</sup> See, COM (2008) 652.

<sup>11</sup> Concerning economic growth, see also the Progress Report on the EU's Integrated Maritime Policy: questions and answers MEMO/09/455 (Brussels, 15 October 2009).

<sup>12</sup> See, for example ESPON TIGER.

<sup>13</sup> See, for example, Dunning (1988).

MNEs are thus generally assumed to create distinctive economic consequences (both positive and negative) for the host economies.

With production facilities and/ or sales in several countries, MNEs may relocate work between regions. Nevertheless, some economic activities (mainly services) have to be produced where they are consumed (for instance tourism). Furthermore, factors of production must be mobile for global relocation of economic activities to occur. It is generally not possible (or at least inconvenient) to relocate infrastructure and buildings, and hence such investments represent high sunk costs which may prevent relocation. Natural resources—like fish and petroleum—must be taken advantage of in the European seas, although their associated outputs may be processed elsewhere.

Assets of the host country which are of interest for MNEs include natural resources, labour supply, specialized know-how and skills. In accordance with ongoing economic globalisation, prices on capital and labour may in the future be equalized between countries.<sup>14</sup> Nevertheless, even if labour and capital costs equalize and modern technology is available in most regions, learning is essentially a localized process, embedded in regional values, institutions and history. Several theoretical traditions give special emphasis to the stickiness<sup>15</sup> of places due to localized knowledge and institutional factors.<sup>16</sup>

Different regions have—in other words—different strengths based on embedded knowledge and other resources. The attractiveness of a region is revealed not only by the extent to which foreign MNEs are interested in locating there, but also by the number of domestic MNEs' value adding activities staying behind. Location-specific advantages of the European sea regions, when it comes to more globally mobile production (like for instance marine equipment) are also associated with the local market size.

Globalisation is connected with enhanced sea transport. In addition to growth in transportation services, port services, etc, it might also give higher demand for ships. Whereas Asian shipyards are producing a large part of the bulk ships, European shipyards have a strong position within the production of specialised vessels. In fisheries, some of the catches from the European seas have been exported to Asia for processing. When wages are rising in Asian countries, this may not be profitable any longer and more of the production will stay local. Tourism connected to the different European seas probably will be affected differently by the global competition. Even if tourism must be consumed where it is produced the different global destinations will compete with each other. For instance the Canary Islands and some of the tourist destinations in the Mediterranean will most likely compete with Thailand whereas tourist destinations at the Arctic (but also at the Atlantic and the North Sea) may have a relatively unique character and, therefore will probably to a lesser degree be exposed to global competition. To sum up this section, even though labour costs so far on average are relatively high compared to several Asian countries, the European sea regions may retain comparative advantages in a highly globalised economy

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<sup>14</sup> Chapman and Walker (1991); Chesnais (1992); Maskell and Malmberg (1999).

<sup>15</sup> See Markusen (1996).

<sup>16</sup> See, for example, Asheim and Gertler 2005; Gertler 2004; Gertler et al. 2000; Maskell and Malmberg 1999; Storper 1997; Porter 1990, 1998. According to Maskell and Malmberg (1999:173), the institutional endowment, among others, should include the entrepreneurial spirit, the moral beliefs, the political traditions and decision-making practices, the culture, the religion and other basic values characterising the region. Storper (1997:5) emphasizes so-called *untraded interdependencies* (including conventions, informal rules, and habits) as constituting *region-specific assets in production*.

related to their specific competencies and traditions. Furthermore, some services must be produced locally. There is, however, always the risks of knowledge leaking due to globalisation; that is overseas competitors can get access to the specialised know-how in some European regions and thereby reduce these regions comparative advantages.

### Risks and opportunities due to climate change

Climate change increases land and sea temperatures and alters precipitation quantity and patterns. This will result in the increase of global average sea level, risks of coastal erosion and an expected increase in the severity of weather-related natural disasters. The impacts of climate change vary considerably by region across Europe. The most vulnerable regions in Europe are Southern Europe, the Mediterranean Basin, Outermost regions and the Arctic. Coastal and urban areas and densely populated floodplains are facing particular problems<sup>17</sup>.

Climate change will impact several sectors, particularly primary sectors. In agriculture projected climatic changes will impact the sector both positively and negatively. Climate change will also put stress on fisheries and aquaculture sectors and may lead to severe effects on coasts and marine ecosystems. Coastal erosion rates will increase and existing defences may provide insufficient protection. In this context, islands and outermost regions deserve special consideration. The energy sector and infrastructure (buildings, transport, energy and water supply) will also be affected, posing a specific threat to densely populated areas and tourism will also be strongly affected. Finally, climate change will increasingly drive ecosystem including marine ecosystems and biodiversity loss, affecting individual species and significantly impacting ecosystems and their related services, on which society depends.

However, climate change may also lead to new development opportunities, for instance within agriculture, green economy and renewable energy production<sup>18</sup>. The melting of the pack-ice may increase the transport and cruise ship traffic in the Arctic region and this may develop the economy there but also endanger the environment. With increased traffic both infrastructure and passenger safety needs will become of increasing concern. The large number of tourists already cruising Arctic waters now exceeds the emergency response capabilities of local communities.

### Overexploitation

The TA2020 considers risks connected with the loss of biodiversity, vulnerable natural, landscape and cultural heritage: "Ecological values, environmental quality and cultural assets are crucial to well-being and to economic prospects and offer unique development opportunities. Overexploitation of these resources to provide for increasing demand, as well as industrial hazards can cause serious damage and may threaten territorial development. Urbanisation, intensification of agriculture and fisheries, transport and other types of

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<sup>17</sup> COM(2009) 147 final, 2009: Adapting to climate change: Towards a European framework for action; ESPON Climate "Climate Change and Territorial Effects on Regions and Local Economies", Final Report, 31/5/2011

<sup>18</sup> [www.eu2011.hu/files/bveu/documents/TA2020.pdf](http://www.eu2011.hu/files/bveu/documents/TA2020.pdf).

infrastructure development, particularly where they take place in a territorially uncoordinated manner, can cause severe environmental problems. [...]Changes in land- and sea use, urbanisation and mass tourism threaten cultural assets and landscapes and may lead to fragmentation of natural habitats and ecological corridors.”

The main risks and opportunities facing the maritime economy are summarised in Table 7 below.

**Table 7** Risks and opportunities for the maritime economy: overview.

	<b>Risk</b>	<b>Opportunities</b>
Globalisation of the economy	Relocation of working places; Possibility of knowledge leaking (loss of specialised know-how)	Gain of competencies through foreign direct investments, trade and migration of labour. It is possible to exploit economies of scale in production because of access to more customers.
Climate change	Sea level rise, coastal erosion, increase of natural disasters	Agriculture, green economy, renewable energy production, tourism
Overexploitation/sustainable use of resources	Loss of biodiversity, vulnerable natural landscape and cultural heritage	None

## 4.2 Data Availability for the Maritime Economy

Eurostat presents so-called Prodcom-statistics on the production of manufactured goods.<sup>19</sup> These data would have been very relevant for the purpose of the project; but they are given only by NUTS 1 regions. Although some of the activities (like shipbuilding, fish processing, and offshore supply) probably will be located at the coast, there will be challenges in placing activities to one particular sea for countries bordering several seas.

The European Cluster Observatory<sup>20</sup>, however, was able to provide the ESaTDOR project team with grouped data on industrial sectors, based on four-digit NACE-codes (SN2007). The grouping of economic activities into different sectors was partly due to definitions used in a recent Norwegian research project, which studied the following industrial clusters: Sea Food, Travelling and Maritime<sup>21</sup>. However, because data are only available on NUTS2 level it is not easy to discern between activities to include and activities to exclude in the

<sup>19</sup> The term comes from the French "PRODUCTION COMMUNAUTAIRE" (Community Production) for mining, quarrying and manufacturing: sections B and C of the Statistical Classification of Economy Activity in the European Union.

<sup>20</sup> <http://www.clusterobservatory.eu/index.html#!view=aboutobservatory:url=/about-observatory/>.

<sup>21</sup> <http://etkunnskapsbasertnorge.wordpress.com/hovedside-2/summary-in-english/>.

presentation. Some activities may coincidentally take place in a coastal region and should therefore be left out, whereas others are genuine maritime activities. We decided to include data on *Fisheries, Tourism, Shipbuilding, Other traditional maritime sectors, Other sectors associated, Oil and Gas and Transport* in the presentations below. The latest data for the different countries are from different years. Furthermore, Poland lacks data for years later than 2001 and is therefore not included in the presentations. Data are also lacking for the German regions of Hannover, Lüneburg, Braunschweig and Weser-Ems.

It would have been of interest to investigate the development in the different sectors over time, but this was not possible due to missing data.

Over the course of the ESaTDOR project a pragmatic approach has been taken to the collection of data to illustrate key trends in maritime activities and to facilitate mapping and the development of a maritime region typology. As part of work carried out on the Inception Report, an initial attempt was made to establish potential sources of useful information for each regional sea and also on a thematic basis (covering environment, energy, cables and pipelines, economic use and transport). This data was further supplemented with additional data providing some general contextual information for the different coastal regions within the ESPON space, such as sea catchment areas, population density, GDP (and others). This “long list” of datasets was then refined using the following criteria:

- A. Geographical coverage and scale: in order to provide the most comprehensive picture of conditions in Europe’s maritime regions, data sets were considered to be useful if they:
  - Provide data at the global or pan-European scale;
  - Are at a scale lower than national (NUTS0) level – as this enables data to be more accurately attributed to specific regional seas, which is not always possible where a nation borders more than one sea region such as Spain and the Mediterranean/ Atlantic. However, certain key datasets which were only available at national levels were not immediately excluded if they were particularly relevant to the project, e.g. short sea shipping data.
- B. Spatial reference format: for data to be mapped, it was essential that the original data source came in a GIS-compatible format, i.e. using suitable spatial reference such as NUTS or GPS coordinates, or was already provided as GIS data.
- C. Time series: an additional desirable criteria for each dataset was the ability to show trends over an appropriate period of time (i.e. changes quarterly, annually, or over longer periods for some environmental data) and consistently across the ESPON space.

### ***Justification of Datasets Chosen for Mapping***

Several challenges are connected with the measurement of clusters. In addition to employment and value added in the different industries, linkages (for instance by means of input-output analyses) should be mapped. Furthermore, the assessment of possible

agglomeration in a region due to maritime activities requires econometric analyses and extensive data. In the ESaTDOR project the mapping as well as description of cluster development had to be based on easy accessible data and secondary sources. As there are some overlaps between the three industrial clusters (Sea Food, Travelling and Maritime) in the Norwegian data, we categorized the actual activities into eight groups: *Fisheries, Tourism, Shipbuilding, Other traditional maritime sectors, Other sectors associated with the maritime cluster, Oil and gas, Insurance and other services and Construction*.

To get a more comprehensive picture of which activities are connected with the maritime clusters, in addition to analyzing statistics survey data should be collected from firms. As this has not been achievable in the ESaTDOR project we only present data on different sectors, where activities to a large extent are supposed to take place in coastal regions. Other sectors have been left out. Our figures may, on the one hand, overestimate maritime employment in the coastal regions. Nevertheless, some of the reported activities, although taking place in the hinterland, may be perceived as economic use connected with the sea. The activities, which are left out, may on the other hand, contribute to an underestimation of maritime employment. Employment, calculated in the maritime sectors by the ESaTDOR project is, however, considerably higher<sup>22</sup> than employment calculated by the Policy Research Corporation<sup>23</sup> (and reported in Appendix 1 to the ESaTDOR Interim report). This probably is due to the different definitions applied by the two projects.

Employment data alone does not give a complete picture of economic use. For instance, relatively labour intensive sectors will have more employees than capital intensive sectors even if their contribution to GDP is the same. Unfortunately, data on value added were not available.

### **4.3 Baseline Conditions for the Maritime Economy**

Before we describe the different sectors more thoroughly we will in Table 8 present an overview of sectoral employment, the contribution to total maritime employment and to total employment in the NUTS2 regions (EU27 + Norway and Iceland) bordering the European seas. The most important cluster of activities are connected with Tourism, which counts for about two third of the employment in the maritime sectors. Transport, other traditional maritime sectors and other sectors connected with the maritime cluster account for 10, 10 and 8 per cent respectively. Oil and gas and shipbuilding count together for less than 2 per cent of maritime employment whereas the comparable figure for Fishing is around 4 per cent. Together, the maritime sectors as they are defined in this project contribute to one fifth of total employment in the NUTS2 regions bordering the European seas (EU27 + Norway and Island).

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<sup>22</sup> Whereas the Policy Research Corporation reported total employment in EU27 and Norway equal to 4.78 million persons our data show a total of 19.5 million persons.

<sup>23</sup> <http://bookshop.europa.eu/en/the-role-of-maritime-clusters-to-enhance-the-strength-and-development-in-european-maritime-sectors-pbKL8009538/>.

**Table 8** Employment in maritime sectors in the NUTS 2 regions bordering the European seas (EU27, Norway and Iceland)

<b>Sectors</b>	<b>Employment in the sector</b>	<b>Employment in the sector as percentage of total employment in all maritime sectors</b>	<b>Employment in the sector as percentage of total employment in NUTS2 regions bordering the European seas</b>
Fishing	856 535	4.4	0.9
Shipbuilding	284 836	1.5	0.3
Other traditional maritime sectors	1 952 547	10.0	2.0
Other sectors connected with the maritime cluster	1 568 041	8.0	1.6
Transport	2 042 421	10.4	2.1
Tourism	12 805 837	65.4	13.3
Oil and gas	64 672	0.3	0.1
Sum	19 574 889	100	20.3

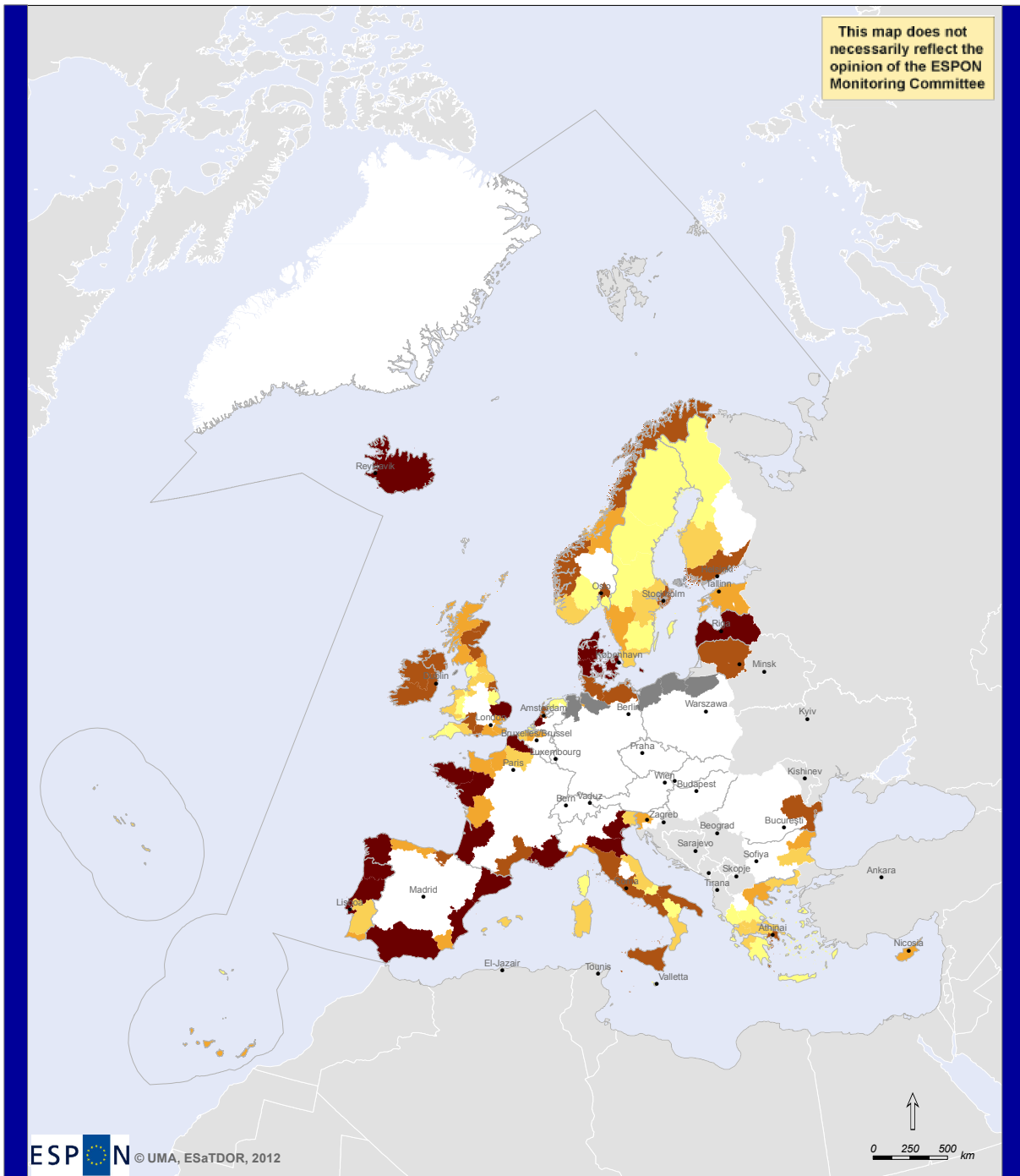
Source: Own calculations based on data from the European Cluster Observatory

#### **4.4 Fisheries**

The data for fisheries includes Marine and freshwater fishing, Marine and freshwater aquaculture, Processing and preserving of fish, etc, Production of oils and fat, Manufacture of prepared meals and dishes, Manufacture of cordage, rope, twine and netting, Manufacture of machinery for food, beverage and tobacco processing, Repair of other equipment, Wholesale of other food, included fish, crustaceans and molluscs, Retail sale of fish, crustaceans and molluscs in specialized stores, Technical testing and analyses, Research and experimental development on natural sciences and engineering.

As is apparent from Map 3, several regions have a relatively large number of employees within Fisheries. Galicia (Spain) is the region which tops the list with more than 45,000 employees. In Denmark and Andalucía (Spain) fisheries count for around 34,000 employees. Other regions with many employees within fisheries are Catalonia and Comunidad Valencia in Spain; Bretagne and Provence-Alpes-Cote d'Azur in France.

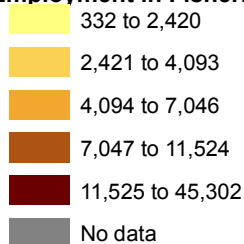
# Number Employed in Fisheries, 2009



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Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI, Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Fisheries 2009 (number of employees).



**Map 3** Number employed in fisheries, 2009



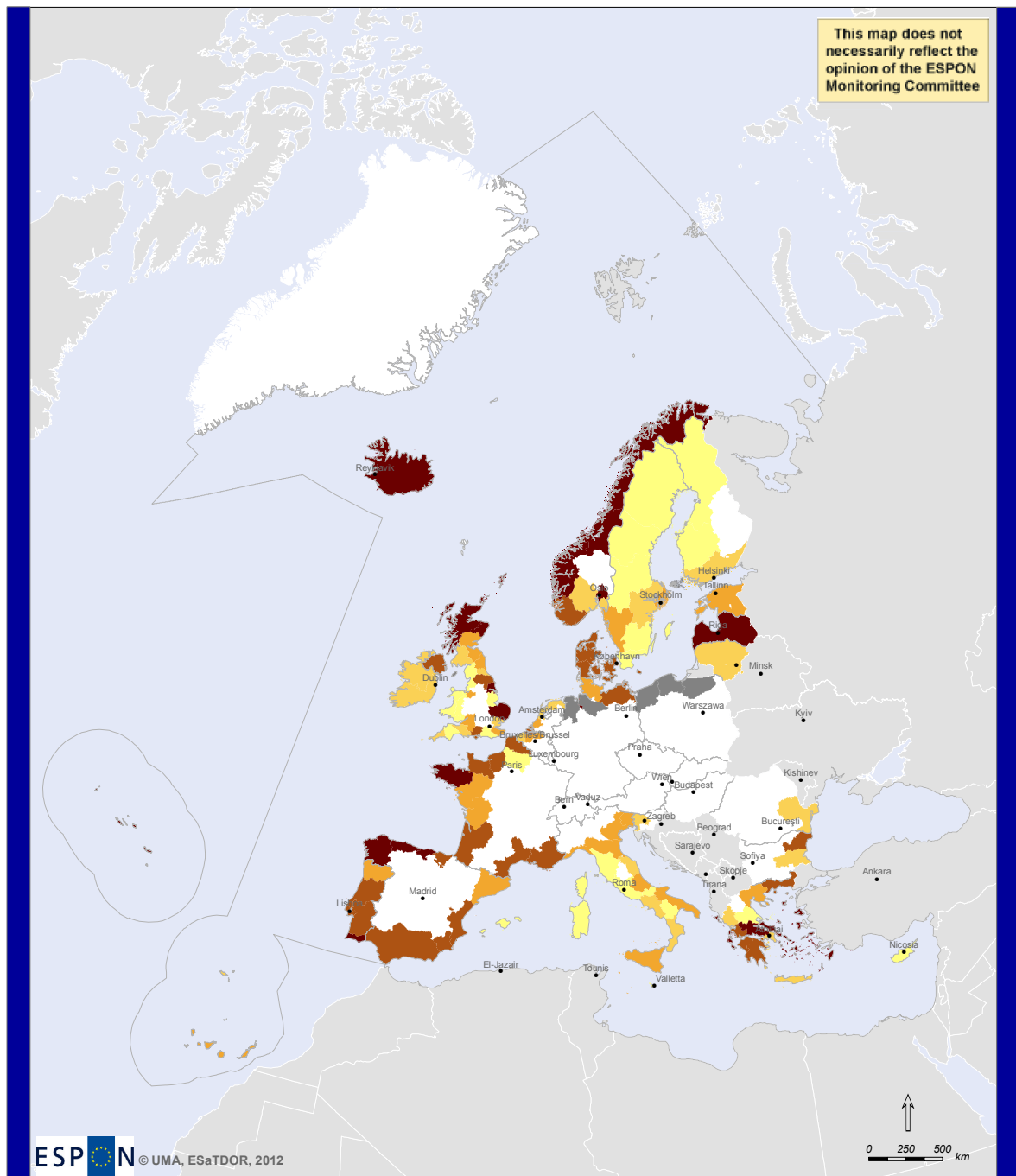
On average, over all NUTS2 regions, bordering the European seas, employment in fisheries, according to this relatively broad definition, counts for less than 1 per cent of total employment. There are, however, large differences between the different regions when it comes to the relative importance of fisheries for the regional employment, see Map 4. Especially in several regions bordering the Atlantic, the North Sea and the Arctic sea fisheries is relatively important, whereas this is less so in regions with boundaries to the Mediterranean, the Black Sea and the Baltic (with exceptions of several regions in Greece, some of the regions in the south of France and Spain, Severoiztochen in Bulgaria, Bremen in Germany and Latvia). Fisheries is relatively most important in Iceland (where employment in the sector contributes to 8.3 per cent of total employment); North Eastern Scotland (3.9 per cent of total employment); Galicia (3.8 per cent of total employment); Nord Norge in Norway (3.2 per cent of total employment) and in Regiao Autonoma dos Acores (2.9 per cent of total employment).

According to the European Commission, Europe's fisheries policy is in urgently in need of reform as vessels are catching more fish than can be safely reproduced, thus exhausting individual fish stocks and threatening the marine ecosystem. Today, three out of four stocks are overfished: more than 80 per cent of Mediterranean stocks and more than 60 per cent of Atlantic stocks.<sup>24</sup>

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<sup>24</sup> [http://ec.europa.eu/fisheries/reform/index\\_en.htm](http://ec.europa.eu/fisheries/reform/index_en.htm).

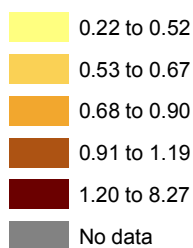
# Employment in Fisheries, 2009 (% of total employment)




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Thematic data: Economic Use, European Cluster Observatory, 2011.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Fisheries, 2009 (percentage of total employment).



**Map 4** Employment in fisheries, 2009 (as a percentage of total employment)

## 4.5 Shipbuilding

According to a study of competitiveness of the European shipbuilding industry, at the present time the share of marine equipment is assessed at 50-70 per cent of the product value, and can be even 70-80 per cent in the more specialized segments whereas in the 1970s most of the shipbuilding work was carried out at the shipyards themselves. A relatively high part of production is outsourced or subcontracted. Value added is around a quarter of the total production value in EU27, Norway and Japan while it is higher in China and lower in Korea. On average, Europe, Japan and Korea show a similar pattern when it comes to value-added per person employed in the shipyard. China has a lower labour productivity, measured this way. Because of the importance of marine equipment, there exist close ties between equipment suppliers and shipyards.<sup>25</sup>

The world's shipbuilding industry is dominated by a few large shipyards. The top-18, all in Korea, Japan and China, accounts for 50 per cent of the market. Nevertheless, European companies are still dominant in a few specialized market segments such as cruise vessels (99 per cent market share), offshore vessels (43 per cent) and luxury yachts (65 per cent). In general, these segments are characterized by a high degree of high-tech qualities, complex production processes, in combination with limited numbers of vessels of the same type that are to be built. As such Europe's position can be characterized as one of a specialized niche player.<sup>26</sup> The European Commission is, however, aware of the possible knowledge leakages, which again may be harmful for the European shipbuilding sector: *"[...] the complex and comprehensive interaction in shipbuilding projects between the various stakeholders (e.g. yards, suppliers, and owners) increases chances for the leakage of knowledge. Because European shipbuilders and suppliers depend more on technological leadership than low costs when compared to Far east competitors, this possibility of knowledge leaking (loss of know-how) may therefore be harmful to the European shipbuilding sector."*<sup>27</sup>

The four largest shipbuilding yards in Europe are located in Germany and Italy.<sup>28</sup> The *shipbuilding* industrial group in Maps 5 and 6 includes building of ships, pleasure boats and floating equipment<sup>29</sup>, repair and maintenance of ships and boats.

As is noticeable from Map 5, Shipbuilding counts for more than 4,000 employees in Severoiztochen (Bulgaria); Mecklenburg-Vorpommern and Schleswig-Holstein (Germany); Denmark; Andalucia and Galicia (Spain); Etela-Suomi (Finland); Bretagne, Provence-Alpes-Cote d'Azur and Pays de la Loire (France); Attiki (Greece); Liguria, Friuli Venezia, Toscana, Marche and Sicilia (Italy); Lithuania; Zuid-Holland (the Netherlands); Agder og Rogaland and Vestlandet (Norway); Sud-Est (Romania) and Devon (the UK).

Shipbuilding is relatively most important for the regional employment in Severoiztochen, Malta, Agder and Rogaland and Vestlandet; Devon; France, Germany, Spain, and Sud-Est in addition to Liguria, see Map 5.

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<sup>25</sup> See, ECORYS Research and Consulting (2009:7-8, 11).

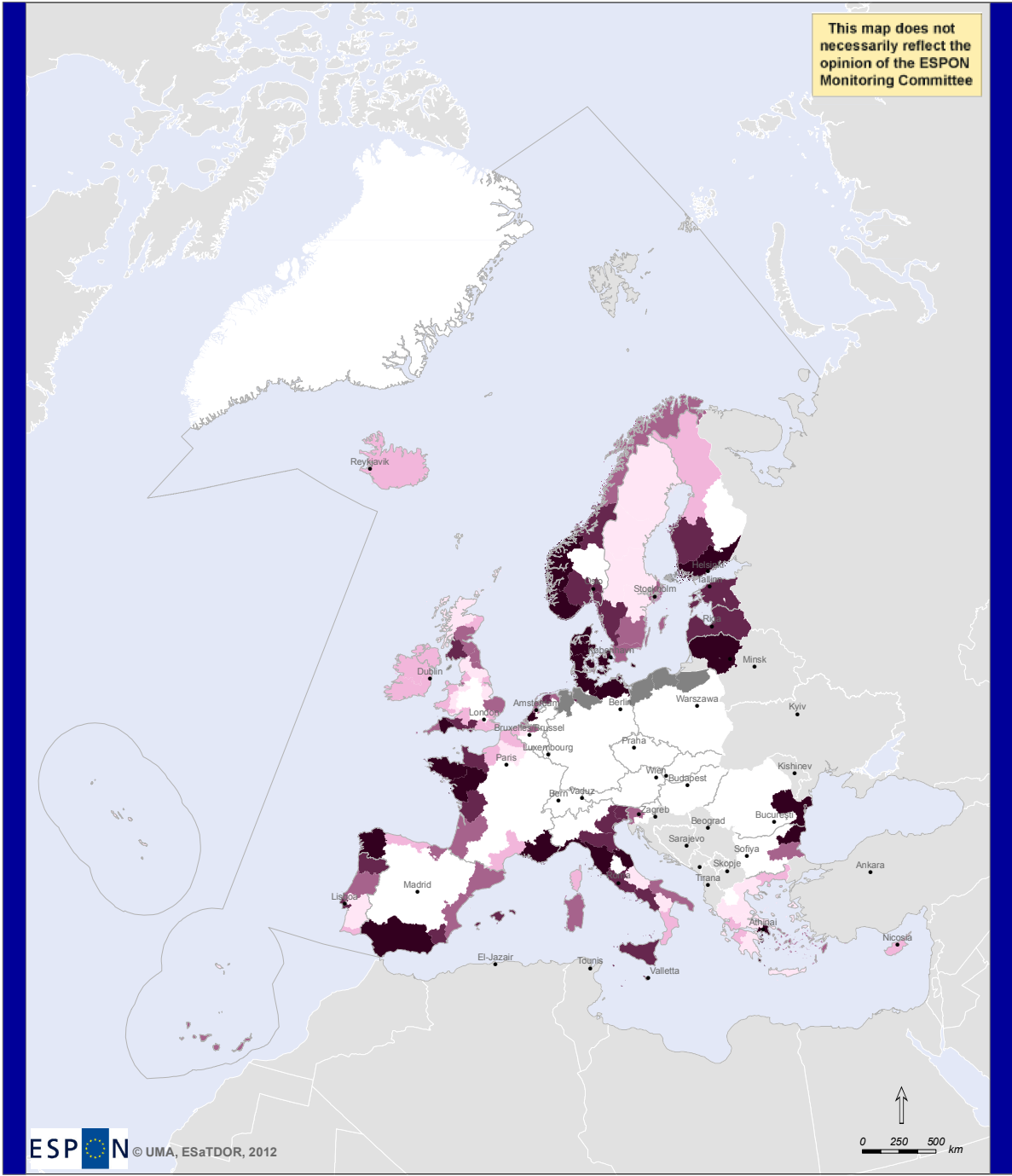
<sup>26</sup> See, ECORYS Research and Consulting (2009:8-9).

<sup>27</sup> See, European Commission (2008 Reports on results:16)

<sup>28</sup> Ecorys (2009:9).

<sup>29</sup> These are cruise vessels.

# Number Employed in Shipbuilding, 2009




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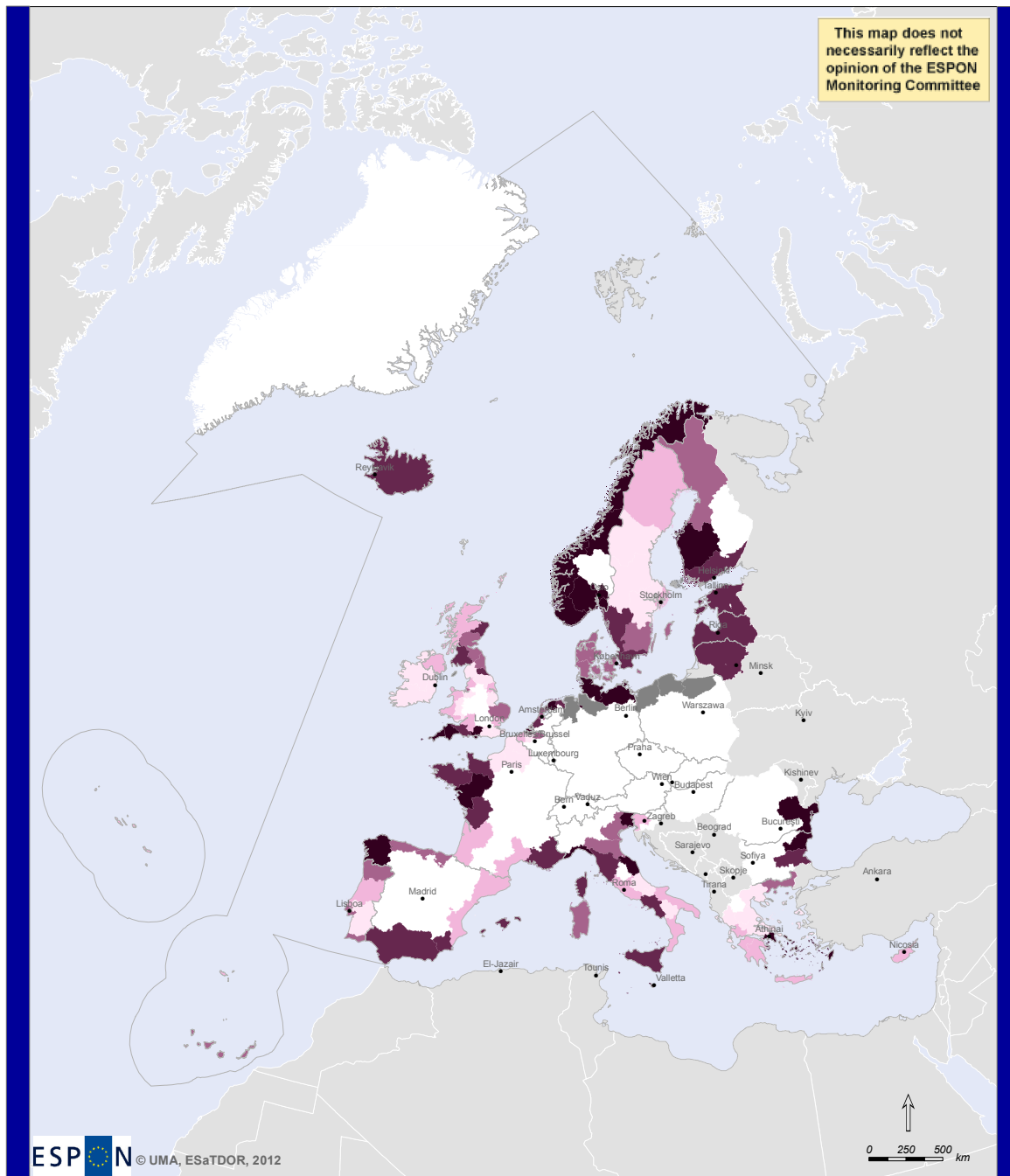
Thematic data: Economic Use, European Cluster Observatory, 2011.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

**Employment in Shipbuilding 2009 (number of employees).**

- 0 to 166
- 167 to 573
- 574 to 1,632
- 1,633 to 4,106
- 4,107 to 25,113
- No data

**Map 5** Number of employees in shipbuilding, 2009

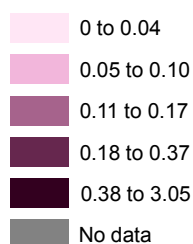
# Employment in Shipbuilding, 2009 (% of total employment)



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Thematic data: Economic Use, European Cluster Observatory, 2011.  
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Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Shipbuilding 2009 (percentage of total employment).



**Map 6** Employment in shipbuilding, 2009 (as a percentage of total employment)

## 4.6 Other Traditional Maritime Sectors

This includes amongst others, manufacture of engines and turbines, pumps and compressors, wiring devices, instruments and appliances for measuring, testing and navigation. According to the European Commission, European equipment industries are world leaders in propulsion, cargo handling, communication, automation and environmental systems. The most important strengths of the European marine equipment market are strong innovation which results in specialised solutions for special problems. The weaknesses are that the products are relatively expensive and that the companies do not sufficiently cooperate with universities<sup>30</sup>.

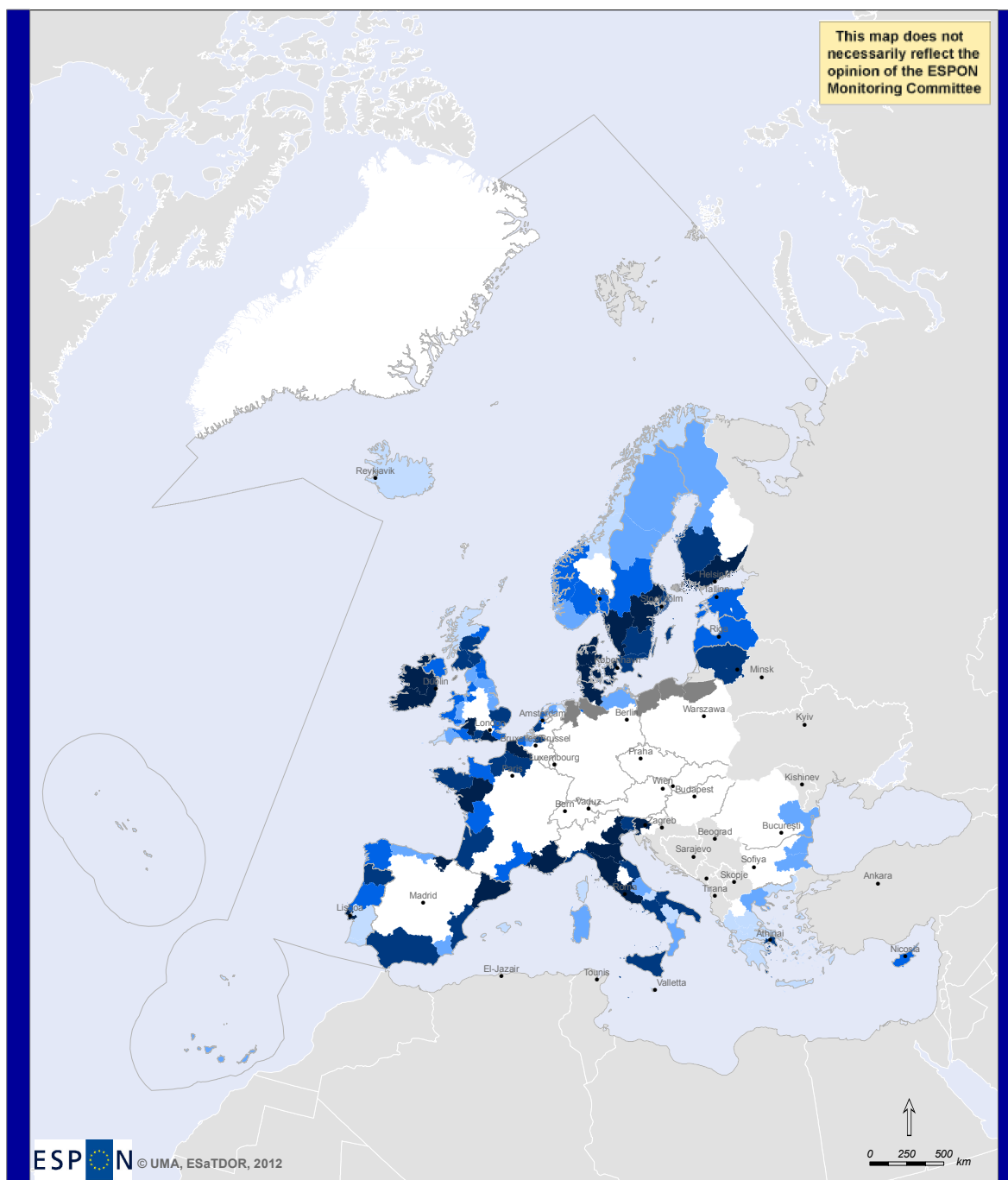
Map 7 show total employment in other traditional maritime sectors. Comparing Maps 5 and 7 we can see that other traditional maritime sectors sometimes have many employees within the same NUTS2 regions where shipbuilding is quite strong, but this is not always the case. For instance in Östra Mellansverige and Västsverige (Sweden); Gloucester, Surrey, East and West Sussex (the UK); Lisboa (Portugal); Pais Vasco (Spain); Nord-Pas-de Calais (France); Lazio (Italy); Ireland and Slovenia other maritime sectors have between 27,300 and 34,100 employees although the shipbuilding sector is quite small. Catalonia (almost 67,000), Veneto (about 9, 000) and Emilia-Romagna (almost 110,000) are regions with a high number of employees within other traditional maritime sectors and a medium number of employees within shipbuilding.

According to Map 8, employment in other traditional maritime sectors as percentage of the employment within a region is more than 3 per cent in Bremen (Germany); in Denmark; in Etela-Suomi and Lansi-Suomi (Finland); in Haute-Normandie (France); in Veneto, Friuli-Venezia Giulia, Emilia-Romagna (Italy); in Östra Mellansverige and Småland med öarna (Sweden) and North Eastern Scotland. Highest is the relative importance of this sector in Emilia-Romagna (5.6 per cent of total employment).

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<sup>30</sup> See, European Commission (2006:32).

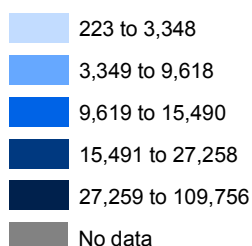
# Number Employed in Other Traditional Maritime Sectors, 2009




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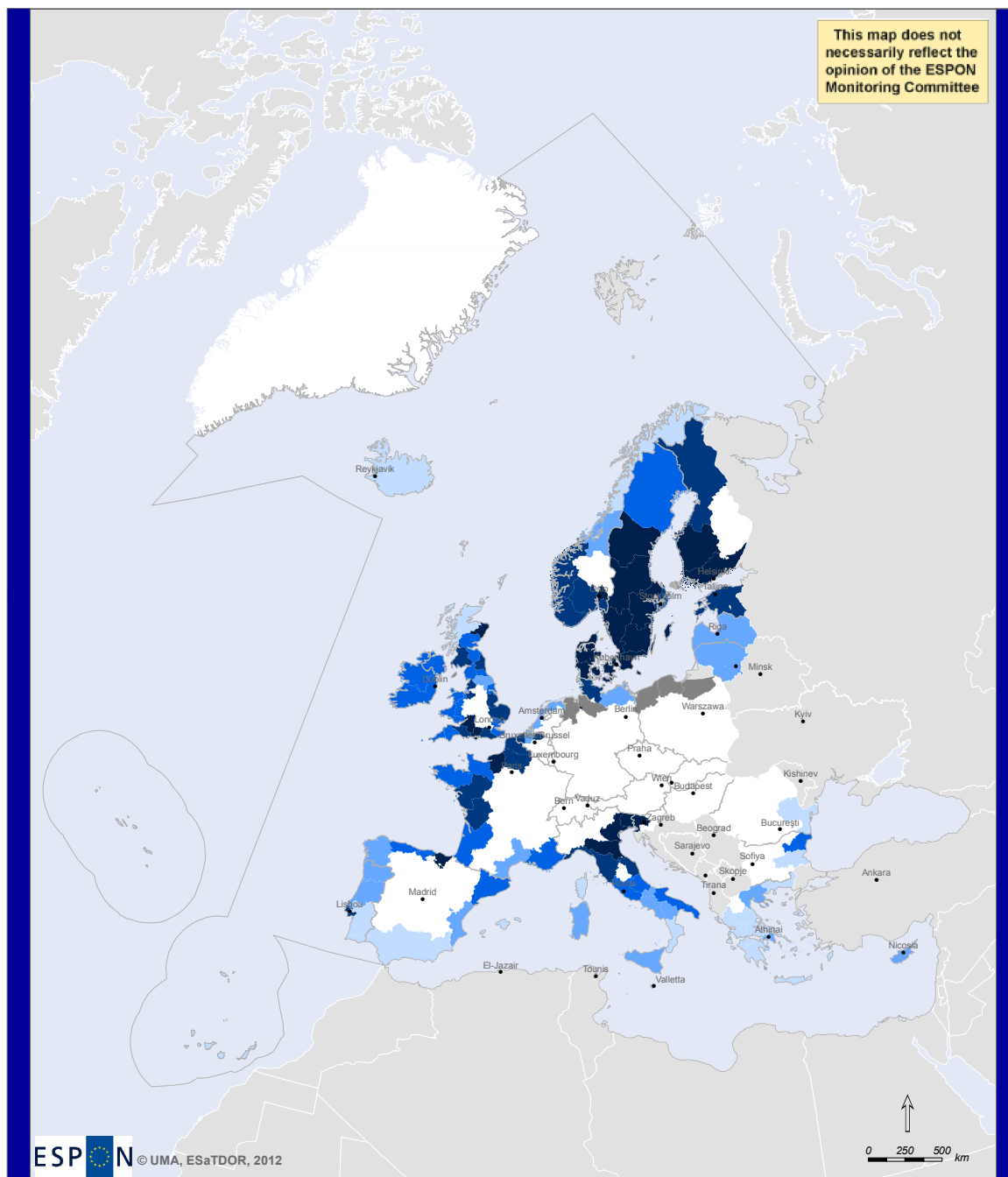
Thematic data: Economic Use, European Cluster Observatory, 2011.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in other traditional maritime sectors 2009 (number of employees).



**Map 7** Number of employees in other traditional maritime sectors, 2009

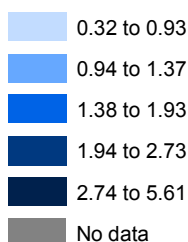
# Employment in Other Traditional Maritime Sectors, 2009 (% of total employment)



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Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in other traditional maritime sectors 2009 (percentage of total employment).



**Map 8** Employment in other traditional maritime sectors, 2009 (as a percentage of total employment)



## 4.7 Other Sectors Associated with the Maritime Cluster

*Other sectors associated with the maritime cluster* includes the manufacture of tubes, pipes, hollow profiles and related fittings, of steel, casting of steel, manufacture of electric lighting equipment. Map 9 shows that employment is higher than 20,000 in Denmark; Estonia; Lithuania; Slovenia; several Italian and Spanish regions; Attiki (Greece); Norte and Centro (Portugal) and Pays de la Loire (France). Veneto (Italy) has more than 106,000 employees within this sector. The corresponding figures for Emilia-Romagna (Italy) and for Cataluna (Spain) are more than 83,000 employees and more than 64,000 employees respectively. All three regions also have relatively many people employed within Shipbuilding and/ or within other traditional maritime sectors.

Map 10 shows that employment as a percentage of total regional employment in this sector is largest in Estonia; Principado de Asturias, Cantabria, Region de Murcia and Pais Vasco in Spain; in Lansi-Suomi in Finland; Kentriki Makedonia, Thessalia and Sterea Ellada in Greece; Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Toscana, Marche, Puglia, Basilicata and Abruzzo in Italy; Alentejo, Norte and Centro in Portugal; Slovenia; Smaland med öarna and Norra Mellansverige in Sweden.

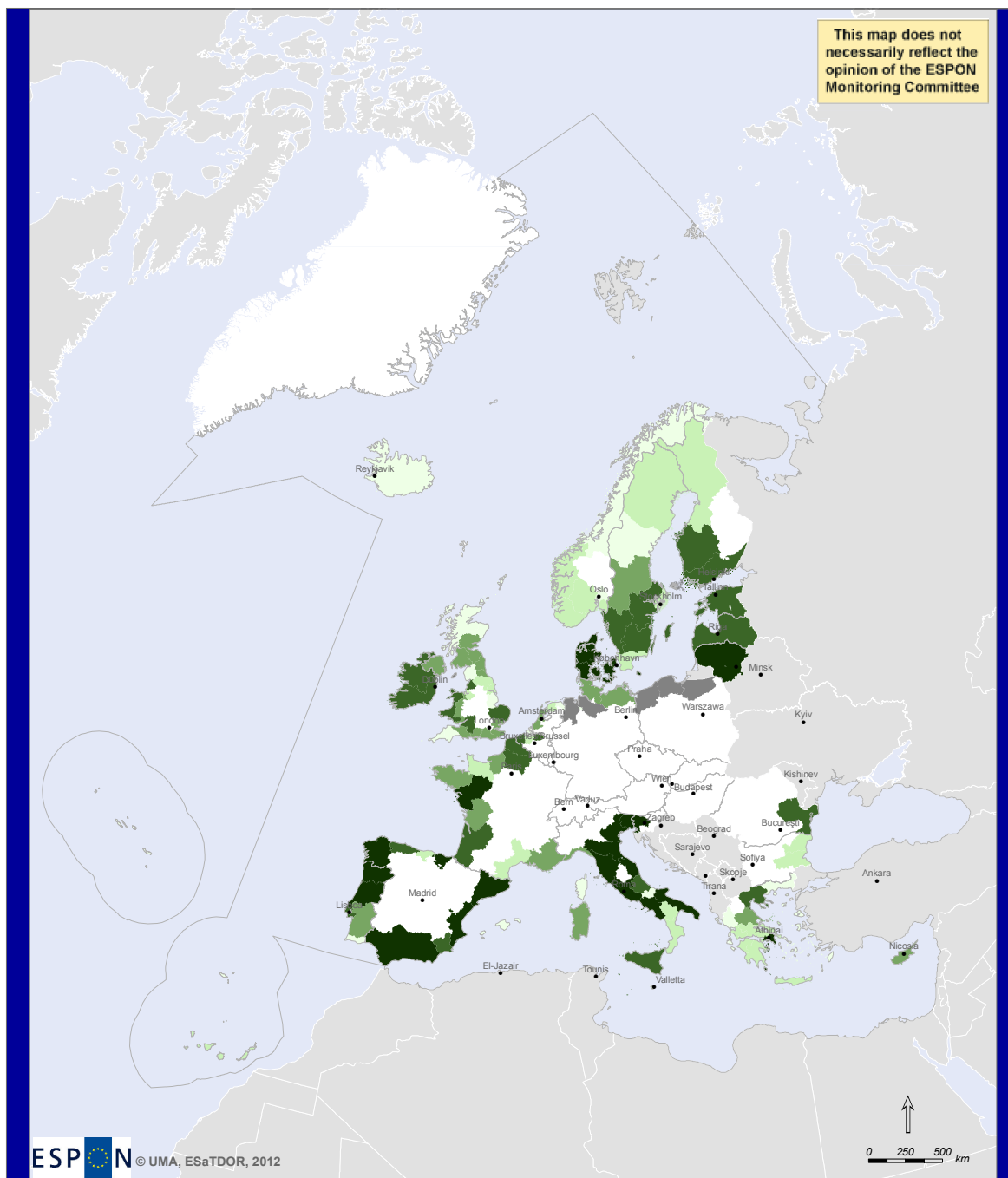
Table 9 shows that there are four regions (Denmark, Attiki, Pays de la Loire and Toscana) that have relatively high employment (within the fifth quintile) in Shipbuilding as well as in Other traditional maritime sectors and Other sectors associated with the maritime cluster. There are twelve regions with high employment in at least two of the sectors (several in Italy and Spain, one in Finland and one in France as well as Lithuania and Slovenia). These regions may have relatively strong interconnected activities between different maritime industries.

**Table 9** Regions with combinations of high employment in several maritime sectors

<b>High employment in all three sectors</b>	<b>High employment in at least two sectors</b>
Attiki (Greece) Denmark Pays de la Loire (France) Toscana (Italy)	Andalucia (Spain) Cataluna (Spain) Emilia-Romagna (Italy) Etela-Suomi (Finland) Friuli-Venezia Giulia (Italy) Galicia (Spain) Lithuania Marche (Italy) Pais Vasco (Spain) Provence-Alpes-Cote d'Azur (France) Slovenia Veneto (Italy)

*NOTE: High employment is defined as being in the fifth quintile in sectors including shipbuilding, other traditional maritime sectors, and other sectors associated with the maritime cluster*

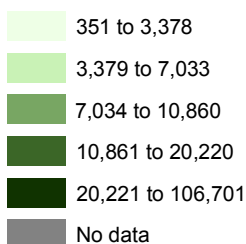
# Number Employed in Other Sectors Associated with the Maritime Cluster, 2009



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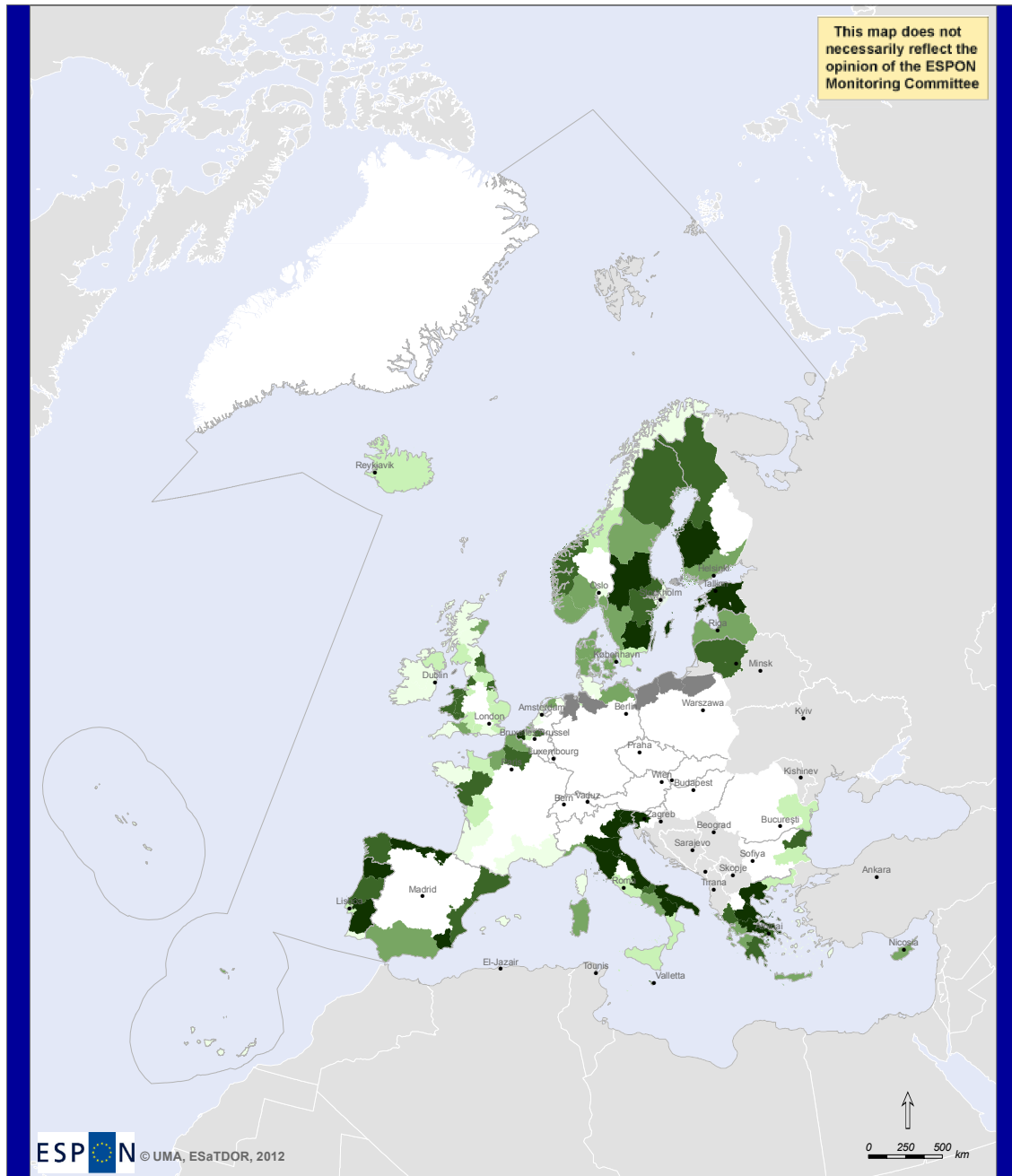
Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in other sectors associated with the maritime cluster 2009 (number of employees).



**Map 9** Number of employees in other sectors associated with the maritime cluster, 2009

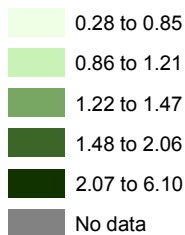
# Employment in Other Sectors Associated with the Maritime Cluster, 2009 (% of total employment)



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Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

9a d'cma Ybh]b'c'ther sectors associated with the maritime cluster 2009 (% of total employment).



**Map 10** Employment in other sectors associated with the maritime cluster, 2009 (as a percentage of total employment)

## 4.8 Transport

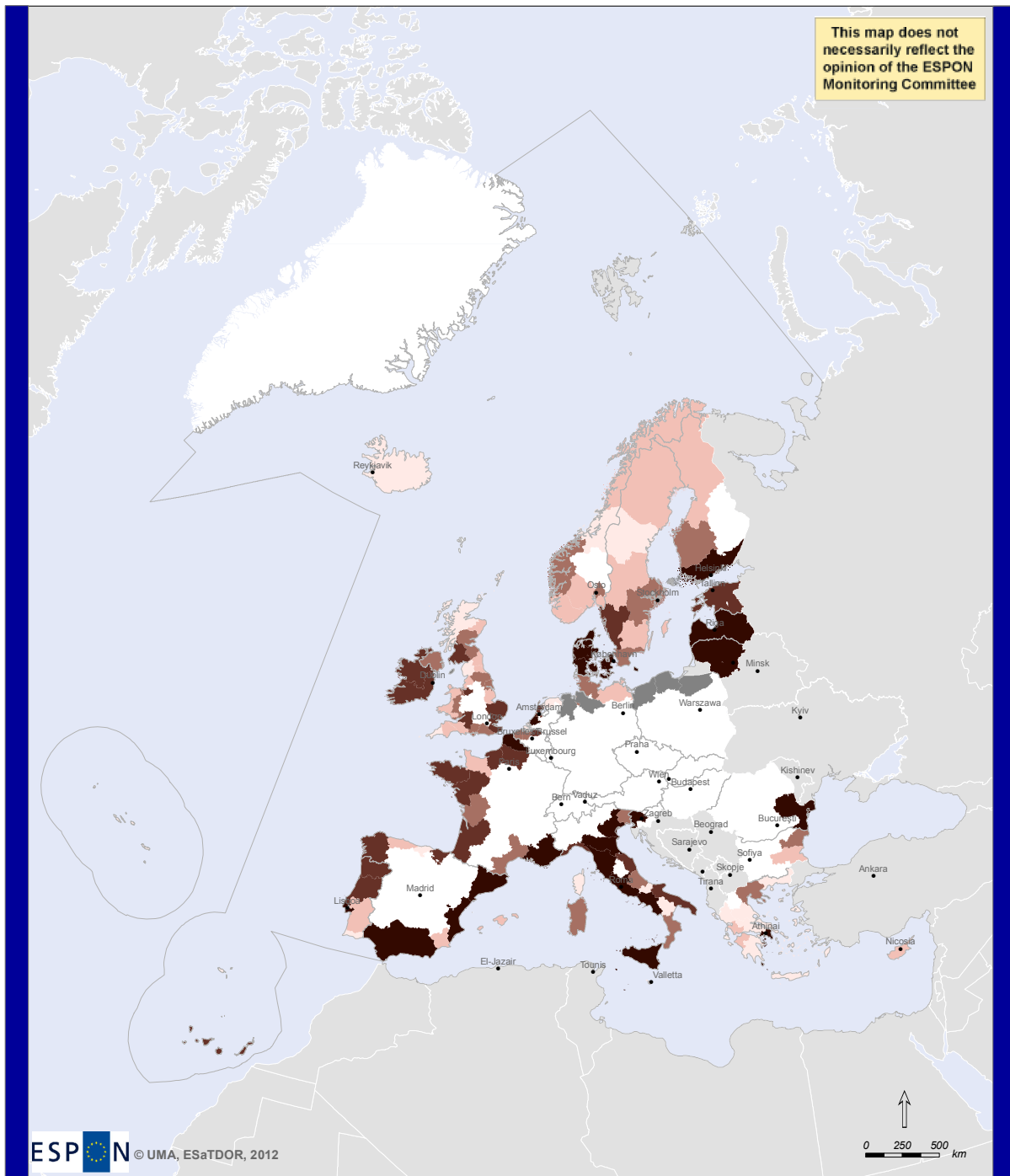
The data here includes employment in freight rail transport; freight transport by road; transport via pipeline; inland, sea and coastal freight water transport; warehousing and storage; service activities incidental to land and water transportation; cargo handling and other transportation support activities. Transportation of people is in the data categorized under Tourism. According to the European Commission, the strength of the European maritime transport industry lies in high standards and quality and relatively efficiency of port controls in Europe. There are, however, difficulties in remaining competitive when it comes to labour costs.<sup>31</sup> Employment in transport is above 28,000 in Denmark; Slovenia; the regions Cataluna, Comunidad Valencia and Andalucia in Spain; Etela-Suomi (Finland); Nord-Pas-de-Calais, Provence-Alpes-Cote d'Azur and Pays de la Loire in France; Attiki (Greece); Veneto, Lazio, Campania, Toscana, Sicily and Emilia-Romagna in Italy; Lithuania; Latvia; Zuid-Holland (the Netherlands); Lisboa (Portugal); Sud-Est (Romania), see Map 11. These are many of the same regions which have high employment also within shipbuilding, other traditional maritime sectors and other sectors associated with the maritime cluster, see Table 9.

Employment as percentage of total employment is highest (within the fifth Quintile) in Severoiztochen; Antwerpen; Estland, Latvia, Lithuania, Slovenia, Sud-Est; Pohjois-Suomi; Haute-Normandie; Dytiki Ellada and Attiki; Lazio, Liguria, Veneto; Nord-Norge; Lisboa; Cheshire, East Yorkshire and Northern Licolnshire, North Yorkshire and North Eastern Scotland, see Map 12.

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<sup>31</sup> See, European Commission (2006:58).

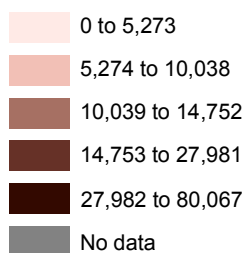
# Number Employed in Transport, 2009



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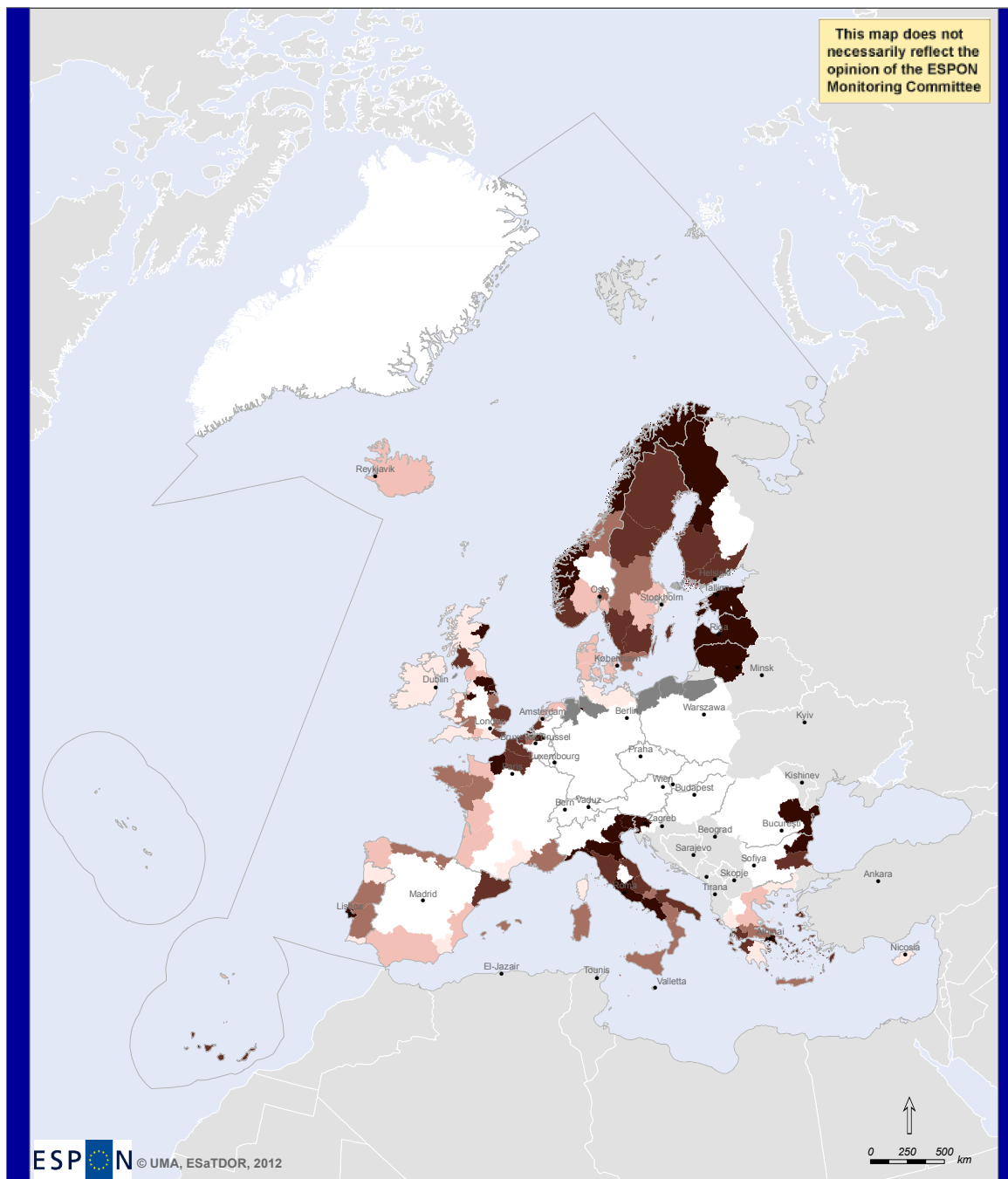
Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI, Regional level, NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Transport 2009 (number of employees).



**Map 11** Number of employees in the transport sector, 2009

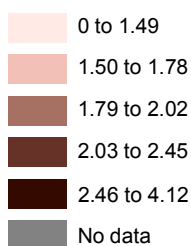
# Employment in Transport, 2009 (% of total employment)



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Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Transport 2009 (percentage of total employment).

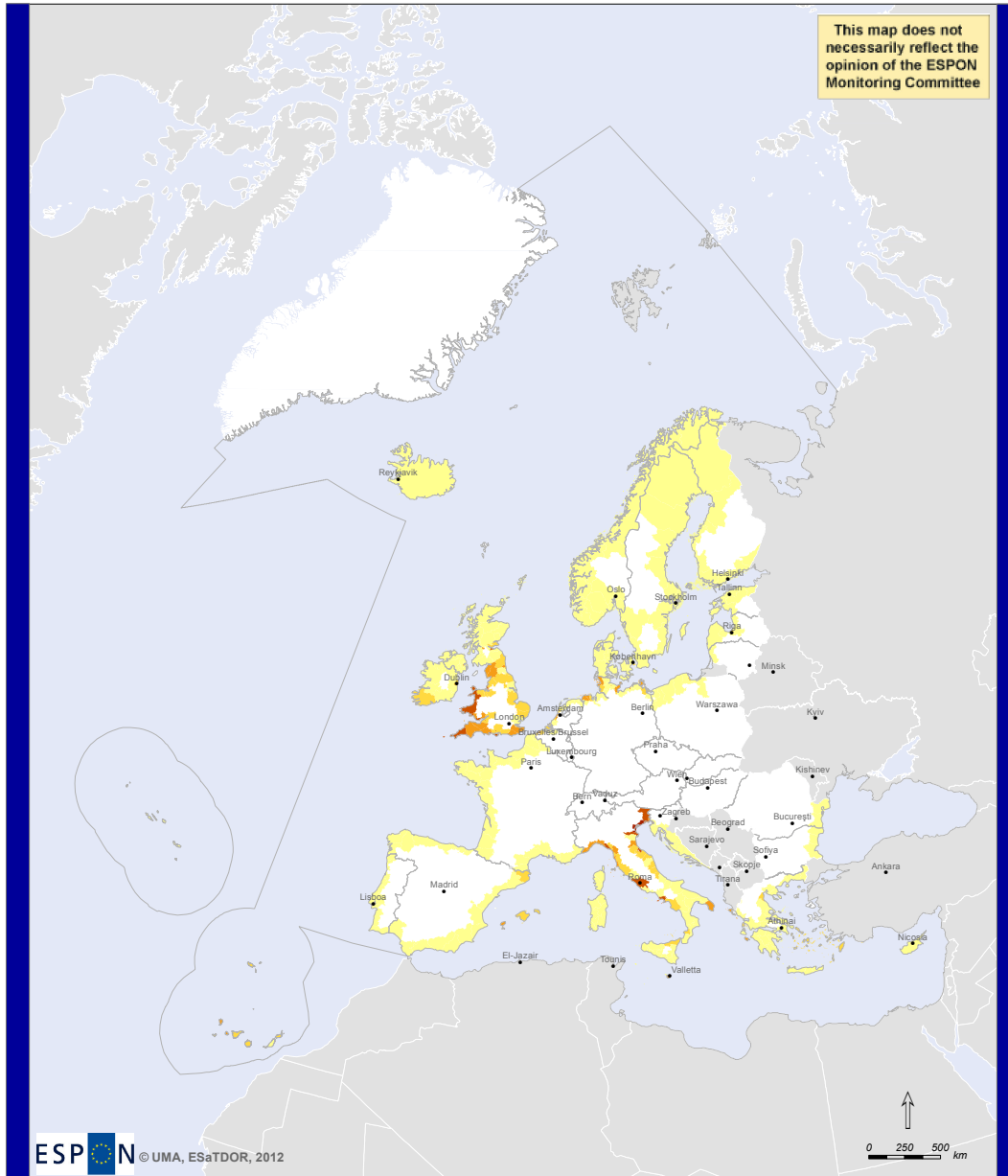


**Map 12** Employment in the transport sector, 2009 (as a percentage of total employment)

## 4.9 Tourism

Tourism intensity, measured as establishments, bedrooms and bed places per square kilometre is highest in some parts of England and Italy, see Map 13.

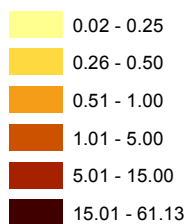
# Tourism Intensity



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Thematic data: Tourism Intensity, EUROSAT, 2009  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS3.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

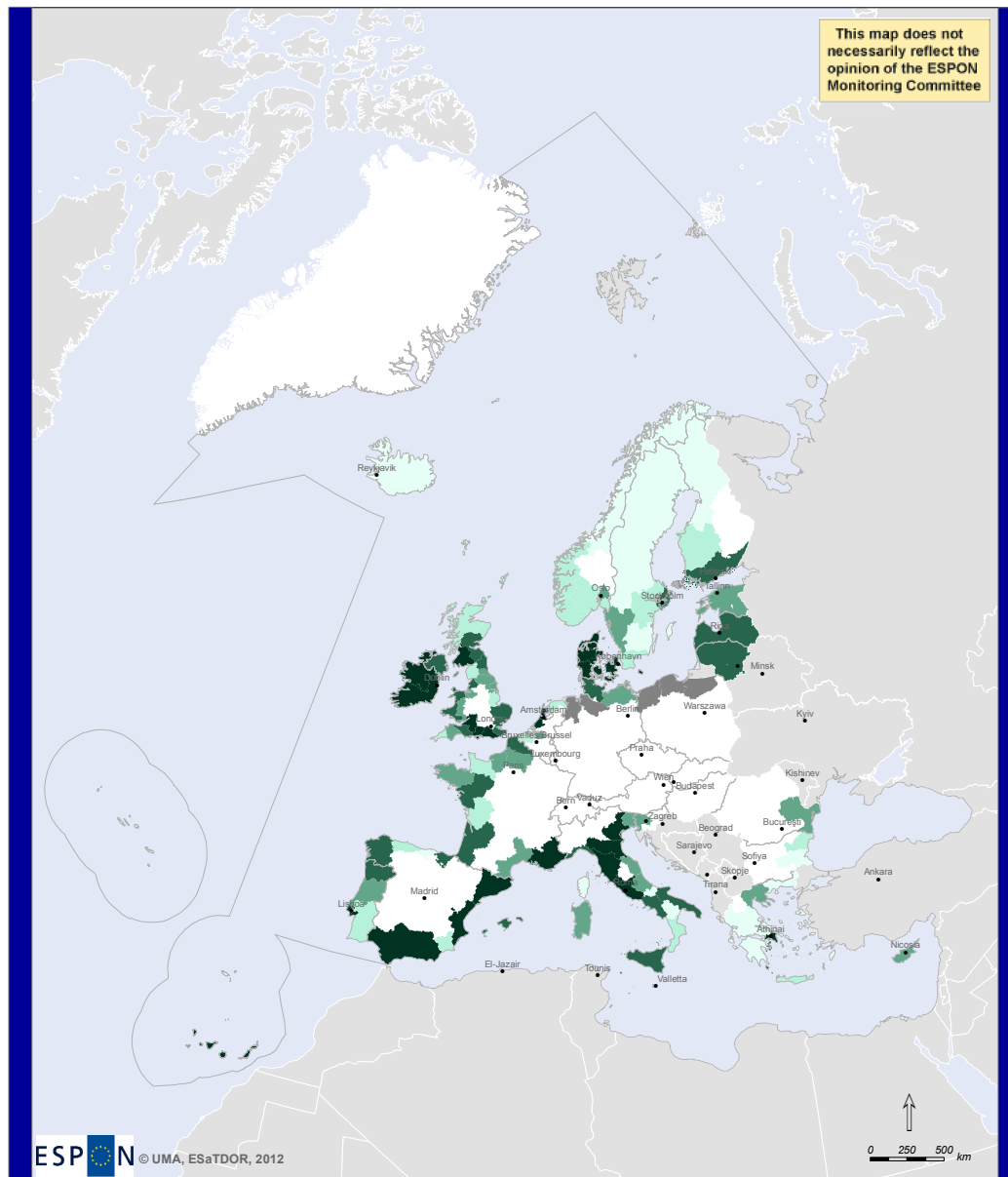
### Tourism Intensity (establishments, bedrooms and bedplaces/km<sup>2</sup>)



**Map 13** Tourism intensity measured as number of establishments, bedrooms and bed places/km<sup>2</sup>

Employment in Tourism is highest Denmark, Ireland, Slovenia and some parts of France, Spain and Italy, see Map 14. As percentage of total employment is Tourism most important in Iceland; Cyprus; Algarve, Lisboa and Madeira; almost all NUTS2 regions in the UK; Oslo and Akershus in Norway; Ionia Nisia and Notio Aigaio (Greece); Illes Balears and The Canarias (Spain), see Map 15.

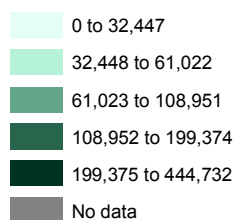
## Number Employed in Tourism, 2009



ESPON © UMA, ESaTDOR, 2012

Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

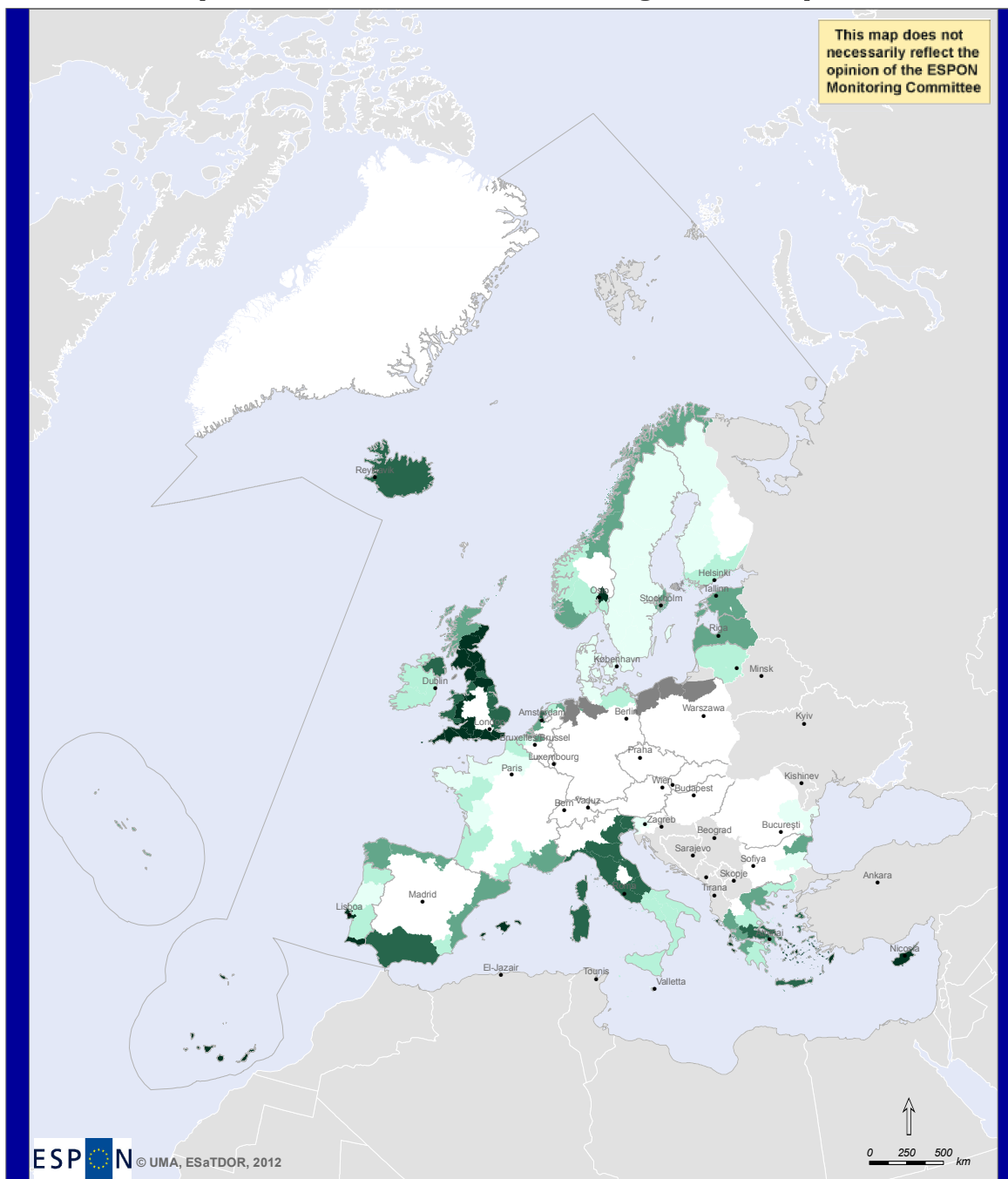
### Employment in Tourism 2009 (number of employees)



Map 14 Number of employees in tourism, 2009



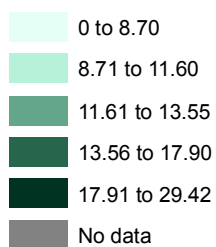
# Employment in Tourism, 2009 (% of total employment)



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Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI, Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Tourism 2009 (percentage of total employment)

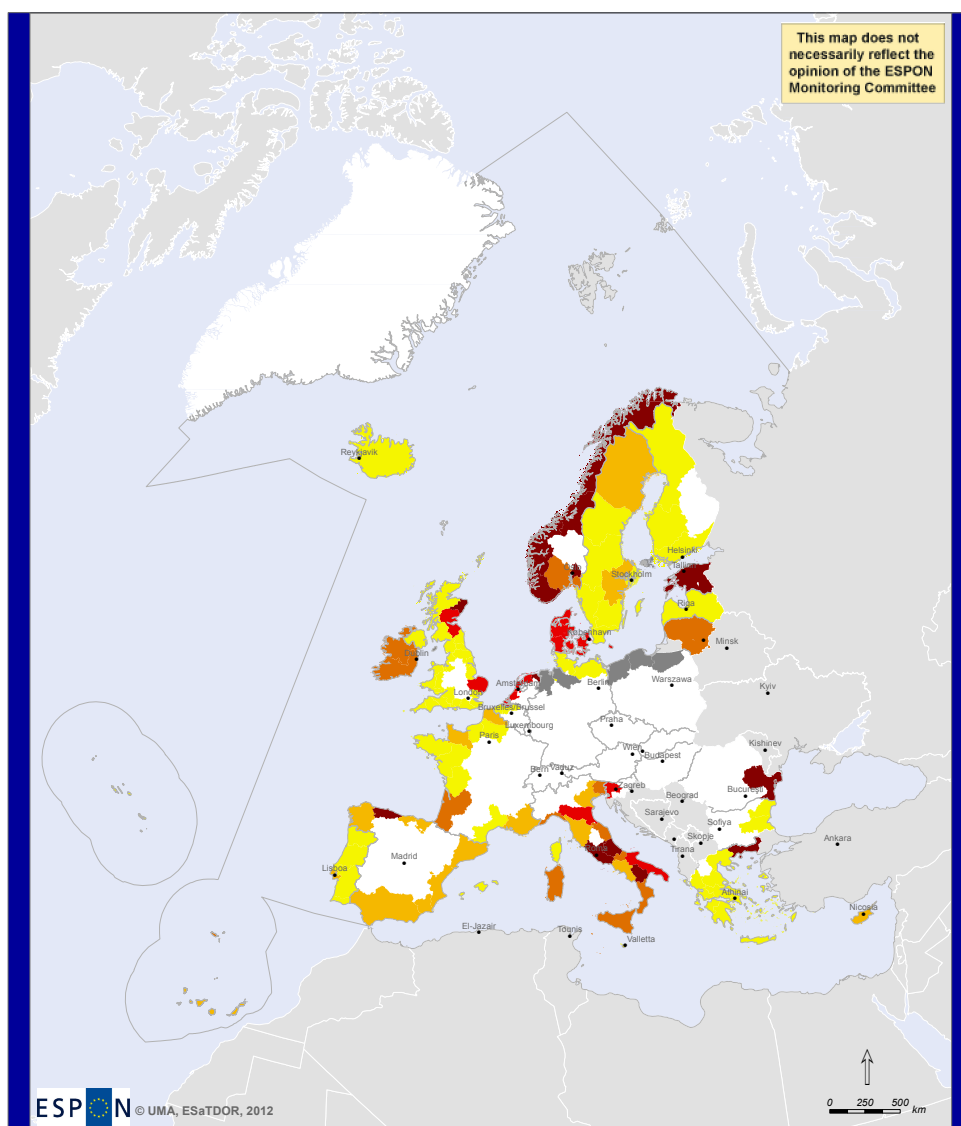


**Map 15** Employment in tourism, 2009 (as percentage of the total employment)

## 4.10 Oil and gas

The oil and gas sector is defined as the extraction of crude petroleum, the extraction of gas and support activities for petroleum and natural gas mining. These are highly capital intensive activities. Most of them are taking place in the Arctic, in the Black Sea (Sud-Est in Romania) and in the North Sea (North East Scotland, Denmark, the Netherland and Norway), see Map 16.

### Employment in Oil and Gas, 2009 (% of total employment)



ESPON © UMA, ESaTDOR, 2012

Thematic data: Economic Use, European Cluster Observatory, 2011.  
Land boundaries: © EuroGeographics Association and ESRI, Regional level: NUTS2  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

Employment in Oil and Gas 2009 (percentage of total employment)

- 0
- 0.001 to 0.003
- 0.004 to 0.03
- 0.04 to 0.11
- 0.12 to 8.88
- No data

Map 16 Employment in the oil and gas sector, 2009 (as a percentage of total employment)

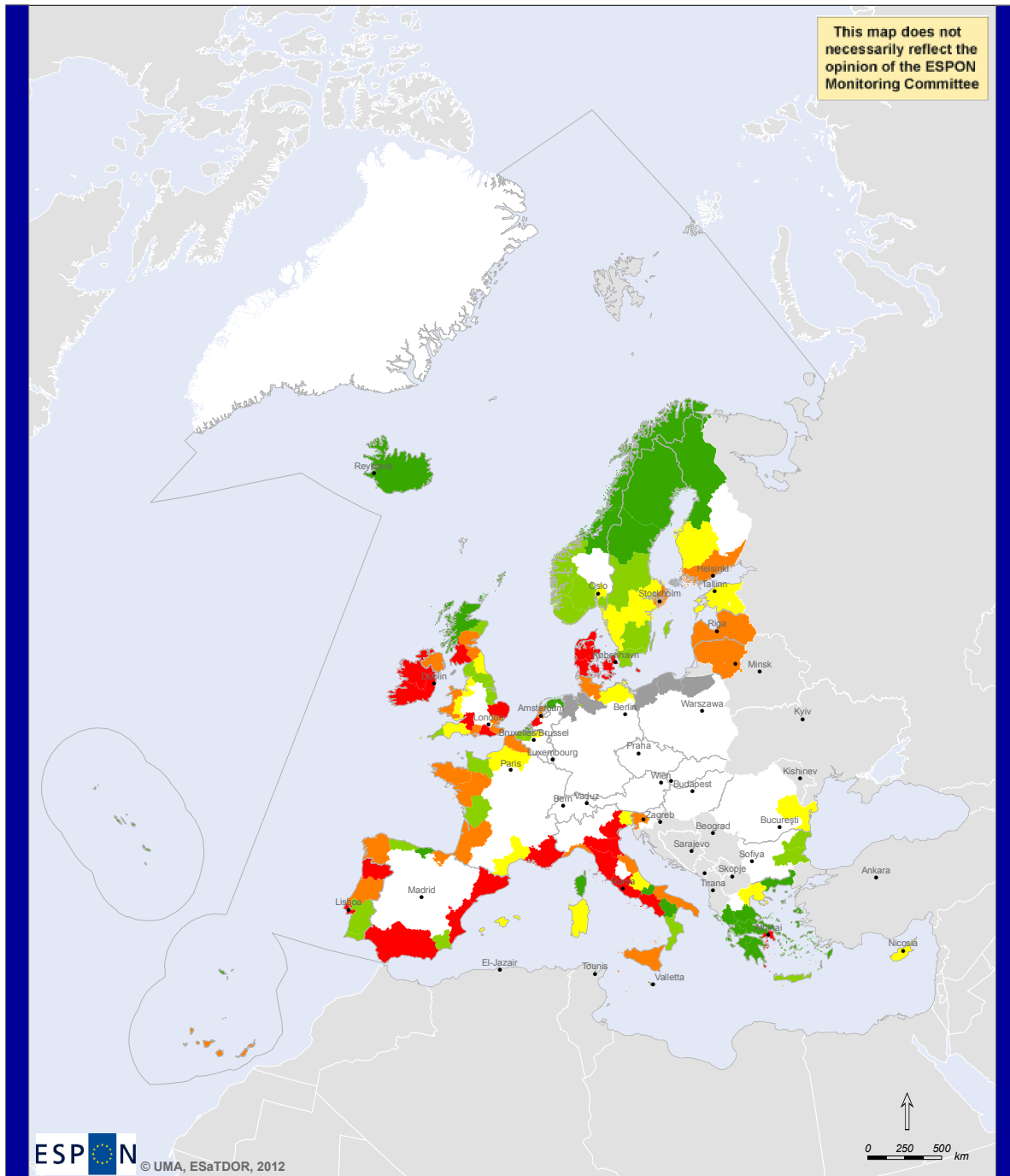
#### 4.11 Key Patterns of Land-Sea Interaction in the Maritime Economy

Map 17 shows how the number of employees in the maritime sectors is dispersed over the NUTS2 regions bordering the European seas. Maritime employment is very high in Denmark, Ireland, some regions in Italy (Veneto, Toscana, Emilia-Romagna, Lazio), in Spain (Andalucia, Catalonia, Comunidad Valenciana), Attiki in Greece; Portugal (Lisboa), France (Provence-Alpes-Cote d'Azur) and the UK (East Anglia, Surrey, East and West Sussex, Hampshire and Isle of Wight, Gloucestershire, Wiltshire and Bristol/Bath area). This can be considered as that the interaction of the land on the sea is most intense in these regions.

The high employment in maritime sectors, displayed in Map 18, often take place in regions with a relatively large population. When calculating maritime employment as percentage of total employment, it is apparent that economic use connected to the sea is especially high in some other regions than those with very high employment (for instance this is the case for Iceland). This can be interpreted as showing the significance of the sea for the land.

Regions, which have a relatively high dependence on the sea are in addition to Iceland, Illes Balears, the Canaries; Ionia Nisia, Notio Aigaiio; Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Marche; Oslo og Akershus; Algarve, Lisboa, Madeira; Northumberland and Tyne and Wear, Cheshire, North Yorkshire, Surrey, East and West Sussex, Hampshire and Isle of Wight, Gloucestershire, Wiltshire and Bristol/Bath area, South Western Scotland in the UK. These are also the NUTS2 regions where fishing and/ or tourism are relatively important. For Oslo and Akershus, Lisboa, the Italian regions and some of the UK regions, other traditional maritime sectors and other sectors associated with the maritime cluster in addition are relatively important for the total employment.

# Total Number of Employees in the Maritime Sector, 2009




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Thematic data: Economic Significance Composite Map.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

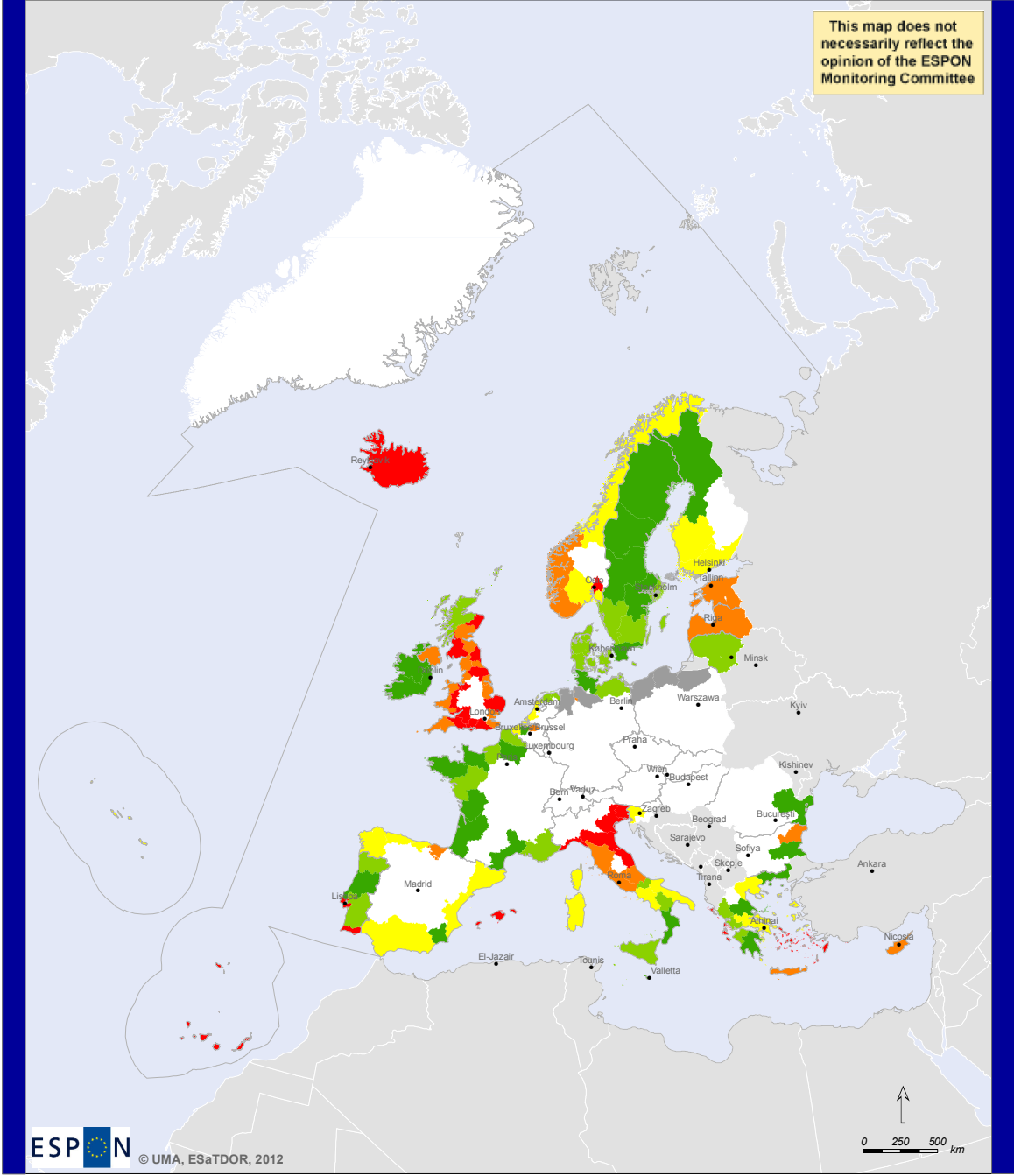
## Economic Use Composite Map (total maritime cluster employees within each NUTS2 region).

- Very Low (8,005 - 51,861)
- Low (51,862 - 109,775)
- Medium (109,776 - 162,923)
- High (162,924 - 263,461)
- Very High (263,462 - 674,442)
- No data

NOTE: This composite map consists of data from the European Cluster Observatory on the number of persons employed in fisheries, shipbuilding, other traditional maritime sectors, sectors associated with the maritime cluster, tourism and transport within each NUTS2 region.

**Map 17** Total maritime cluster employees per NUTS2 region, 2009

# Employment in the Maritime Sector, 2009 (as a % of Total Employment)



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Thematic data: Economic Significance Composite Map.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

**Total Maritime Employment Composite Map (percentage of total employment within each NUTS2 region)**

- Very Low (5.42 - 15.52)
- Low (15.53 - 17.60)
- Medium (17.61 - 21.06)
- High (21.07 - 24.69)
- Very High (24.70 - 36.35)
- No data

*NOTE: This composite map consists of data from the European Cluster Observatory on persons employed in fisheries, shipbuilding, other traditional maritime sectors, sectors associated with the maritime cluster, tourism and transport as a percentage of total employment within each NUTS2 region.*

**Map 18** Total maritime cluster employees (as a percentage of total employment) per NUTS2 region, 2009

## 4.12 Future Prospects

### *Economic globalisation*

Multinational enterprises are standing behind extensive global relocation of economic activities due to, among others, differences in labour costs and market sizes between regions. Nevertheless, some economic activities have to be produced where they are consumed (for instance Tourism, Transport and several other services). Natural resources—like fish and petroleum—must be taken advantage of in the European seas, although their associated outputs may be processed elsewhere. Tourism, which is a relative labour-intensive activity, is the maritime sector with highest employment in the NUTS2 regions bordering the European seas, followed by Transport. Other traditional maritime sectors and Other sectors connected with the maritime cluster together with Shipbuilding, which are relatively capital and competence intensive activities, count together for about one fifth of the maritime employment in the European sea regions. These sectors are exposed to competition from low-cost countries in Asia, but have partly managed to develop their own specialised niches. In accordance with ongoing economic globalisation, prices on capital and labour may in the future be equalized between countries. Embedded regional knowledge will, however, continue to be important for the comparative advantage of European regions. The main risk for these industries is therefore the leakage of their particular know-how to the competitors.

### *Cluster and regional development*

Economic marine and maritime clusters may serve as the driving force in coastal regional economies. A well-developed concentration of related business spurs three important activities: increased productivity (through specialized inputs, access to information, synergies, and access to public goods), more rapid innovation (through cooperative research and competitive striving), and new business formation (filling in niches and expanding the boundaries of the cluster map). Well-performing clusters are responding to change, induce industrial development, attract foreign investment and stimulate growth. Bringing about cluster development in marine and maritime sectors may enhance sea-related industries in Europe.

### *Climate change*

Climate change may impose severe challenges for the marine environment all over Europe and particularly in the Arctic area. Global warming may endanger both the local Arctic ecosystem and global ecosystem. However, the retreat of the polar ice cap may also open up increased activities in shipping, tourism and oil and gas. This may stimulate regional development in the North and be beneficial for European and global economic development.

## *Sustainable use of resources*

Fisheries in Europe are exhausting individual fish stocks and threatening the marine ecosystem and many stocks are overfished<sup>32</sup>. The fishing industry is also facing an uncertain future due to overexploitation. A new prosperity to the fishing sector requires that fishing becomes environmentally, economically, and socially sustainable. This is necessary for achieving a stable, secure and healthy food supply for the long term and for creating new opportunities for jobs and growth in coastal areas.

Tourism is also expected to increase significantly in the years to come and Europe is the fastest-growing tourist region<sup>33</sup>. This implies risks on overexploitation of natural resources and climate change through increased greenhouse gas emissions but also opportunities for many regions, particularly coastal and remote regions. Tourism and travel is considered to be a highly climate-sensitive economic sector due to its close relationship to the environment and climate. Therefore, tourism must address the climate change issue in a sustainable way<sup>34</sup>.

### **4.13 Policy recommendations for the maritime economy**

Economic activities related to the European Seas such as the traditional maritime sectors like shipbuilding, tourism and seafood are important for the European economy, particularly for some coastal regions. In order to maintain and develop these sectors on the long term in accordance with the goal of territorial cohesion, economic activities must be conducted in a sustainable and knowledge-based manner. The following issues should thus be addressed:

- Cluster development in maritime sectors
  - Promote and stimulate better cooperation between different industries
  - Stimulate cluster development in different geographical areas
  - Support creation, sharing and transfer of knowledge within and between clusters
- Extractive industries – oil, gas and minerals
  - Ensure that environmental friendly extraction of oil and gas
  - Implement adequate safety and security systems in relation to oil and gas production
  - Develop infrastructure in relation to oil and gas production, particularly in remote areas such as the Arctic
- Sustainable fisheries
  - A fisheries policy which prevent overfishing

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<sup>32</sup> [http://ec.europa.eu/fisheries/reform/index\\_en.htm](http://ec.europa.eu/fisheries/reform/index_en.htm)

<sup>33</sup> <http://www2.unwto.org/>

<sup>34</sup> From Davos to Copenhagen and beyond: advancing tourism's response to climate change. UNWTO Background Paper. 2009, World Tourism Organization.

- Sustainable development of the seafood industry
- Tourism and climate change
  - A tourism policy which can reduce the emission of greenhouse gases
  - A tourism policy which protect vulnerable areas, such as the Arctic
- Data collection
  - Data on economic use at NUTS2 and NUTS3 level
  - Data that show the development in different sectors over time
  - Data on employment, both production values and value added.



## 5. Maritime Transport

### Introduction – Maritime Transport in Europe

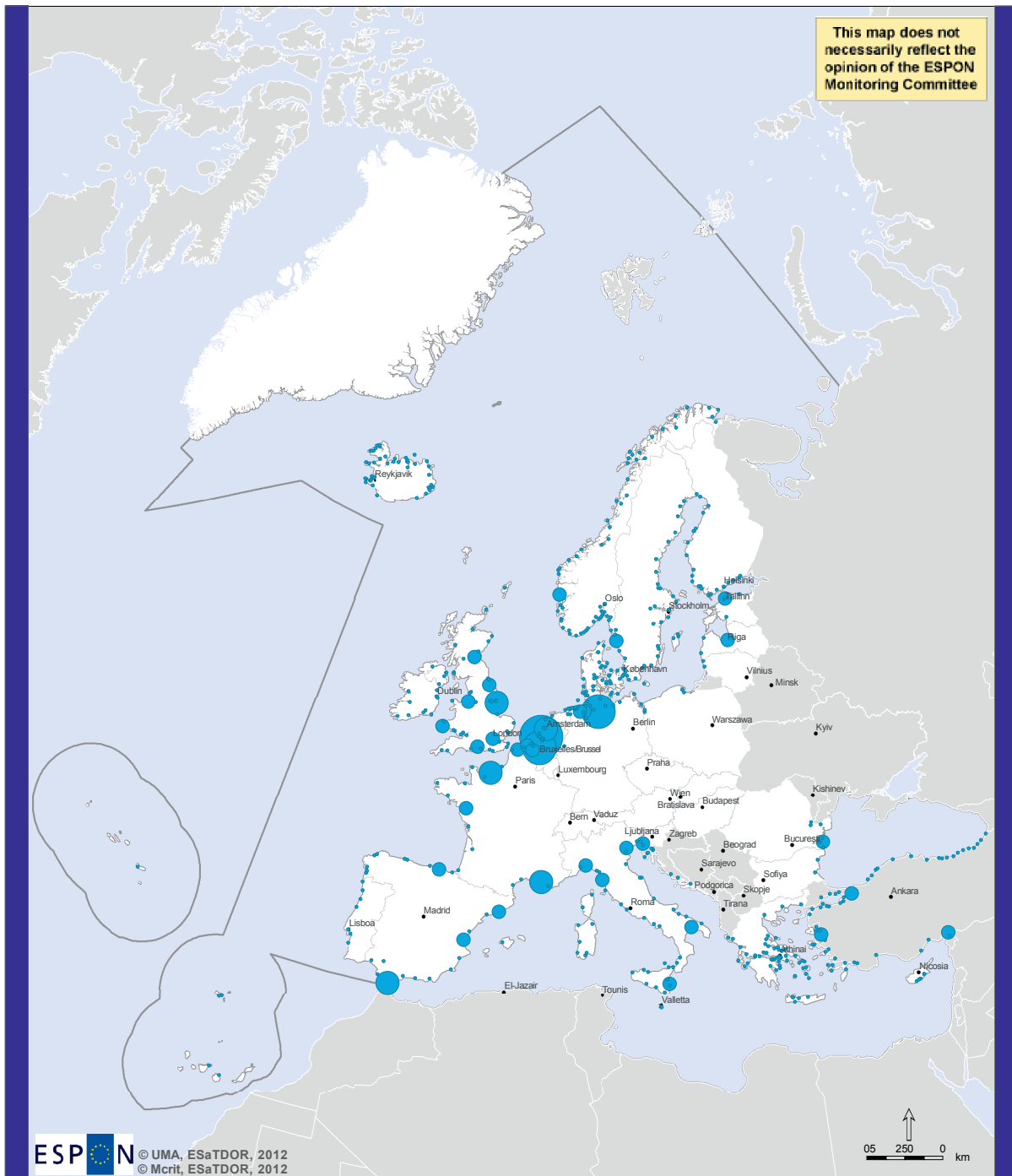
Today, there are more than 1200 ports along the coasts of the European Union but most traffic is concentrated in a few major ports, most notably in the Atlantic and Northern ranges (see Map 19). In 2009, only 15 ports managed more than 40 million freight tonnes (general cargo, containers, solid bulk and liquids), 37% of all maritime freight managed in EU ports was concentrated in the 3 largest ports, all in the North of the continent (Rotterdam with 387MTn, Antwerp with 158MTn and Hamburg with 110MTn).

The increasing traffic of manufactured goods from China, Japan and other Far East countries currently runs and will most likely continue to run through the Suez Canal and the Mediterranean Sea. Most interestingly, a primary element with potential to alter current east-west flow patterns is related to climate change: with an increased global temperature, the Arctic Sea route could become navigable for significant periods of the year, with shortened travel distances for Japanese and Korean ports and for some Chinese ports.

Only 25% of this Asiatic traffic enters Europe through the Mediterranean ports, while 75% of freight continues through Gibraltar up to Northern European ports with an additional two days of travel, and subsequent increase in CO<sub>2</sub> emissions. However, Mediterranean ports are attempting to increase their share in the maritime sector by planning important rail projects intended to enlarge their hinterlands up to central Europe.

Currently the two major cornerstones of EU maritime policy are the implementation of the Motorways of the Sea and the effective reduction of environmental impacts of the maritime sector.

# Total Goods Shipping, 2008



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Thematic data: Gross weight of goods handled in all ports, EUROSTAT, 2008. Iceland data: EUROSTAT, 2006.  
Port locations: Eurostat - GISCO (European Commission), 2009.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Total shipping at ports, 2008 (million tonnes). All ports.

- 1 - 25
- 25 - 50
- 50 - 100
- 100 - 200
- > 200

**Map 19** Total goods shipping (tonnes) at European ports, 2008

## 5.1 Key Issues for Maritime Transport

### *Governance and Policy Context*

The European Commission's *White Paper on Transport* (COM/2001/370) is a document of strategic reflection. It has adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. Related to maritime transport, the White Paper focuses on safer shipping, removing barriers to short sea shipping, improving efficient hinterland connections in sea ports and reducing CO<sub>2</sub> maritime transport emissions up to 40% by 2050 compared to 2005 levels.

The Strategic goals and recommendations for the EU's *Maritime Transport Policy Until 2018* (COM/2009/08) refer to two main issues: i) The ability of the maritime transport sector to provide cost-efficient maritime transport services adapted to the needs of sustainable economic growth of the EU and world economies and ii) The long-term competitiveness of the EU shipping sector, enhancing its capacity to generate value and employment in the EU, both directly and indirectly, through the whole cluster of maritime industries.

The Action Plan with a View to Establishing a European Maritime Transport Space without Barriers (COM/2009/10) states the need to simplify maritime procedures for intra EU trips, mostly in order to support the development of Short-sea shipping. The action plan includes for the short term (by 2010) the "Simplification of customs formalities for vessels only sailing between EU ports", a "Guidelines for speeding up documentary checks related to animal and plant products carried between EU ports" and the "Rationalisation of documents requested under different bodies of legislations". For the mid-term (by 2013), it urges the "simplification of administrative formalities for vessels sailing between EU ports, but having a call in a third country or a free zone", an "Enhanced electronic data transmission", an "Administrative single window", the "Simplification of rules on carriage of dangerous goods by sea".

The communication *a sustainable Future for Transport: Towards an Integrated, Technology-led and User Friendly System* (COM/2009/279), states the low degree of shifting transport to more efficient modes, including through the development of short sea shipping. It also states that the maritime sector is a valuable alternative to land transport in the view of the large amount of coast km and seaports in the EU. It adds that the full implementation of the European Maritime Space without Barriers and the maritime transport strategy for 2018 can make the 'Motorways of the Sea' a reality and exploit the potential of intra-European short sea shipping. Logistics operations using synergies between sea and rail and/or river also have great potential for development.

The *Greening Transport* (COM/2008/433) communication claims for promoting sustainable mobility and internalising external costs of transport. In the maritime sector, the Communication advocates increased safety to prevent accidents involving ships, passengers and crew, and to reduce their environmental impact. It also urged the necessity to specify concrete measures to reduce greenhouse gas emissions from the sector by 2009, stating the need of the Commission to take action if the IMO had not done so by then. Commission action might include integrating the sector into the EU's Emissions Trading

Scheme. This strategy will be evaluated in 2013. In the short term, the communication urged further reductions in the sulphur content of liquid fuels, including maritime transport fuels.

The Marco Polo II programme aims to shift a substantial part of the expected increase in international road traffic to short sea shipping, rail and inland waterways, or to a combination of modes of transport in which road journeys are as short as possible. It should hence reduce environmental impacts through a modal shift. The programme, which will run until the end of 2013, finances projects that stimulate modal shift or traffic avoidance, promote cooperation and know-how sharing, as well as innovative actions to improve synergies between modes and Motorways of the Sea (section 4.1.2.1).

The Trans-European Transport Networks are a planned set of road, rail, air and water transport networks designed to serve the entire continent of Europe. The TEN-T policy is intended to increase coordination in the planning of infrastructure projects by the Member States. TEN-T envisages coordinated improvements to primary roads, railways, inland waterways and airports. The TEN-T has identified a set of “core ports” of European interest, which will concentrate the efforts of Community investment in the next few decades.

Table 10 below summarises the key risks and opportunities for maritime transport in Europe which have been identified from European Transport (and more specifically Maritime Transport) literature.

**Table 10** Risks and opportunities for maritime transport

Risk	Opportunities
<p><b>Administrative barriers.</b> The removal of administrative burden is key to the development of short sea shipping. Administrative barriers are one of the most important threats to motorways of the sea competitiveness, as they imply substantial delays in combined road-maritime freight transport which in turn makes inland European road transport more efficient and fast.</p>	<p><b>Growth of shipping activities.</b> According to the EU Maritime Transport Strategy, 80% of world trade is currently carried by sea and more than 80,000 merchant ships call at European ports every year. The shipping business is an important source of employment and economic activity.</p>
<p><b>Inadequate port infrastructure.</b> With growing maritime traffic, ensuring adequate shipping infrastructure becomes an important issue to prevent bottlenecks in the future, and facilitate port efficiency and productivity. Required investments need to be timely and in those areas of strategic EU interest.</p>	<p><b>Short Sea Shipping.</b> 40% of intra-European freight is carried by short sea shipping. Most of this traffic is, however, feeding large intercontinental ports. The “Motorways of the Sea” program is a set of key sea routes between EU Member States which combined with other modes of transport are to provide regular, high-quality services, with lower GHG emissions, which offer an effective alternative to transporting goods only by road. The development of SSS and Motorways of the Seas is a primary policy aim of the EU CTP.</p>
<p><b>Inadequate port-land interconnections.</b> Being able to relocate all merchandise from ports towards inland Europe is essential for an efficient EU transport system. Often, port-land interconnections are the weakest link of the transport chain.</p>	<p><b>Cruise activity.</b> Growth of cruise activity is associated with the growth of global tourism activity. Cruise activity has a big impact in local economies where cruises have permanent stops. Cruise activity is important especially in the Mediterranean and the Baltic Seas.</p>
<p><b>Environmental impacts.</b> The growth of activities in ports may be a threat to environmental health of the seas and coastal areas close to ports.</p>	<p><b>Climate Change may allow new shipping routes.</b> With an increased global temperature the Arctic Sea route could become navigable for significant periods of the year, with shortened travel distances for Japanese and Korean ports and for some Chinese ports. However, the development of such routes may only be expected in the very long term.</p>

## 5.2 Maritime Transport Data Availability

The key themes for transport to be explored are the evolution of freight transport, transport of passengers and short sea shipping (SSS). Other relevant political themes are related to pollution, transport of energy products and fishing (catches and fleet). Shipping and international trade are closely related.

For the purposes of the ESaTDOR project, data on the following topics has been identified as being of particular relevance for collection and analysis. Ideally, datasets needed on freight transport would be traffic data by seas and major flows between European sub-seas, main routes between European ports, traffic by ports, container traffic between European ports (in TEU) , total traffic by sub-categories (liquid bulk, dry bulk, containers ...), the size of the merchant fleet and characteristics by country. The impact of the shipping activity in GDP and the job market is also important information. Datasets that should be available on short sea shipping (SSS) are number and routes by port, major routes by seas and between ports, volume of administrative formalities and delays per port.

In terms of passenger transport, datasets on cruises and ferry traffic between ports, major passengers' routes and passengers flows between ports and by sea and economic impact of cruises, as well as recreational sailing activity datasets like harbour mooring availability, number of recreational boats by sea and sub-sea are all important and ideally should be available on a Europe-wide basis.

Obviously, not all of this data is available in a harmonised way for all seas in Europe.

Over the course of the ESaTDOR project a pragmatic approach has been taken to the collection of data to illustrate key trends in maritime activities and to facilitate mapping and the development of a maritime region typology. As part of work carried out on the Inception Report, an initial attempt was made to establish potential sources of useful information for each regional sea and also on a thematic basis (covering environment, energy, cables and pipelines, economic use and transport). This data was further supplemented with additional data providing some general contextual information for the different coastal regions within the ESPON space, such as sea catchment areas, population density, GDP (and others). This "long list" of datasets was then refined on the basis of geographical coverage and scale, spatial reference format and availability of most up to date or time series data across the ESPON space.

Most of the time, the only homogeneous datasets correspond to data provided by ports, so knowledge of maritime transport can only be described accurately at port level. Flows between ports are very much dependant on the decision of sea shipping companies, and on their international transport routes, and they may vary along time depending on specific transport demands. Routes have been estimated through shipping lane analysis via GPS register of a fraction of the merchant fleet, although these sorts of analysis contain some caveats derived from the fact that only a reduced number of shipping companies have taken part (some connections might be missed); they are often simulated with transport models calibrated using port handling data.

The variables finally selected to produce maps in ESaTDOR can be read in Table 11 below:

**Table 11** Transport datasets used for mapping in the ESaTDOR project

<b>Name of dataset</b>	<b>Level of coverage</b>	<b>Year</b>	<b>Time series? Y/N (and range)</b>	<b>Include in Sea Profiles Y/N</b>	<b>Include in Typology Y/N</b>	<b>Source</b>
Traffic at ports: total cargo	European	2008	1997 - 2010	Y	Y	Eurostat
Traffic at ports: type of cargo	European	2008	1997 - 2010	N	Y	Eurostat
Traffic at ports: containers only	European	2008	1997 – 2010	Y	N	Eurostat
Short Sea Shipping at Country Level	European	2008	2000 – 2009	Y	N	Eurostat
Ferries: traffic at ports	European	2008	1997 – 2010	Y	N	Eurostat
Cruises: traffic at ports	European	2008	2004 – 2010	Y	Y	Eurostat
Ferry lines	European	2005	No	Y	N	TRANS-TOOLS
Ports	European	2009	No	Y	Y	GISCO
Shipping lanes	Global	2008	No	Y	N	National Centre for Ecological Analysis and Synthesis

Reasons for dataset exclusion in ESaTDOR were in general due to not being homogeneous at European level or data being too old, although certain datasets were relevant and complete at regional level for some seas. Only EUROSTAT was able to provide, in general, such harmonised data series, complemented in some topics by modelled data (TRANS-TOOLS for ferry routes) and also by National Centre for Ecological Analysis and Synthesis (Shipping lanes).

## 5.3 Maritime Transport - Baseline Conditions

### *Growth of shipping activity*

Being an important sector in the European economy, the expansion of maritime traffic is both an opportunity for operators and for ports around Europe. In May 2010, the European parliament approved the *European Maritime Transport Strategy 2018* (COM/2009/08) which stressed the vital importance of the European maritime transport sector for the community's economy and for Europe's transport systems.

According to the EU Maritime Transport Strategy, 80% of world trade is currently carried by sea, more than 80,000 merchant ships call at European ports every year, and more than 400 million sea passengers pass through European ports each year. Around 90% of the European Union's trade with third countries passes through European ports. Map 20 shows the main shipping lanes (and density of shipping) through Europe's seas, highlighting the density of through traffic in the Mediterranean and heavily congested waterways around the Channel/North Sea.

The 2011 Transport White Paper (COM/2011/144) notes that Europe (EU/EEA) has the world's largest shipping fleet, representing 41.6% of the world's vessels (measured in GT) directly employing some 300,000 seafarers on board merchant vessels and another three million in related jobs.

Maritime traffic is predicted to increase once again in the short and mid-term. According to Deutsche Bank (2006), between 1990 and 2005 the container trade at the world's ports expanded by just under 10% p.a. on average (2005: +11%). Worldwide container handling grew slightly faster than container transport, averaging 10.6% p.a. between 1990 and 2005, and being a result of the increasing proportion of the pure handling business. Transshipment traffic grew by nearly 14% p.a. in the same period. Map 21 shows container activity at European ports in 2008, with the north west of Europe (English Channel and North Sea) and western Mediterranean handling the most container traffic.

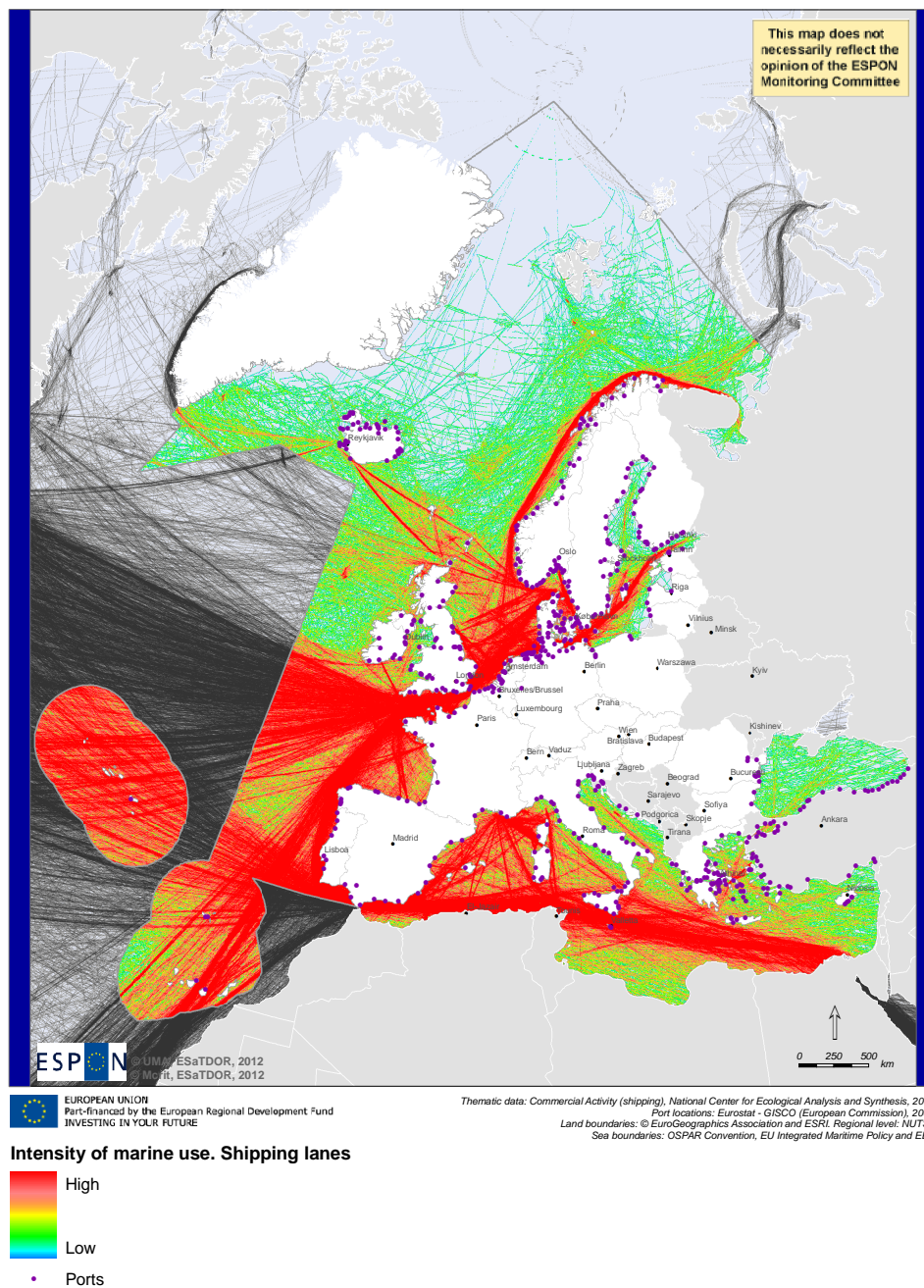
The traffic intensity in the Mediterranean accounts for 30% of total World maritime traffic, with more than 200,000 vessels over 100 tonnes crossing the sea annually. The North Sea contains some of the busiest shipping routes in the world, with more than 400 ships passing daily through the English Channel. The Baltic Sea is one of the most heavily trafficked seas in the world with up to 15% of the world's cargo transportation. Approximately one half of the ships in the Baltic Sea are cargo vessels, 14% are tankers and 11% passenger vessels (2008 figures, HELCOM, 2010). The Black Sea has strategic links with the Caspian and with the Mediterranean via the Bosphorus, where crossings are naturally limited in terms of frequency of passage and size of ships; this also determines the potential for further development.

Most of the traffic in the Mediterranean is just passing traffic, as only 25% of the Asiatic traffic resulting from globalisation enters Europe through Mediterranean ports after passing through the Suez Channel, while 75% of freight continues through Gibraltar up to Northern European ports with an additional two days of travel, and subsequent increase in CO<sub>2</sub> emissions. With a total maritime container throughput of an estimated 90.7 million TEU in 2008, only 13 ports managed more than 1MTEU and 40% of the total port traffic in Europe is



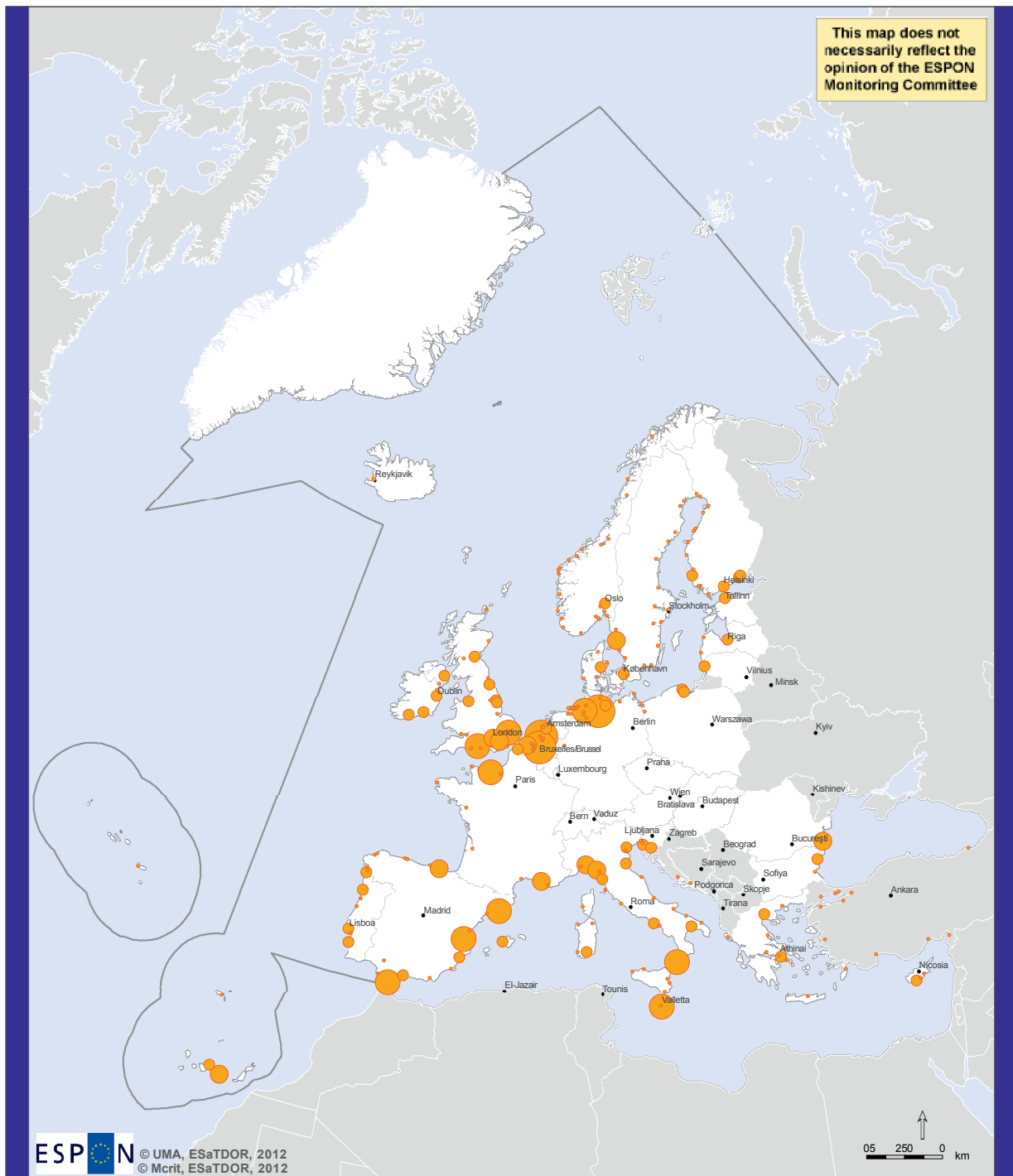
concentrated in the four largest ports; all in the Northern range (Rotterdam, Antwerp, Hamburg and Bremen, see Map 21). Most of the largest Mediterranean ports have a major transshipment component, in particular Algeciras (93% in 2010, Spain), Gioia Tauro (80,4% in 2004; Italy), Marsaxlokk (95% in 2008, Malta), and also more recently Valencia (51% in 2010, Spain). The Mediterranean ports are attempting to increase their share in the European maritime import/export sector (new rail infrastructure is planned to connect them to Europe's core areas). It is claimed that increasing the business of Mediterranean ports would provide a more balanced port system in Europe and would allow for shorter shipping distances and time savings for a substantial number of destinations, having a relevant effect on transport emissions.

## Shipping Lanes



Map 20 Shipping lanes in European Seas

# Container Shipping, 2008



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Thematic data: Containers handled in all ports by direction, EUROSTAT, 2008.  
\*Marsaxlokk data: Freeport Malta, 2008.  
Port locations: Eurostat - GISCO (European Commission), 2009.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Container shipping at ports, 2008 (million TEU). All ports.

- 0 - 0.15
- 0.15 - 0.70
- 0.70 - 1.6
- 1.6 - 5.5
- > 5.5

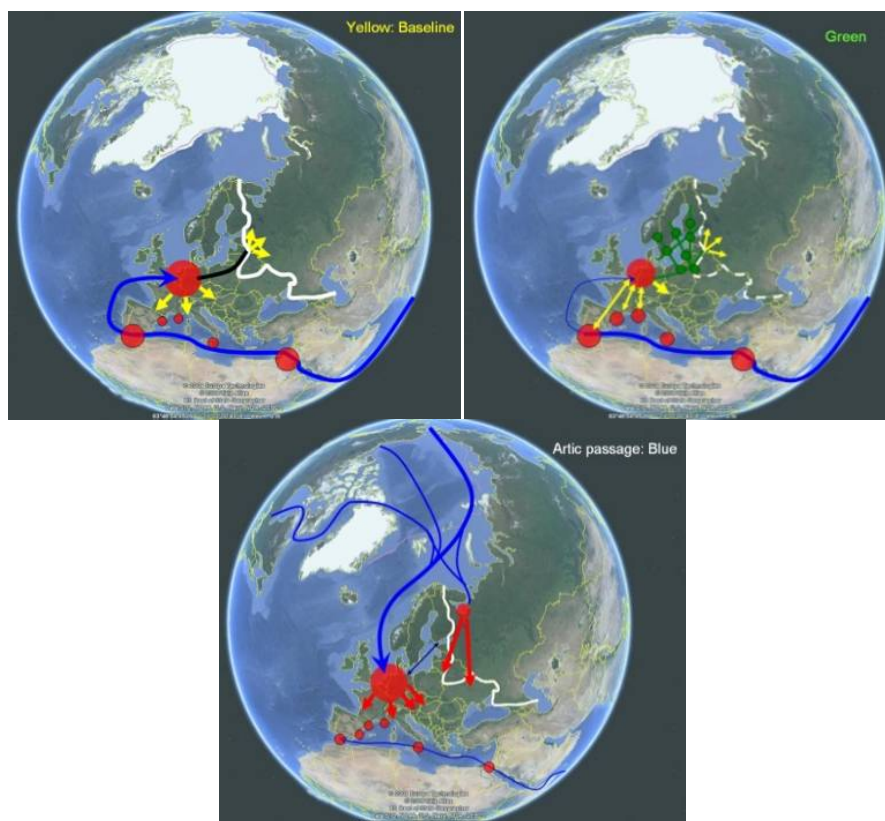
**Map 21** Container activity at European ports (million TEUs), 2008

## New maritime routes

In recent years the polar ice pack has thinned allowing for increased navigation in the Arctic Ocean. Even with an upgraded Panama Channel, the Far East – Europe route through Suez is still shorter, between 25% and 60% in distance and between 7% and 50% in travel time depending on the origin/destination ports. But, with an increased global temperature the Arctic Sea route could become navigable for significant periods of the year in the long term, with shortened travel distances for Japanese and Korean ports and for some Chinese ports. This could however raise the possibility of future sovereignty and shipping disputes among countries bordering the Arctic Ocean. Gaps in hydrographical data exist for significant portions of primary shipping routes important to support safe navigation.

Figure 9 below shows three alternative scenarios for the development of shipping in European seas, each displaying a different volume of maritime transport passing through the Mediterranean. In particular, the possibility of an Arctic shipping corridor will substantially reduce traffic in the Mediterranean.

**Figure 9** Alternative scenarios for maritime freight transport.



Source: MCRIT for the Baltic Scenario Forum, 2009

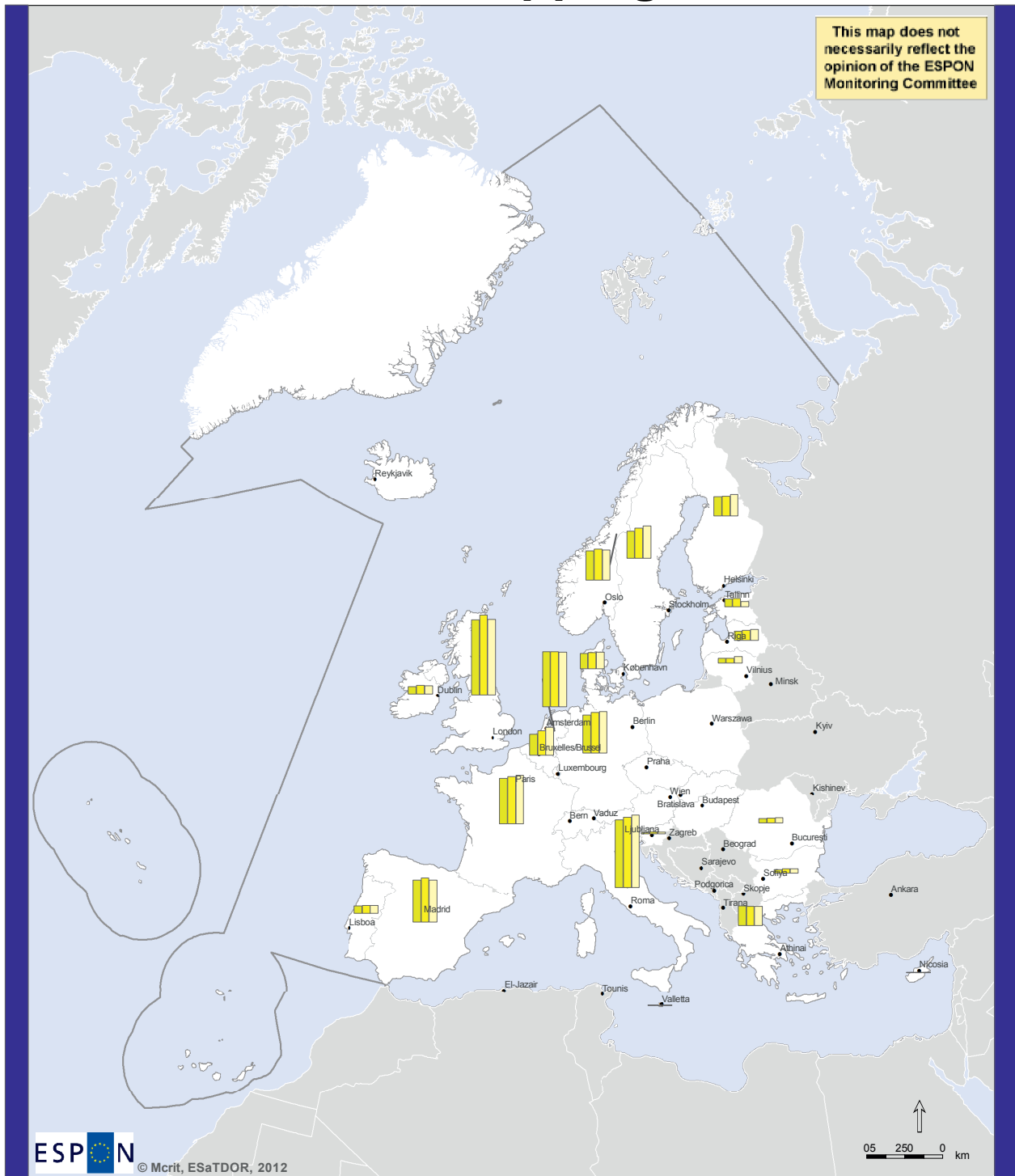
## Motorways of the Sea and Short Sea Shipping

According to European Transport Policy, the most important issues in maritime transport are short sea shipping (SSS), freight traffic, passenger traffic and international trade.

Today, 40% of intra-European freight is carried by short sea shipping. Map 21 shows the growth in short sea shipping by country from 2004-2008, whilst Map 22 shows SSS by country and in inward/outward directions, showing that the majority of EU countries are net importers of goods by SSS (the exceptions being Romania, Estonia, Latvia and Norway). The “Motorways of the Sea” program is a set of key sea routes between EU Member States which combined with other modes of transport are to provide regular, high-quality services offering an effective alternative to transporting goods only by road. Routes under greatest pressure due to freight transport by road and sea are shown in Figure 10. The Motorways of the Sea should represent a cleaner, more cost-effective solution for transporting freight and should reduce congestion at the main bottlenecks on roads. However, the success of the Motorways of the Sea concept has so far been limited, according to Commission Staff Working Paper *SEC/2011/358* (also known as *COM/2011/144*), and an important share of intra-EU maritime traffic (20% between 1998 and 2008) is partly due to feeder traffic for global container connections.

Administrative barriers to short sea shipping, however, are an important threat to Motorways of the Sea competitiveness, as they imply substantial delays in freight transport. An EU-registered ship travelling from Antwerp to Rotterdam can still require the same amount of paperwork as a ship travelling to Rotterdam from Panama. To improve short sea shipping, the EC is giving impulse to a European maritime transport area without or with less administrative procedures to goods shipped by sea between European ports. The removal of administrative barriers should prompt an increase in short sea shipping, in the same way that liberalisation of the air transport has led to increased passenger demand and routes served.

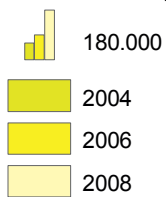
# Short Sea Shipping Trends



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Thematic data: Short Sea Shipping at country level by direction, EUROSTAT, 2004 - 2006 - 2008.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

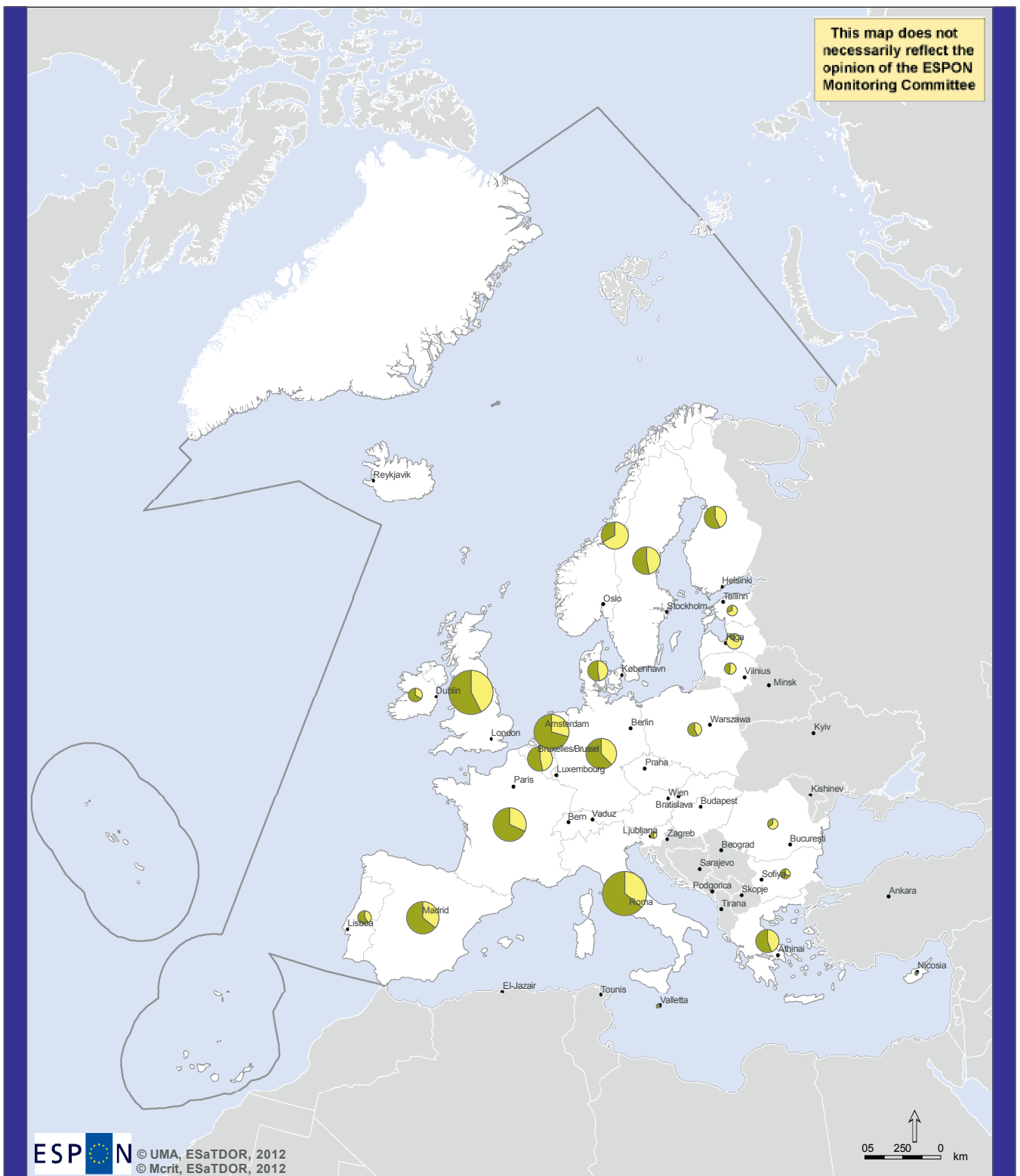
## Short Sea Shipping at NUTS0 level time series, 2004 - 2008 (1000T).



**Map 22** Trends in Short Sea Shipping, 2004-2008

# Short Sea Shipping by Direction, 2008

This map does not necessarily reflect the opinion of the ESPON Monitoring Committee



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Thematic data: Short Sea Shipping at country level by direction, EUROSTAT, 2008.  
Land boundaries: © EuroGeographics Association and ESRI, Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

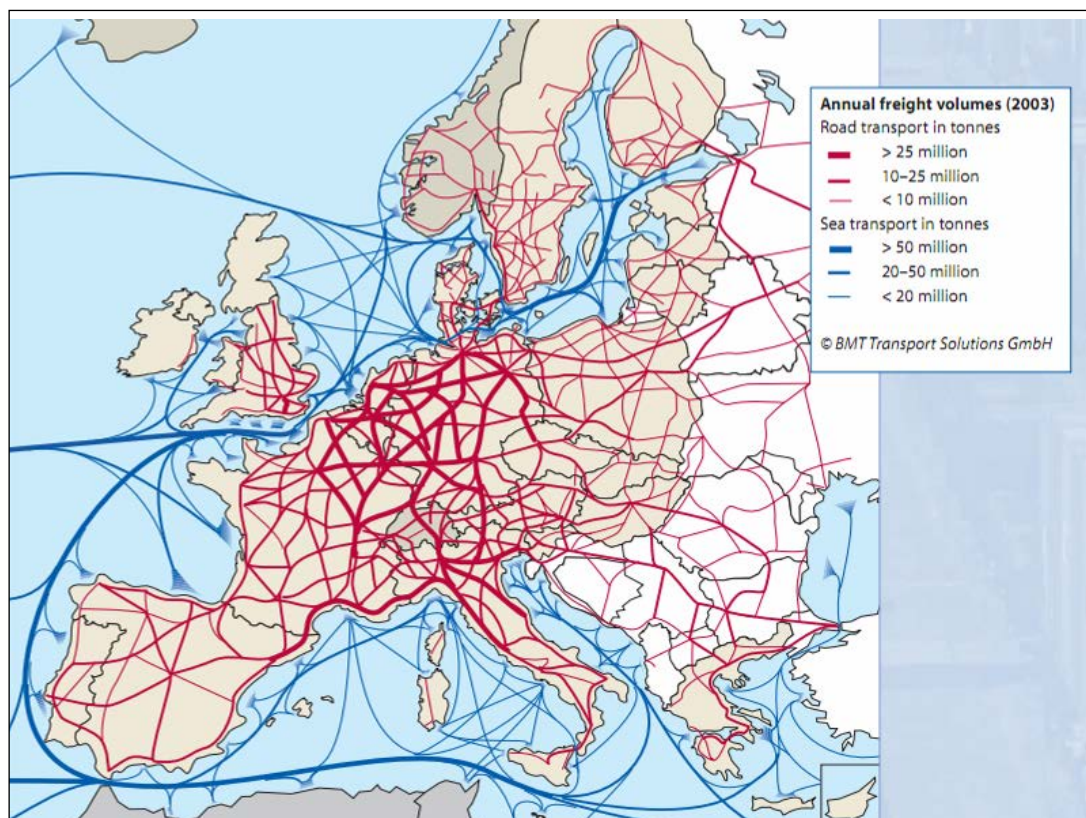
## Short Sea Shipping at NUTS0 level by direction, 2008.

-  Outward
-  Inward

**Map 23** Short Sea Shipping by inward/outward direction, 2008

Today, more than 600 ships cross the North Sea (including 200 ferries) at the Strait of Dover. Approximately half the shipping activity in the Greater North Sea consists of ferries and roll-on/rolloff vessels on fixed routes (OSPAR Commission, 2010). The Atlantic forms the Western Europe section of the EU's Motorways of the Sea transport corridors. The Commission has begun to implement the Motorways of the Sea concept in the Black Sea, closely linked to the TRACECA (TRANsport Corridor Europe-Caucasus-Asia) programme. In the Mediterranean, Short sea shipping is important between Spain and Italy, in the Adriatic and Ionic seas, as well as between the northern Mediterranean rim and the Maghreb.

**Figure 10** Annual freight transport volumes in Europe, including Short Sea shipping (2003).



Source: *Motorways of the sea. Shifting freight off Europe's roads.* European Commission, Directorate-General for Energy and Transport (2006)

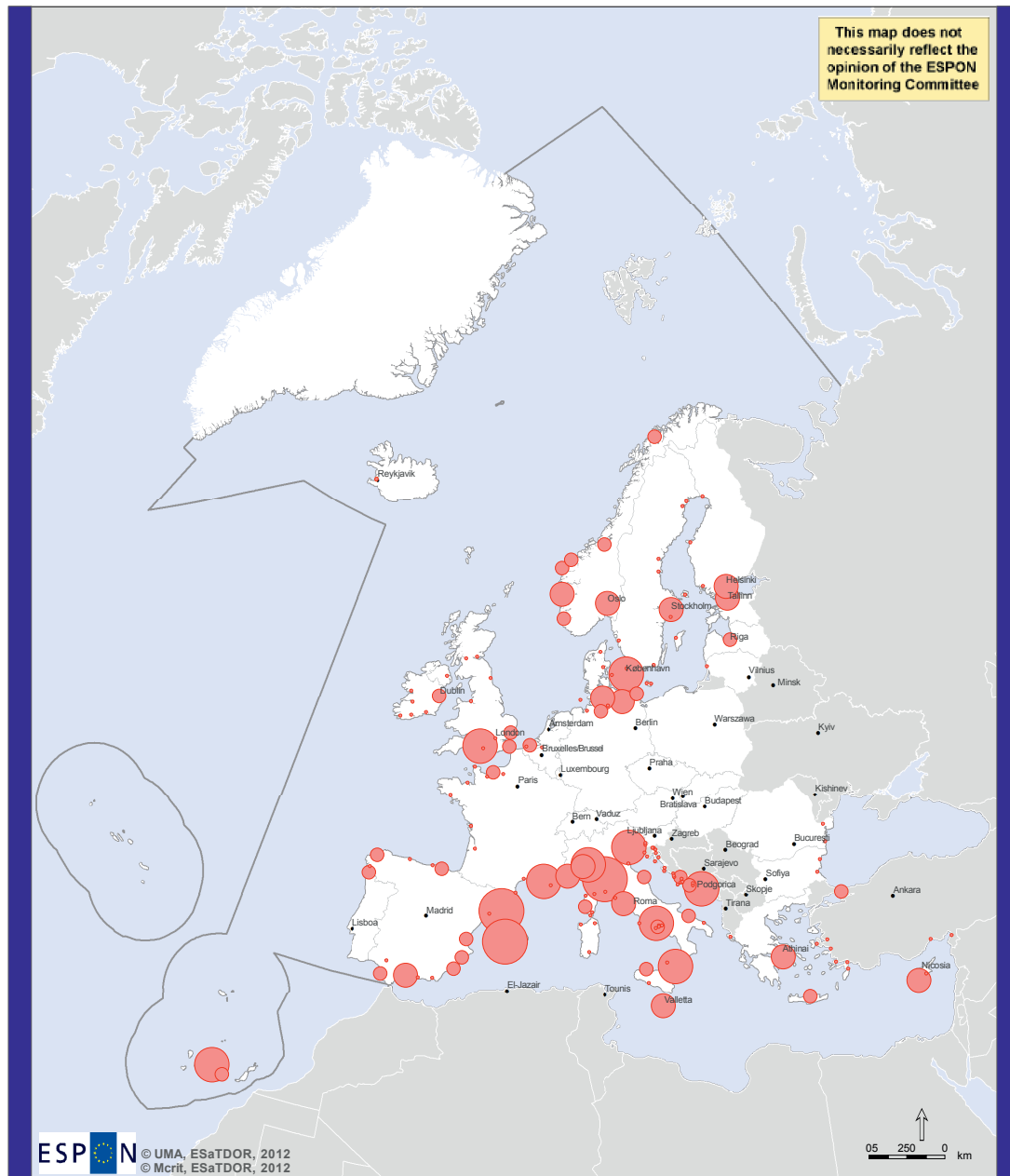
### Cruise activity

According to the European Cruise Council (ECC), the European cruise industry continues to increase its share of the global cruise market with 25.2 million passengers visiting a European port in 2010; 5.2 million passengers joined their cruise in Europe in the same year with the industry generating €35.2 billion of goods and services and providing almost 300,000 jobs. In 2010 there were 198 cruise ships operating in Europe ranging in size from 3,600 passengers to less than 100.

Map 24 shows passengers at cruise ports in 2008. The Port of Barcelona is the largest in the Mediterranean in terms of cruise passengers, with around 2.3 million per year, followed by

Civitavecchia (Italy), Palma de Mallorca (1.5 million passengers, Spain) and Venice. Copenhagen, St. Petersburg, Tallinn, Stockholm and Helsinki are most visited ports in the Baltic. Significant increases in cruise ships in the Arctic Sea, a majority not purpose-built for Arctic waters, have been observed in the summer season.

## Cruise Activity (Passengers), 2008



Thematic data: Passengers maritime transport by direction and type of traffic, EUROSTAT, 2008.  
 Port locations: Eurostat - GISCO (European Commission), 2009.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

**Cruise activity at ports, 2008. (Thousand passengers). All ports.**

- 1 - 50
- 50 - 250
- 250 - 500
- 500 - 1000
- > 1000

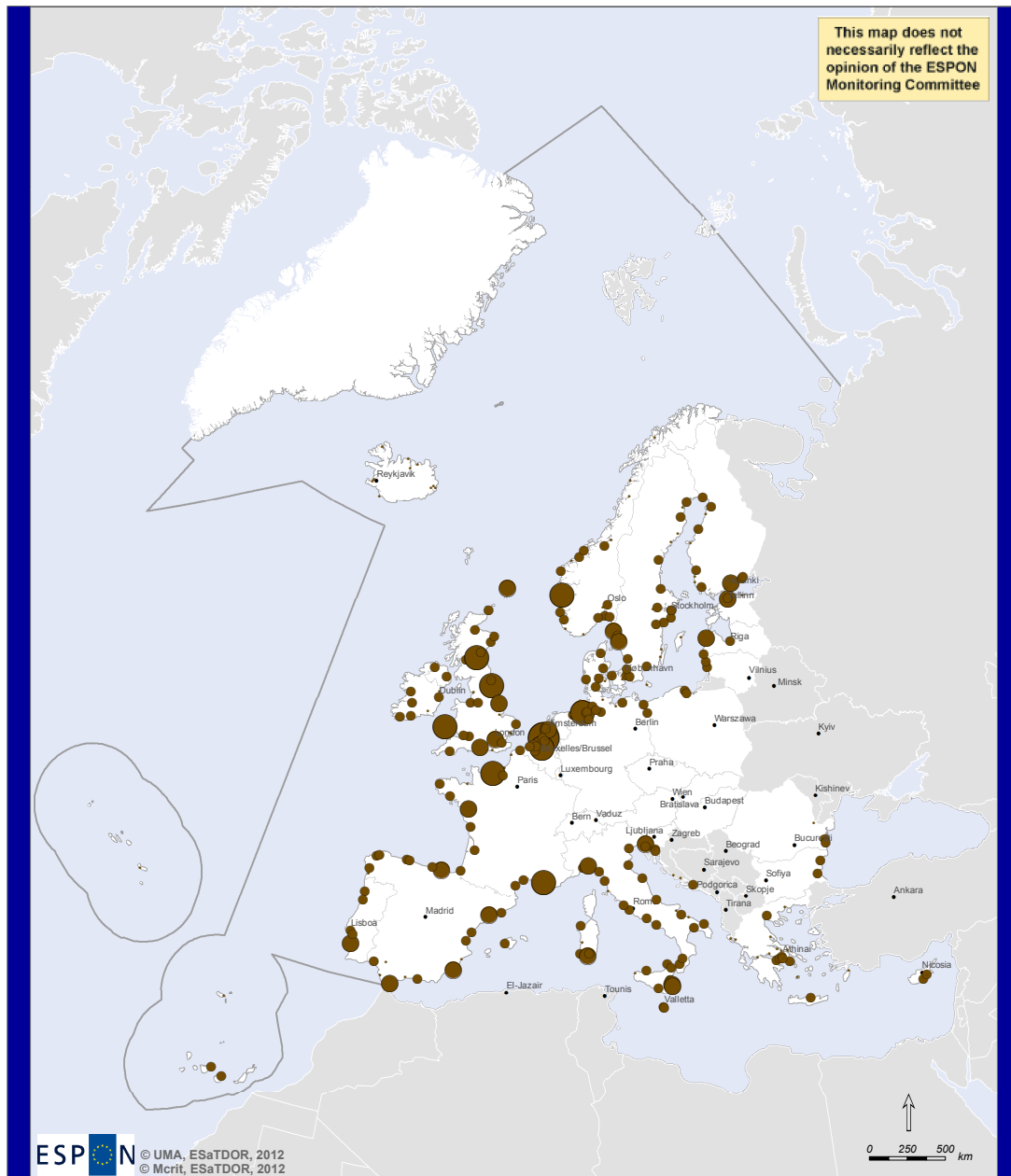
**Map 24** Cruise activity (passengers) at ports, 2009



## Gas and oil shipping

Map 25 shows the volume of liquid bulk (oil and gas products) handled by European ports in 2008. As expected, the greatest concentration of activity is around the North Sea and Norwegian Coasts close to major oil and gas fields.

# Liquid Bulk Shipping, 2008



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Thematic data: EUROSTAT, 2008.  
Port locations: Eurostat - GISCO (European Commission), 2009.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTSO.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

### Liquid bulks goods by port, 2008 (thousand tonnes).

- < 1000
- 1001 - 40000
- 40001 - 80000
- 80001 - 160000
- > 160000

**Map 25** Liquid bulk goods shipping (million tonnes) by port, 2008.

In the Black Sea area, the trade and transport of strategic Oil and Gas supplies is central. Exports of crude oil from Black Sea ports averaging at over 100 million tonnes a year are expected to continue to rise, resulting in continued seaborne transit via the Bosphorus and increased use of eastern Mediterranean ports linked to new pipelines intended to bypass the Bosphorus.

In the Baltic, oil transportation in the eastern part (Gulf of Finland) is important due to the export of Russian oil. 380,000 ship calls have been counted in the year 2008.

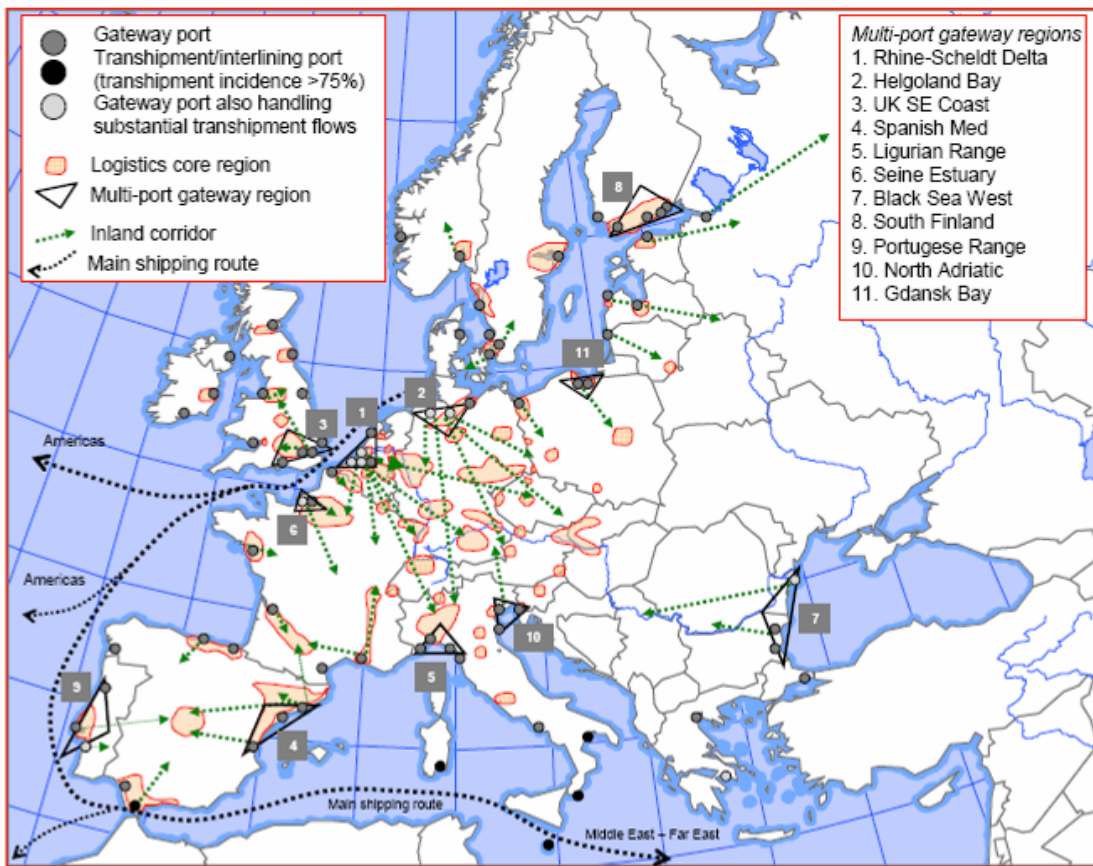
Gas and oil traffic flows in the Mediterranean are mainly south-north direction. Traffic tends to intensify under the pressure of the Turkish economy, the countries of Central Europe and the CIS, and Gulf countries. The strengthening of Turkey as a platform for exchange is thus confirmed particularly with regard to container shipping.

### **New Infrastructure**

With growing maritime traffic, ensuring adequate shipping infrastructure is important to prevent bottlenecks in the future, and seek port efficiency and productivity. Figure 11 shows where Europe's core container networks are concentrated, with the greatest degree of connectivity in the traditional "core" of Europe, i.e. Southeast England, the Netherlands, Belgium, Luxembourg, eastern France and western parts of Germany. In addition, Map 26 shows some areas which may be disadvantaged due to high travel costs to reach nearest ports, such as the west of Scotland, central parts of Sweden and the Balkan States.

There is a general lack of marine infrastructure in the Arctic, except for areas along the Norwegian coast and northwest Russia, compared with other marine regions of the world with high concentrations of ship traffic. Except in limited areas of the Arctic, there is a lack of emergency response capacity for saving lives and for pollution mitigation. There are serious limitations to radio and satellite communications and few systems to monitor and control the movement of ships in ice covered waters.

**Figure 11** The European container port system and logistics core regions in the hinterland.

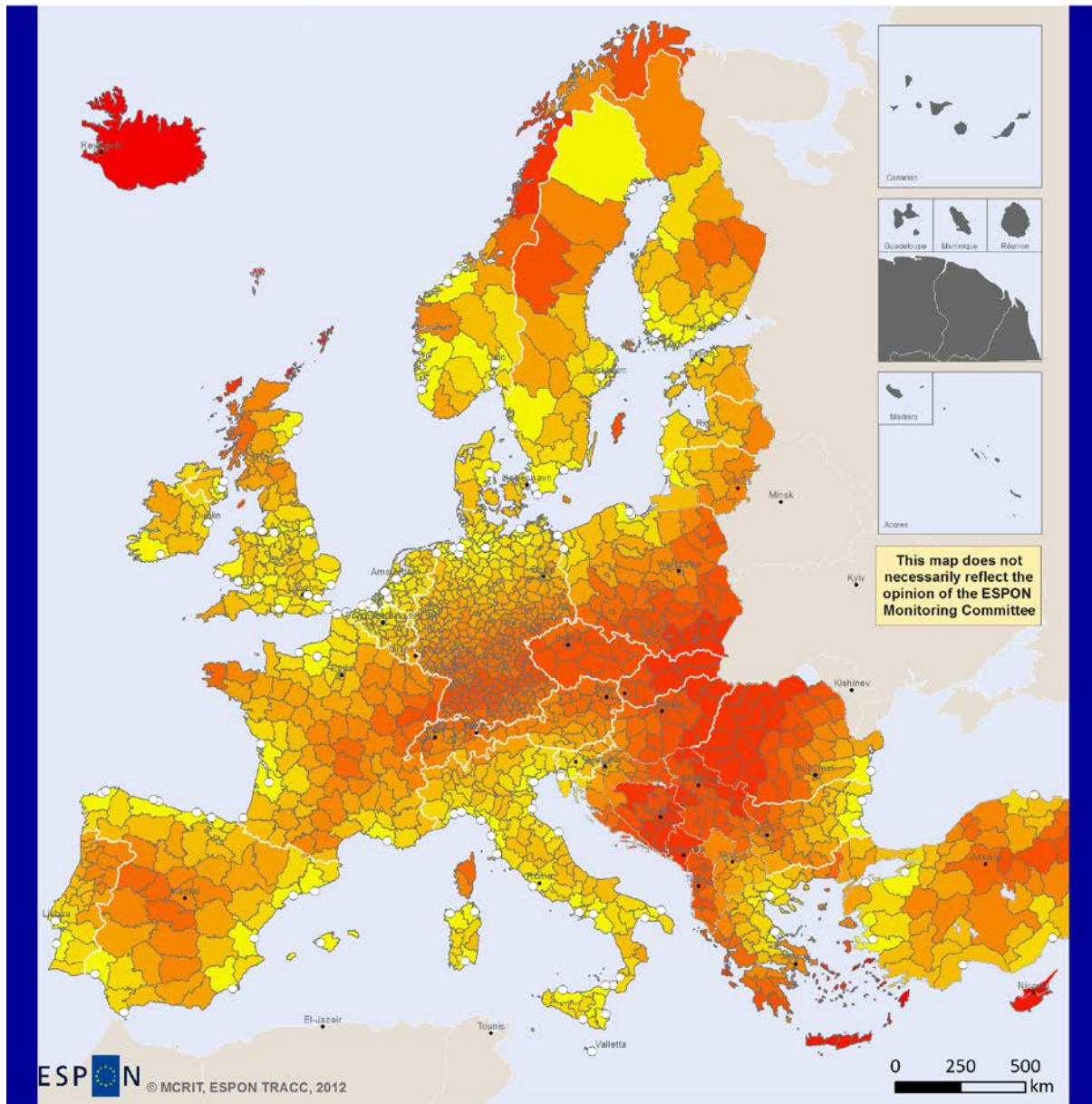


Source: *The relationship between seaports and the inter-modal hinterland in light of global supply chains*. Notteboom (2008).

Maritime infrastructure in the Atlantic must be in place to meet demands for maritime transport. Therefore there are several opportunities for maritime transport and associated industries in the Atlantic Arc to benefit from the development of intra-EU short sea shipping, research and development clusters, and the promotion of measures to facilitate better connection of islands and long-distance intra-EU passenger transport through quality ferry and cruise services, which will support links between the outermost islands of the Atlantic (Azores, Canary Islands and Madeira) and mainland Europe.

The Mediterranean ports are willing to increase their share in the maritime sector by planning important rail projects intended to enlarge their hinterlands up to central Europe.

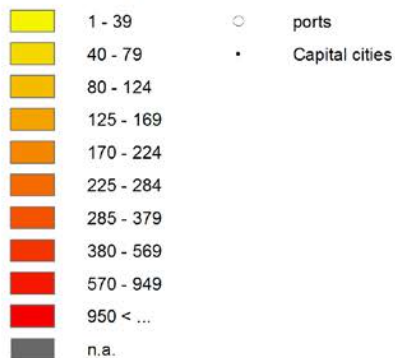
# Inland Accessibility to Ports



ESPON © MCRIT, ESPON TRACC, 2012

Data source: EUROSTAT 2010, MCRIT 2012 GIS Database © EuroGeographics Association for administrative boundaries

## Travel Cost to access nearest maritime port for 2010 (euros)



**Map 26** Inland accessibility to ports by shortest cost intermodal path.  
Source: ESPON TRACC 2012

## 5.4 Key Patterns of Transport Flows

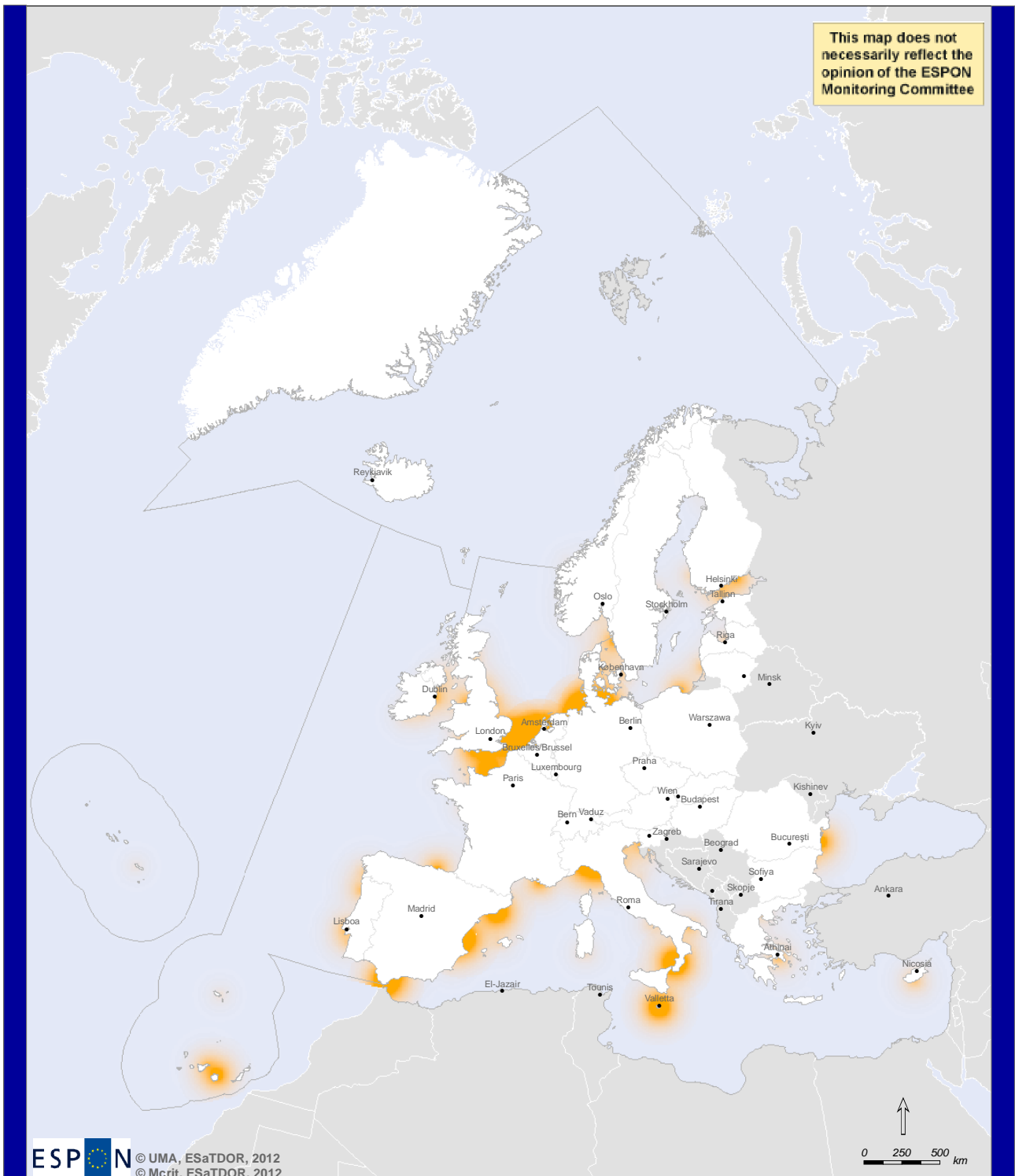
Using the concept of maritime “flows” to represent the land-sea interactions of goods, people and information moving through the seas, Maps 27-30 show the extent of these land-sea interactions for container traffic, cruise passengers, liquid bulk (oil and gas) and submarine telecommunications cables (cables are discussed in more detail in Chapter 6 – Energy, Cables and Pipelines of this Scientific Report) whilst Map 31 draws these influences together in one composite map displaying the overall pattern of these flows in Europe’s seas.

In the composite map (Map 31), two areas of high maritime activity are detected. First high activity area of flows is concentrated in the Atlantic Coast, between Le Havre, in France, and Bremen, in Germany. In this coast are concentrated the main ports of freight transport (Rotterdam, Hamburg Antwerp, Bremerhaven, Felixstowe and Southampton). According to the ESPON TIGER (Territorial Impact of Globalization for Europe and its Regions) project, Rotterdam appears as the pivotal hub for many commodities as it extends its influence towards a majority of northern European ports: this directly reflects its dual role as both maritime hub and load centre (continental gateway).

A second high activity area of flows is identified in the Western Mediterranean, where container activity is slightly smaller (still there are very relevant at ports like Marsaxlokk in Malta, Gioia Tauro in Italy and Valencia and Barcelona in Spain, although they have an important transshipment component), but where the main ports of cruises are concentrated, such as in Barcelona and Palma de Mallorca, Napoli, Livorno and Civitavecchia, Piraeus and Malta. According to ESPON TIGER, there are functional linkages between types of traffics and types of regional economies.

In general, urban regions with higher GDP per capita than the national average, and higher concentration of tertiary activities (notably the financial sector) concentrate more valued, larger, and diversified traffic (i.e. traded vehicles, containers) on average, such as Hamburg, Lisbon, London, Oslo, Stockholm, Genoa, Rome (Civitavecchia), Bremen, Copenhagen, and Piraeus (Athens). This is opposed to a profile of “traditional” and “peripheral” regions where the primary sector (and to a lesser extent the industry and construction sectors) as well as bulk commodities (e.g. agricultural products, minerals, metals) dominate both economy and flows.

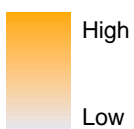
# Influence of Container Ports



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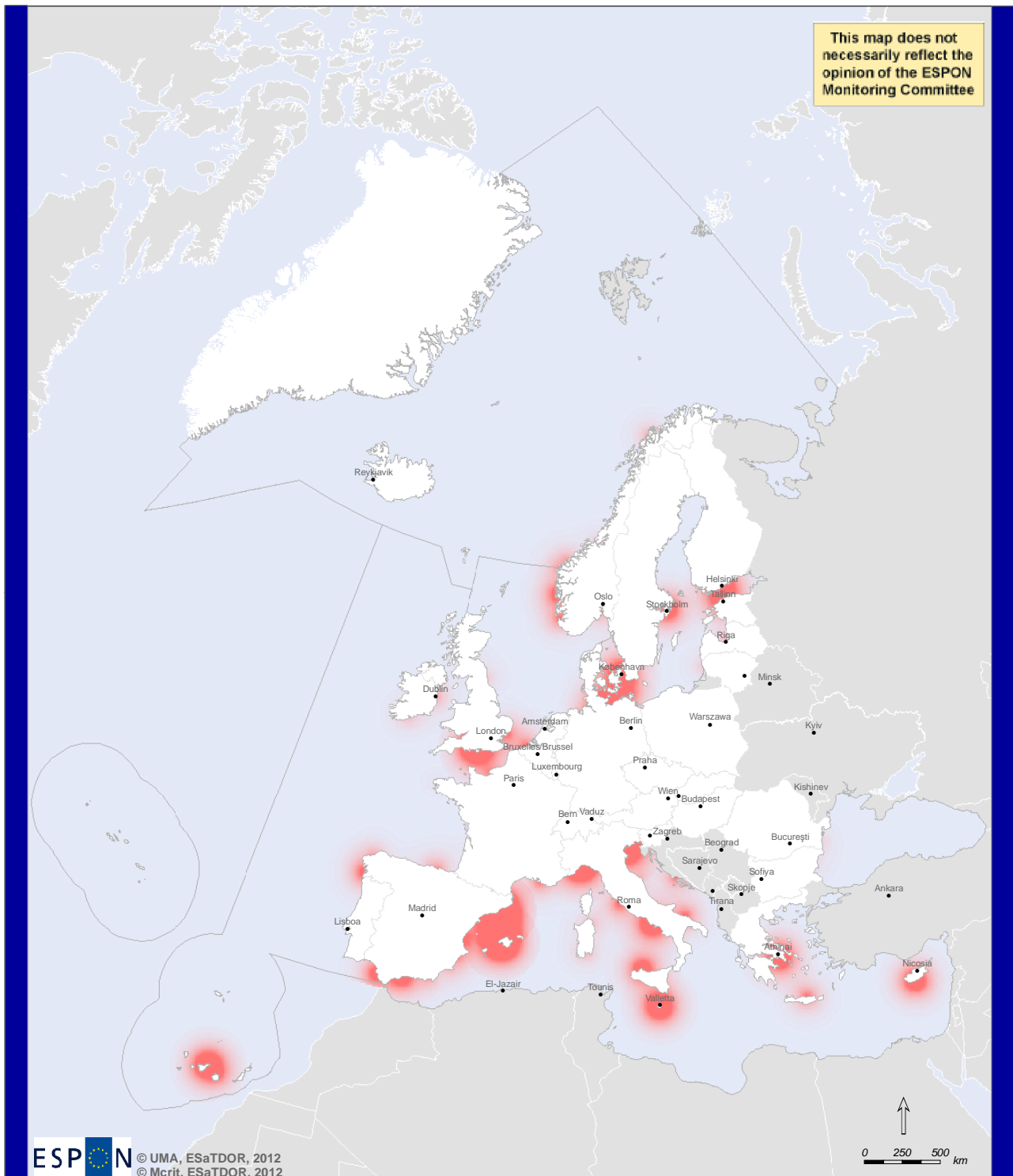
Thematic data: EUROSTAT, 2008.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

**Economic influence of container ports, based on port proximity and container volume handled in 2008.**



**Map 27** Economic influence of container ports, based on volume of containers handled

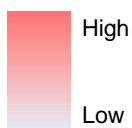
# Economic Influence of Cruise Ports



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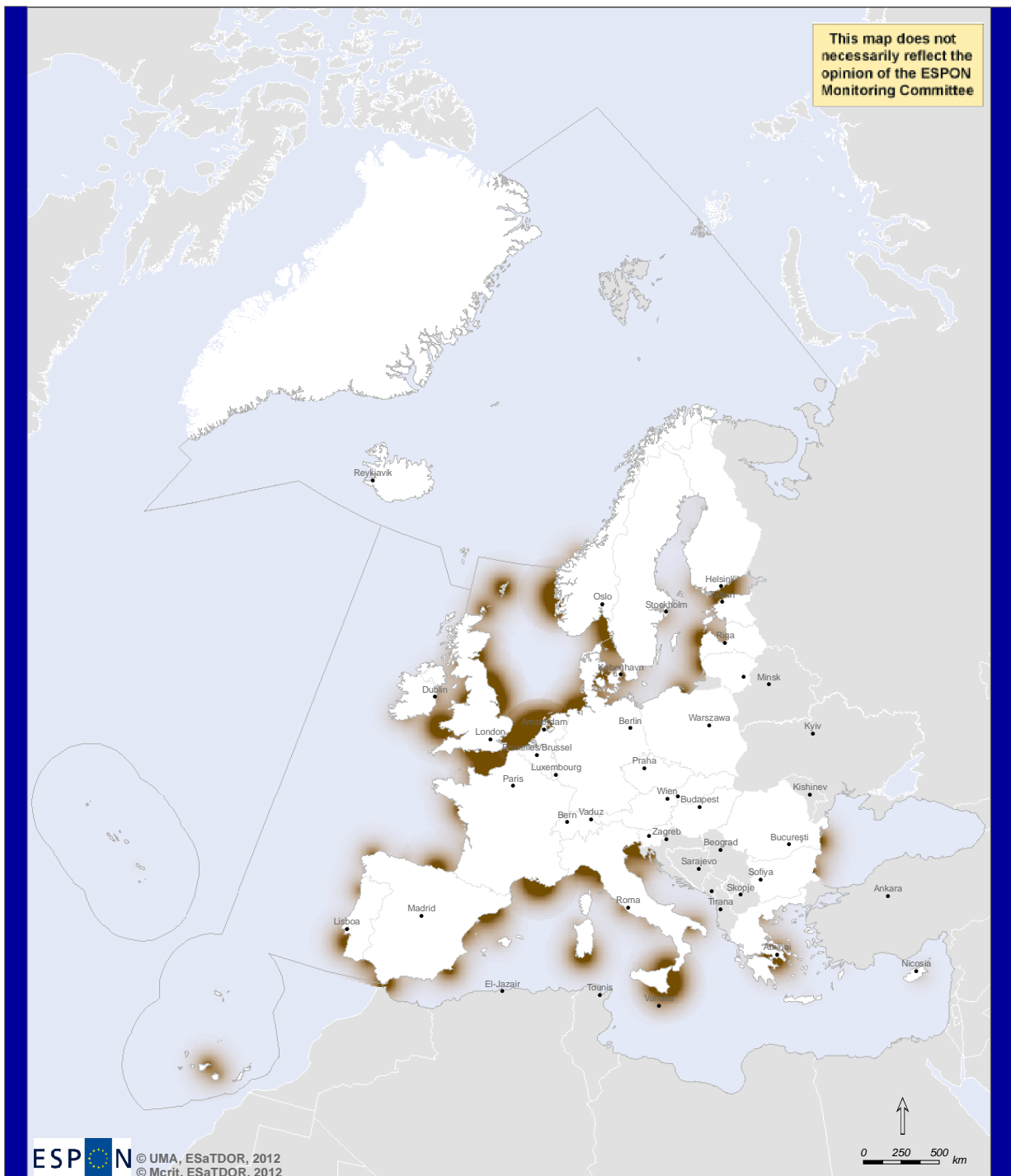
Thematic data: EUROSTAT, 2008.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

**Economic influence of cruise ports, based on port proximity and cruise activity in 2008.**



**Map 28** Economic influence of cruise ports based on cruise activity

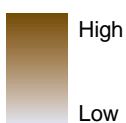
# Marine Exposure Due to Liquid Bulk Shipping




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Thematic data: EUROSTAT, 2008.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTSO.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

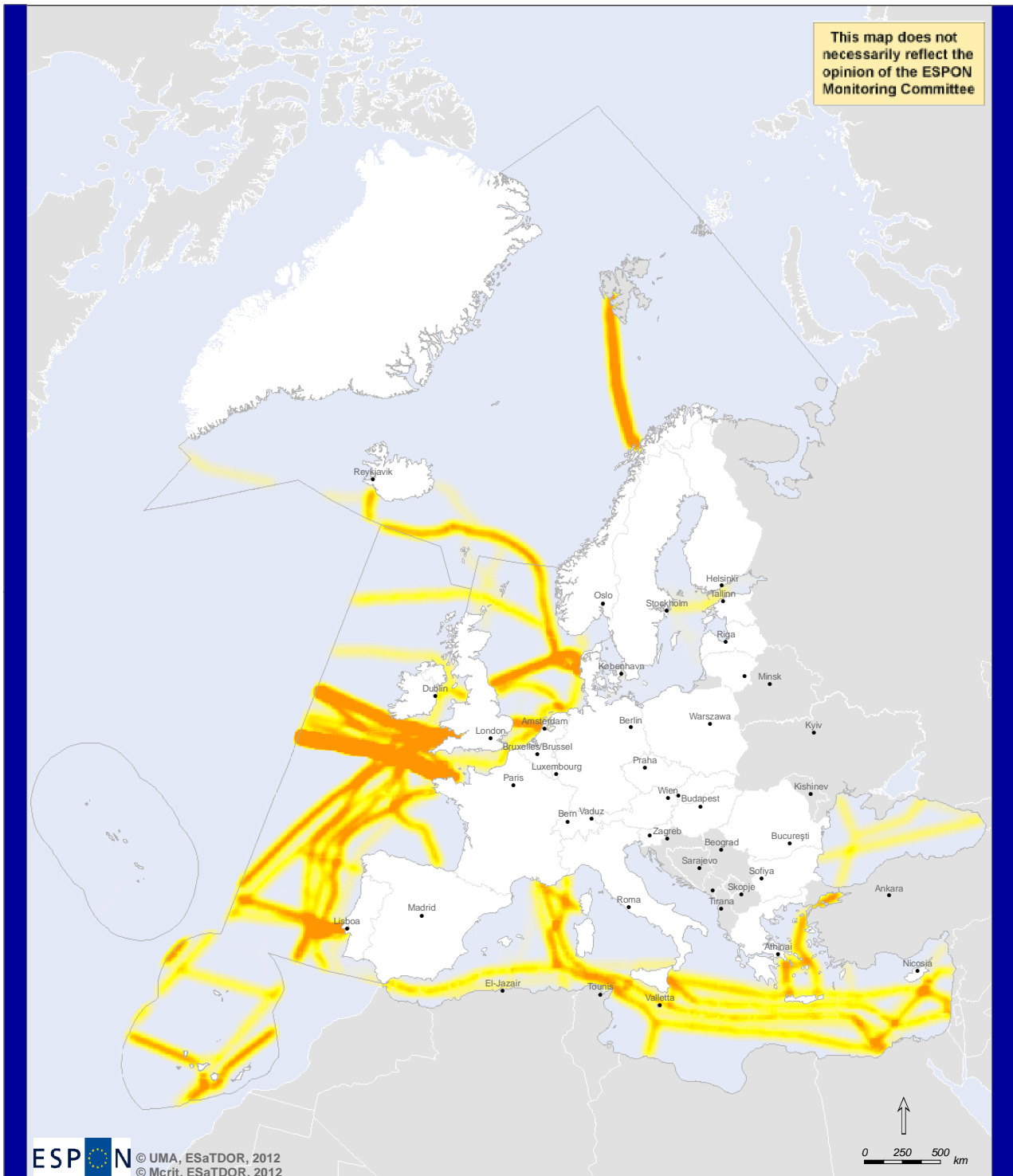
**Marine exposure due to port influence, based on port proximity and volume of liquid energetic products handled in 2008**



**Map 29** Marine exposure due to port influence, based on port proximity and volume of liquid bulk (energy) products handled, 2008



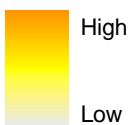
# Information Flows (Undersea Cables)



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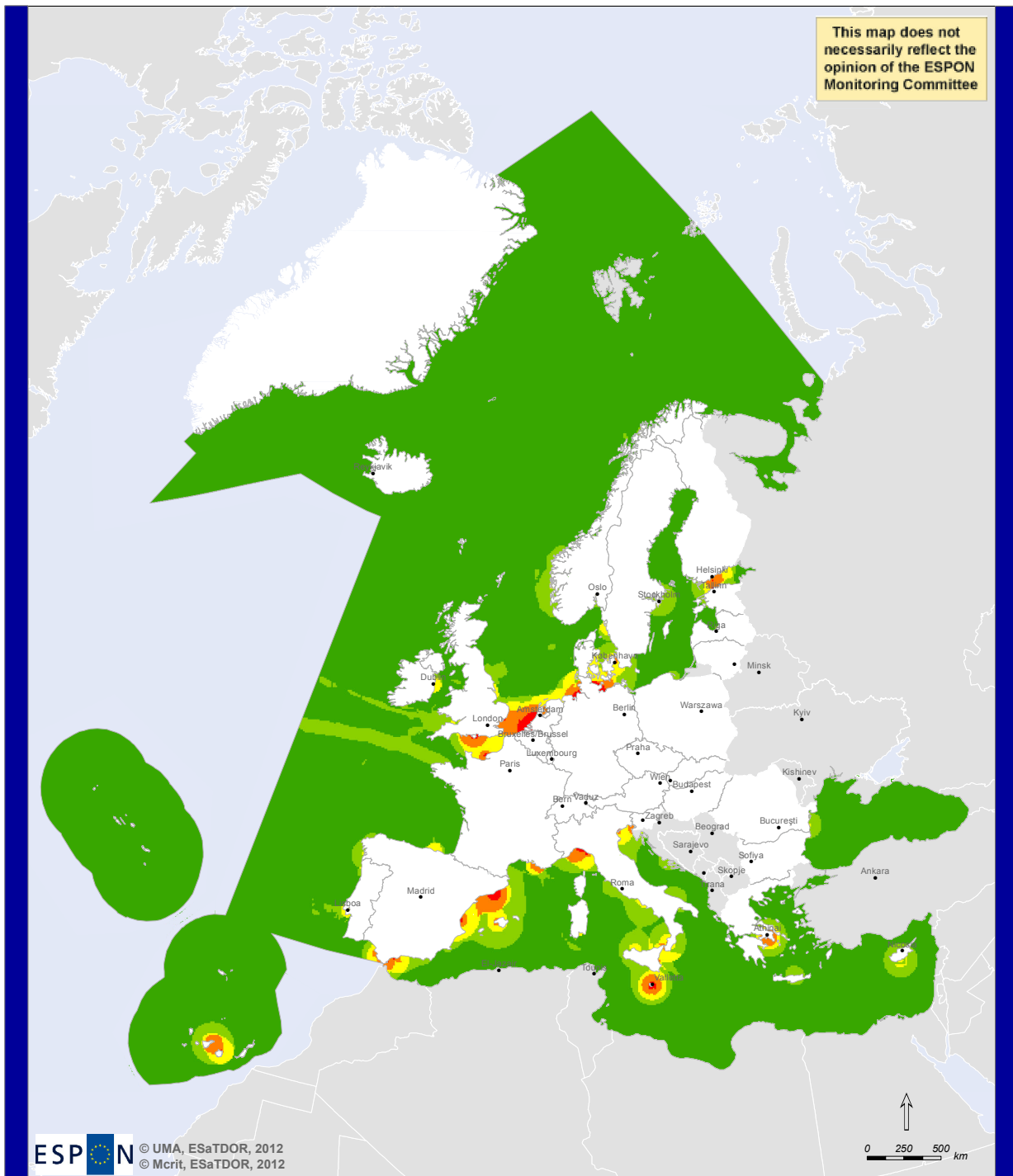
Thematic data: EUROSTAT, 2008.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Cable influence



**Map 30** Undersea cable influence based on information flows (Gb/s)

# Flows




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Thematic data: Flows Composite Map.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Flows Composite Map

- Very Low
- Low
- Medium
- High
- Very High

*The Flows composite map is a proxy to land-sea interactions of goods, people, energy and information based on the analysis of flow magnitudes and interchange nodes. Influence of interchange nodes is higher with proximity to node and size of associated flow (container traffic, cruise traffic and LBK traffic plus Gb/s through cables).*

**Map 31** Flows composite map

## 5.5 Future Prospects for Maritime Transport

The transport maps have shown the importance of growing freight flows in Europe. Being the interface between land and sea transport, the growth in port transport directly translates onto increased activities inland (freight transport resulting from international shipping distribution in Europe, tourist activities resulting from cruises, maritime labour occupations). Increased transport brings together economic activity, but also has risks in terms of environmental pressures on seas and coastal areas.

Several developments can already be anticipated that will have a likely impact on maritime transport. We will now discuss the most important developments and their consequences.

- **Ongoing globalization** is expected to result in an increase in shipping of goods to-and-from Europe. Container transport is expected to grow along with world trade, which according to UNCTAD could be around 3.5% yearly growth, and according to the financial sector could be around 6.5% annual growth, during the next 20 years. It is likely that during this period southern European ports grow at higher rates than previously, especially in the Western Mediterranean, especially if proper connections are established between Central Europe and these ports, by road and by rail. In fact, most Mediterranean ports have in the last 10 years undertaken major enlargements aiming at increasing their capacity, and their share in container activity.

However, these expectations will depend on the continuation of the present driver of globalisation of markets and perpetuation of European-Asian trade. The development of northern African countries could in fact substitute a share of the global trade which today takes place between Asia and Europe for a far shorter-distance trade between the Mahgreb (North West Africa) and Mashriq (the Eastern Mediterranean region including Israel, Lebanon, Syria etc.), and Europe, which could eventually be transported by land infrastructure. Also, more protectionist legislation for the European internal market could reduce the growth expectations of intercontinental shipping.

- **Growth of the World Middle classes.** Tourism is expected to grow exponentially in Europe, according to World Tourism Organisation (still above 3% yearly up to 2030). Despite the current economic crisis, tourism growth in Europe has recovered well in 2011. In the next decades, the growth of the global middle classes is expected to be approximately 100 million people per year between 2010 and 2050 (Goldman Sachs, 2008), due mostly to the development of emerging BRIC economies. The growth of tourism may increase the numbers of cruise activity in Europe, (e.g. in the Mediterranean and in the Baltic).
- **Climate change** with an increased global temperature the Arctic Sea route could become navigable for significant periods of the year, with shortened travel distances for Japanese and Korean ports and for some Chinese ports. This scenario, however, seems only reasonable in the long term and difficulties for navigation could still be important for large periods of the year, requiring constant ice-breaking activity which would also increase transport costs.

- **More EU integration.** Increasing competitiveness of freight transport and improving the environmental record of maritime transport are the main objectives of the White Paper on Transport (2011). The “motorways of the sea” program is the set of key sea routes between EU Member States which combined with other modes of transport are to provide regular, high-quality services which offer an effective alternative to transporting goods only by road. Administrative barriers to short sea shipping, however, are an important threat to motorways of the sea competitiveness, as they imply substantial delays in freight transport.

## 5.6 Policy Recommendations for Maritime Transport

The transport industry is an important part of the European economy, employing some 10 million people and representing up to 5% of the European GDP. The EC is willing to promote a sector where many European companies are world leaders in infrastructure, logistics, manufacturing of transport equipment and management systems. Transport accounts for about one fourth of GHG emissions in Europe. By 2030, the goal for transport will be to reduce GHG emissions to around 20% below their 2008 level.

Based on current European policies and strategies<sup>35</sup>, the following key issues will need to be addressed in the European maritime transport system:

- **Promoting maritime transport for intra-EU transport.** 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors, according to White Paper. Increased waterborne transport. To meet this goal will also require appropriate infrastructure to be developed.
- **Better integration of ports and hinterlands.** More efficient hinterland connections for ports (*Blue Lanes*). Seaports need to increasingly be connected to the rail freight network and, where possible, to the inland waterway system. Coordinated operation of ports. Market access to ports needs to be further improved. Deployment on TEN-T infrastructure and a gradual integration of modal systems.
- **Development of short-sea shipping.** Simplify the formalities for ships travelling between EU ports. Fewer barriers to short distance maritime transport; enhanced administrative procedures; reduction of administrative burden. *Blue Belt* in the seas around Europe for free maritime movement. These conditions are necessary to promote the development of motorways of the sea, the maritime dimension of the TEN-T core network.

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<sup>35</sup> EC (2011); *White Paper - Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*, COM(2011)144, March 2011

- **Inland water-way transport.** A suitable framework must be established to take care of European tasks for inland waterway transport. To remove barriers that prevent increased use of IWW system. Technological systems like RIS (*River Information System*) to be implemented for integrated management of the IWW.
- **Environment.** Promoting high global maritime standards, modern vessels and cleaner fuels for shipping. Improving the environmental record of shipping by both technology and better fuels and operations: overall, the EU CO2 emissions from maritime transport should be cut by 40% (if feasible 50%) by 2050 compared to 2005 levels. Internalisation of environmental costs.
- **Safety.** Passenger ship safety needs to be proactively addressed and modernised. Enhanced vessel traffic monitoring (SafeSeaNet and RIS) to supporting maritime and river transport safety and security, as well as the protection of the environment from ship-source pollution.
- **Security.** A risk based approach to the security of cargo originating outside the EU should be considered. Common information sharing environment for the surveillance of the EU maritime domain. Increase the level of security along the supply chain without impeding the free flow of trade. 'End-to-end' security certificates should be considered taking into account existing schemes.

For the purposes of monitoring and information gathering to support territorial cohesion, the following are subjects of interest for the transport theme. There is a relatively large and specialised public data sources for maritime transport, however there are a number of gaps and not all of above information is available.

While usually, data based on ports is extensive and relatively homogeneous all around Europe, the main data gaps are related to the origin and destination of maritime flows, as well as to the available services and costs, and the types of freight being carried. Needless to say, as commercial ports are privately managed, and transport operators are multinational private corporations, most of this information has commercial value and is restricted. Also, data on the economic impacts of shipping or cruise activity on local economies is not available.

The following list summarises topics which could be of interest for further data monitoring among European institutions.

- Data on flows: shipping routes, cruise routes (application of GPS technologies).
- Data on SSS at port level, with origin/destination information
- Data traffics on neighbouring countries (Mediterranean + Baltic + Black Sea)
- Data on port hinterlands (keeping track of the full freight route: Foreland - European port - NUTS3 of hinterland)
- Data on freight type at port level (crossing of Eurostat and COMEXT databases)
- Economic data on shipping activity

## 6. Energy, Cables and Pipelines

### Introduction

European seas are an important source of the EU's conventional energy resources thanks to the significant offshore reserves of oil and gas, especially in the North Sea. However, these resources are in decline, so that the EU is becoming increasingly reliant on energy imports; this is raising growing concerns about energy security and hence the need to find new resources and diversify supply.

This and the EU's commitment to reduction of greenhouse gas emissions provide the underlying rationale of recently formulated EU energy policy. Policy is also directed to the development of transnational energy and communication networks. European seas are being recognised as an important focus for the achievement of these goals, especially through: the large-scale deployment of offshore wind energy, to be followed in the longer term by other marine renewables; the development of transnational marine grid systems; and potential carbon storage under the seabed.

The seas will also play a continuing role in current patterns of energy production and distribution, with ongoing exploitation of and exploration for hydrocarbon reserves. Conventional resources will increasingly be transported by ship and via expanding pipeline networks stretching across land and sea. Similarly, the seabed will continue to host the growing network of submarine telecommunications cables.

The changing pattern of European seas with regard to energy production and supply and telecommunications also has important implications for land-sea interactions. The shift from hydrocarbons to offshore renewables and the growth of energy and communication networks are leading to new infrastructure and port requirements, manufacturing demands and employment opportunities that favour coastal development and the creation of specialised industrial clusters.

### 6.1 Key Issues for European Energy

The energy sector has undergone radical transformation over the last two decades or so, with state-owned monopolies giving way to privatised, fragmented and competitive structures under state regulation. In this climate of economic liberalisation, industrial and business organisations and associations are playing an important role in governance arrangements, pressing for policy initiatives and being key agents of change in the restructuring of energy systems. Policy initiatives are therefore enmeshed with technological and financial possibilities for the sector as mediated by the industry. Similar technological and business-oriented advances have driven the telecommunications sector.

Energy has been a concern of the EU since its beginnings, having its roots partly in the 1951 *European Coal and Steel Community* and the 1957 *European Atomic Energy Community*. However, a comprehensive energy policy has only taken shape in recent years. Building on

previous policy initiatives<sup>36</sup>, the *Energy Policy for Europe*, led by *DG ENER*, was agreed in 2007<sup>37</sup>, reviewed in 2010<sup>38</sup> and affirmed in 2011 with the adoption of the *Energy Roadmap 2050* to speed implementation<sup>39</sup>. Commitment to renewable energy was further emphasised in 2012<sup>40</sup>. A raft of legislation has been brought in to implement various aspects of energy policy<sup>41</sup>.

Energy policy establishes three overarching aims: competitiveness, sustainability and security of supply. The strategy identifies several areas of action, nearly all of which impact potentially on European seas and land-sea interactions. These are: reduction in greenhouse gas emissions; reduced reliance on fossil fuels and expansion of renewables; increased energy efficiency; improving energy relations with neighbouring territories; expanding network connections; development of technology; and enabling market competition to complete the internal energy market (being extended to some adjoining countries). The development of offshore wind energy capacity and transnational offshore grid systems have been specifically identified as key elements of the strategy.

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<sup>36</sup> *Energy for the Future: Renewable Sources of Energy*, COM 599, 1997; *A European Strategy for Sustainable, Competitive and Secure Energy*, COM 105, 2006

<sup>37</sup> *An Energy Policy for Europe*, COM 1, 2007

<sup>38</sup> *Energy 2020: A Strategy for Competitive, Sustainable and Secure Energy*, COM 639, 2010

<sup>39</sup> *Energy Roadmap 2050*, COM 885, 2011

<sup>40</sup> *Renewable Energy: a Major Player in the European Energy Market*, COM 271, 2012

<sup>41</sup> *Overview of the Secondary EU Legislation (Directives and Regulations) that falls under the Legislative Competence of DG ENER and that is Currently in Force*, [http://ec.europa.eu/energy/doc/energy\\_legislation\\_by\\_policy\\_areas.pdf](http://ec.europa.eu/energy/doc/energy_legislation_by_policy_areas.pdf)



The lead on energy policy has been taken by *DG ENER*, but is also being incorporated into the emerging policy on territorial cohesion (*DG REGIO*)<sup>42</sup>. It is also closely linked to climate policy (*DG CLIMA*), and offshore energy policy is linked to the integrated maritime strategy (*DG MARE*)<sup>43</sup>. Table 12 provides a brief summary of European Directorates whose activities have the greatest impact on energy policy.

**Table 12** European Directorates relevant to energy issues

DG Energy	General Areas of Responsibility	Energy policy, hydrocarbons, renewable energy, nuclear energy, energy and electricity infrastructure, energy efficiency, energy technology and innovation.
	Relevant Areas for Seas	Energy policy, hydrocarbons, renewable energy, energy and electricity infrastructure, energy technology and innovation.
DG Climate Action	Relevant Area for Marine Energy	International and EU climate policy, carbon capture and storage, emissions trading.
DG Regio	Relevant Area for Marine Energy	Incorporation of energy policy into territorial cohesion policy.
DG Mare	Relevant Area for Marine Energy	Integration of marine energy, maritime clusters.

The key messages to emerge from the policy framework that are most relevant to European seas are as follows.

1. Climate and resource challenges require drastic action; the EU is committed to sustainable growth and low consumption based on a more secure, competitive and sustainable energy supply. The '20-20-20' targets demand a 20% reduction in greenhouse gas emissions, 20% of primary energy supply to come from renewable sources and a 20% reduction in primary energy use by 2020. The *2050 Roadmap* affirms this commitment and sets out priority actions.
2. Reliance on imported fossil fuels must be reduced, because of their contribution to climate change and the uncertainties of supply and prices which can threaten the competitiveness of regions heavily dependent on imports.

<sup>42</sup> *Green Paper on Territorial Cohesion: Turning Territorial Diversity into Strength*, COM 616, 2008; *Investing in Europe's Future: 5th Report on Economic, Social and Territorial Cohesion*, Report from the Commission, 2010; *Territorial Agenda of the European Union 2020: Towards an Inclusive, Smart and Sustainable Europe of Diverse Regions*, 2011

<sup>43</sup> *An Integrated Maritime Policy for the European Union*, COM 574, 2007

3. Sustainable energy solutions are needed, especially the expansion of renewable and low carbon energy, which can support diversification of supply and long term solutions (especially in isolated regions). Binding national renewable targets have been set, though this requires differential efforts from member states. Renewable energy production also presents development opportunities.
4. Wind and solar energy are the renewables with the greatest potential, though with strong regional variations; the greater wind potential is along the Atlantic and North Sea coasts, some Mediterranean islands and the southern Baltic.
5. Europe's seas can play an important role in renewable energy supply. Offshore wind energy has an enormous potential, and member states are encouraged to turn to this where possible. Investment, research and technological development into wind energy and other marine renewables are called for.
6. The internal gas and electricity markets should be completed and extended to adjoining territories. External energy relations should also be improved with neighbouring territories, including Russia and North Africa. These objectives should be supported by the development of infrastructure.
7. Trans-European energy networks should be developed to improve connectivity, especially with the remaining isolated energy markets in Europe.
8. Gas connections should be developed, including a southern gas corridor from the Caspian and Middle Eastern regions, and use should be made of liquefied natural gas.
9. Electricity interconnections should be developed, working towards smart and upgraded networks and a European supergrid. Offshore grid systems should interconnect northwest Europe's networks and North Sea wind energy.
10. The potential for carbon capture and storage should be developed.
11. Technological development is being pursued through the *Strategic Energy Technology Plan*. Current initiatives include supporting the development of offshore wind turbines, carbon capture and storage systems, and a European transmission network.
12. Market-based instruments should be used to facilitate the transition to sustainable energy systems.

Many of these priorities are in line with wider international trends and strategies, especially those of organisations promoting structural change in the sector. A number of international and regional bodies have formed to represent and coordinate the energy industry. They have responded to particular energy issues, such as the oil crises of the 1970s, though have more recently turned their attention to the challenges of energy security and climate change, with a growing emphasis on the need to shift to more sustainable systems of energy production and consumption. For example, the *International Energy Agency* is advising its

member countries on reliable, affordable and clean energy systems<sup>44</sup>, the *World Energy Council* is promoting the sustainable supply and use of energy<sup>45</sup> and the *United Nations Environment Programme* has set out climate change and renewable energy as a priority area<sup>46</sup>.

At a European level, the European Energy Forum acts as an EU forum for debate on energy issues, while industry-led organisations are backing many of the above policy priorities. For example, the *European Wind Energy Association* is actively promoting the expansion of wind energy capacity onshore and offshore<sup>47</sup>, and *Friends of the Supergrid* are working for the development of a Europe-wide electricity transmission network, particularly with the connection of offshore renewables to points of demand in mind<sup>48</sup>. Also, in the marine context, regional sea organisations are giving their backing to some of these priorities. Finally, the *European Islands Network on Energy and Environment* is working for the uptake of sustainable energy systems on smaller European islands.

Risks and opportunities associated with this policy framework are summarised in Table 13 below.

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<sup>44</sup> [www.iea.org](http://www.iea.org)

<sup>45</sup> [www.worldenergy.org](http://www.worldenergy.org)

<sup>46</sup> [www.unep.org](http://www.unep.org)

<sup>47</sup> [www.ewea.org](http://www.ewea.org)

<sup>48</sup> [www.friendsofthesupergrid.eu](http://www.friendsofthesupergrid.eu)

**Table 13** Opportunities and risks for energy development

OPPORTUNITIES	RISKS
Continued exploitation of fossil fuels, including exploration and production in new areas.	Environmental impacts of oil and gas exploration and exploitation, continuing reliance on declining resources and continued carbon emissions.
Reduction of reliance on fossil fuels, including their import and associated carbon emissions.	
Large-scale expansion of offshore renewable sources of energy, especially wind power in the short- and mid-term. Possibilities for synergies with other marine uses.	Environmental impacts of offshore renewables infrastructure construction and operation and spatial restrictions imposed by infrastructure, which is generally of a highly dispersed nature.
Integration and expansion of electricity networks within and beyond Europe, by development of transmission grid systems, including across sea areas.	Environmental impacts of grid systems and restrictions on seabed use.
New gas supply routes from beyond Europe via major new pipelines and shipping, and integration of gas supply networks within Europe.	Increased reliance on gas imports to Europe. Environmental impacts of pipeline systems and restrictions on seabed use.
Use of exhausted oil and gas fields and other seabed geological strata for carbon storage.	Uncertain technology and effectiveness of carbon storage.
Continued expansion of telecommunications networks making use of seabed cables within and beyond Europe.	Environmental impacts of cable networks and restrictions on seabed use.
Onshore economic growth and employment associated with new offshore industries.	Uneven socio-economic benefits and environmental impacts of onshore development.

## 6.2 Energy, Cables and Pipelines: Data Availability

In order to address the issues outlined above, data was sought under the following headings.

1. The current and possible future contribution of European Seas to conventional forms of energy supply:
  - a. the distribution of offshore oil and gas facilities;
  - b. levels and trends of offshore production;

- c. patterns of offshore exploration for oil and gas.
2. The potential contribution of European Seas to the expansion of renewable sources of energy to providing 20% of primary energy supply by 2020:
    - a. the distribution of marine renewable resources;
    - b. development of marine renewable energy, especially wind, including location of offshore wind farm sites and levels of production;
    - c. the development opportunities presented by the expansion of marine renewables;
  3. The contribution of existing and potential marine energy networks to the completion and extension of gas and electricity networks, and to improving connectivity with surrounding regions:
    - a. the distribution and capacity of sea-bed pipelines and cables;
    - b. the potential for expanding marine gas networks;
    - c. the potential for developing marine electricity grids, and their integration with terrestrial grids.
  4. The potential of European Seas to contribute to carbon capture and long-term storage:
    - a. the location of potential marine sites for carbon storage.

Over the course of the ESaTDOR project a pragmatic approach has been taken to the collection of data to illustrate key trends in maritime activities and to facilitate mapping and the development of a maritime region typology. As part of work carried out on the Inception Report, an initial attempt was made to establish potential sources of useful information for each regional sea and also on a thematic basis (covering environment, energy, cables and pipelines, economic use and transport). This “long list” of datasets was then refined on the basis of geographical coverage and scale, spatial reference format and availability of most up to date or time series data across the ESPON space.

These criteria proved to be particularly restrictive in relation to the Energy etc. theme. For example, statistics on energy production and consumption are available from a number of sources (e.g. International Energy Agency, OECD, Eurostat), but these are generally provided only at a national level; furthermore, there is no disaggregation into onshore and offshore figures, such as for oil production. Also, although relevant spatial information is available, this is frequently only provided in a map form which is not GIS-compatible, or may only be made available in this form on a commercial basis, placing it beyond the resources of the project. Where GIS-compatible data is publicly available, it generally only covers restricted geographical areas, such as for the OPSAR region, thus failing to provide the European scale needed for the project.

Nonetheless, the following datasets listed in Table 14 were found to meet the above criteria. Moreover, they provide some coverage of the main data needs listed above, with an indication of spatial patterns relating to conventional and renewable offshore sources of energy and to cable networks. These datasets were the ones used as the basis of original mapping for the Energy etc. theme. In order to supplement this information, other sources have also been drawn upon below, to illustrate in more detail some of the issues under

discussion. These are generally geographically more restricted, covering particular sea basins, or are maps for which GIS-compatible formats are not available.

**Table 14** Datasets selected for the Energy etc. theme

Name of dataset	Level of coverage	Year	Time series Y/N (and range)	Include in Sea Profiles Y/N	Include in Typology Y/N	Source
Oil and gas employment	Europe	2009	N	Y	Y	European Cluster Observatory
Oil and gas rigs	Europe	2008	N	Y	N	National Center for Ecological Analysis and Synthesis
Offshore wind farm location and capacity	Europe	2010	N	Y	N	4c Offshore/ LORC Knowledge
Wave power potential	Europe	2008	N	Y	N	Fugro OCEANOR, Worldwaves
Seabed cables (capacity and length)	Europe	2012	N	Y	N	Greg's cable maps
Cable influence	Europe	2008	N	N	Y	Eurostat

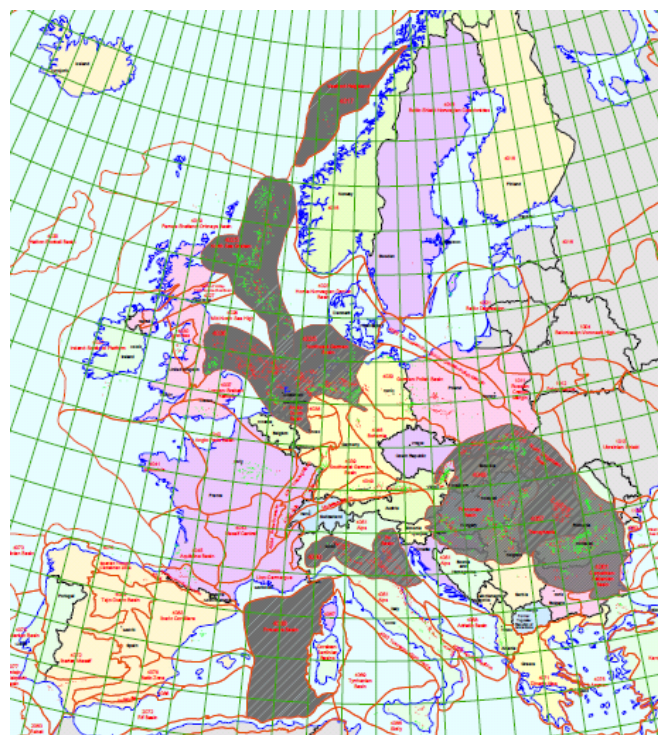
### 6.3 Baseline conditions

#### Oil and Gas

By far the richest concentration of Europe's hydrocarbon reserves are located in geological strata under the seabed, especially in the North Sea. Although other reserves are to be found elsewhere (Figure 12), the continental shelf sedimentary layers of the North Sea have provided an unequalled source of oil and gas over the last 40 years. Exploitation of oil is concentrated mostly in northern sections in Norwegian and UK waters, and of gas to the south, shared mainly between the Netherlands and the UK, as demonstrated by the distribution of oil and gas rigs and the extensive network of pipelines connecting the fields to the surrounding points of demand (Figure 13). Relatively minor, though locally important, levels of oil and gas production are to be found elsewhere in European seas, such as in the Irish, Black and Baltic Seas and the central Mediterranean (Map 32).

The growth of the sector has produced significant economic and employment benefits for the producing countries, with concentrations of oil and gas-related employment in certain coastal areas, such as in Scotland and Norway (see Map 16 in Chapter 3, “Employment in the oil and gas sector, 2009 (as a percentage of total employment)” and Map 33). Some other concentrations are associated with production in adjoining areas, such as Danish involvement in North Sea production. Other concentrations, such as in Italy and Romania, are partly attributable to their relatively low levels of offshore production, though these employment figures also reflect other components of the industry, such as onshore production and oil and gas processing activities. Estonia benefits from involvement in Russian production.

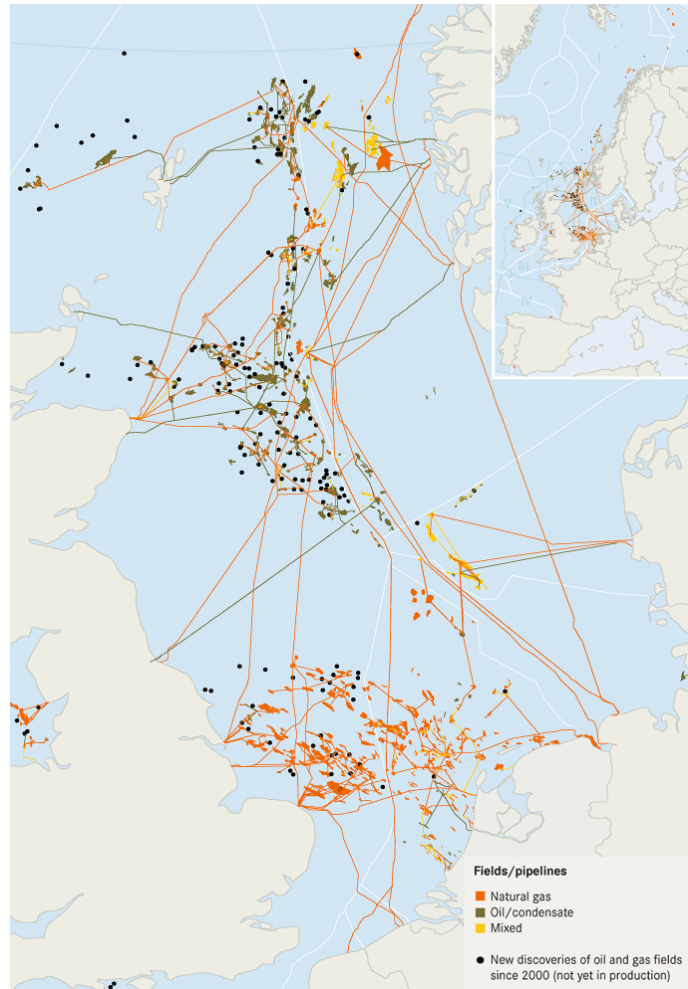
**Figure 12** European oil and gas fields<sup>49</sup>



As far as the North Sea fields are concerned, oil and gas has provided a significant share of the energy mix for the major producer nations mentioned, allowing energy self-sufficiency for a period. However, levels of production are declining, with the UK having passed peak oil production in 1999 and now relying on hydrocarbon imports once more. Norway is likely to follow suite in the coming decade. Exploration for new reserves continues, and new reserves are being opened up, but not at a sufficient rate to compensate for the drop in production elsewhere. Moreover, newly discovered reserves are smaller, leading to a proportionally higher number of installations at sea. Small reserves are also being discovered in other sea areas, such as the southern Baltic, the eastern Mediterranean and the western Black Sea.

<sup>49</sup> <http://pubs.usgs.gov/of/1997/ofr-97-470/OF97-470/euromap.pdf>

Figure 13 Oil and gas fields and pipelines in the North Sea <sup>50</sup>

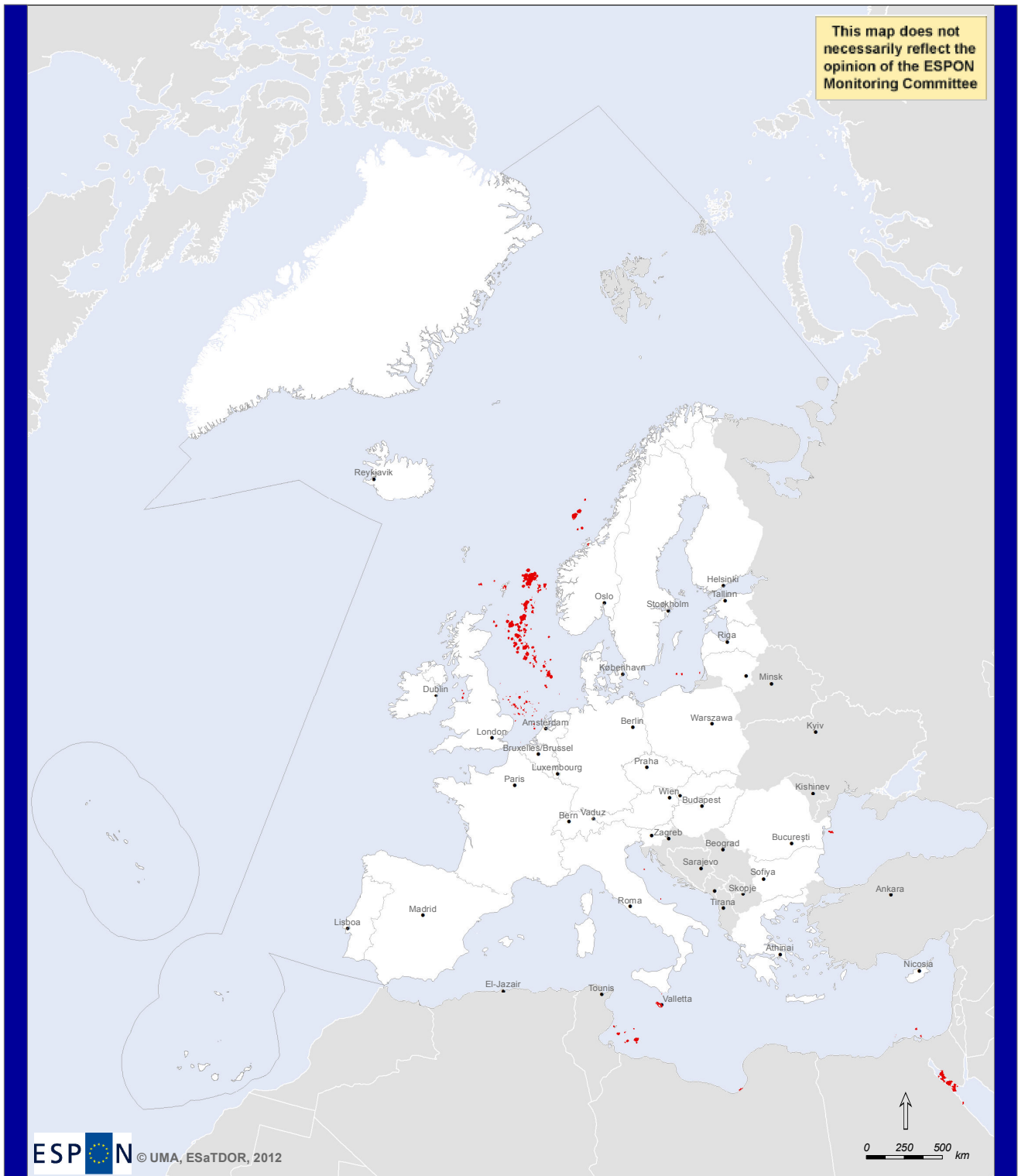


Europe's principal hydrocarbon reserve is therefore in decline, and Europe as a whole will have greater reliance on supplies of oil and gas from beyond its borders. Hence Europe's energy strategy is directed towards reducing this reliance through developing alternative forms of energy and greater energy efficiency.

<sup>50</sup> [http://qsr2010.ospar.org/en/ch07\\_01.html](http://qsr2010.ospar.org/en/ch07_01.html)




# Location of Oil and Gas Rigs




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*Thematic data: National Center for Ecological Analysis and Synthesis based on data from NOAA's National Geophysical Data Center, 2008; HELCOM and LOTOS Petrobaltic S.A., 2011.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.*

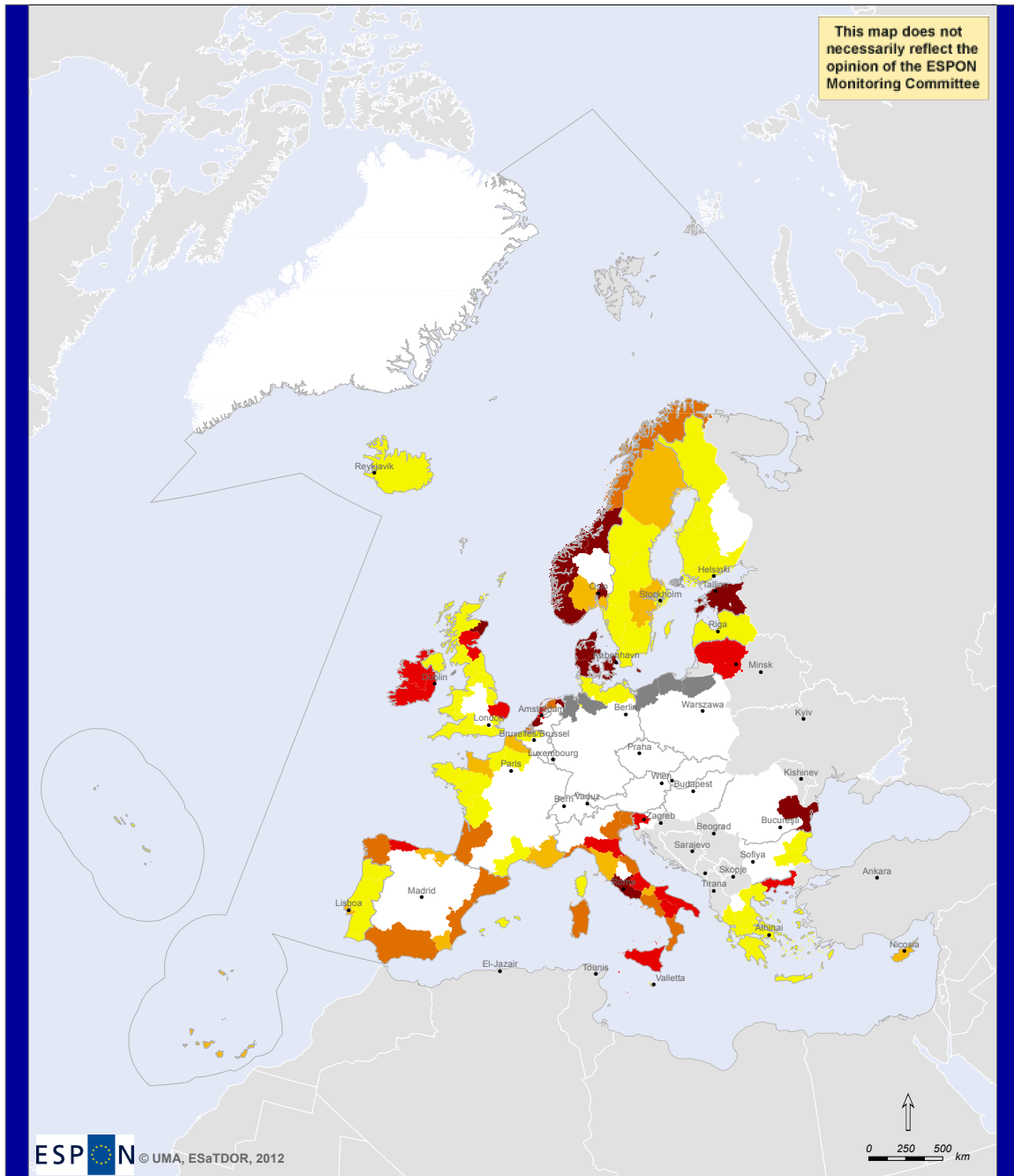
## Oil and gas rigs

 Oil and gas rigs

This map is produced using data on the location of stable lights at night (the Stable Lights of the World dataset) of a NOAA program with ephemeral sources of lights (e.g. fires, mobile structures) removed. Data represents presence/absence of light in a resolution of 30 arc-second for 2003. This has been integrated into a 10x10km grid based on the presence or absence of light in every cell, which does not mean that the whole cell is occupied by oil or gas rigs.

## Map 32 Location of oil and gas rigs in European Seas

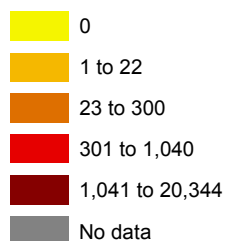
# Number Employed in the Oil and Gas Sector, 2009




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Thematic data: Economic Use, European Cluster Observatory, 2011.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Employment in Oil and Gas (Number of employees)



**Map 33** Number of employees in the oil and gas sector, 2009

The only major untapped hydrocarbon reserves in Europe are thought to lie in Arctic waters, now being made more accessible by retreat of the polar ice cap. Potentially a quarter of the world's undiscovered reserves are to be found in the ocean, mostly in the Russian section. However, considerable reserves are also likely to be found in Norwegian waters, especially in the Barents Sea. Opening up these resources will however present significant environmental, technical and political challenges, and is not a visible focus of European energy policy.

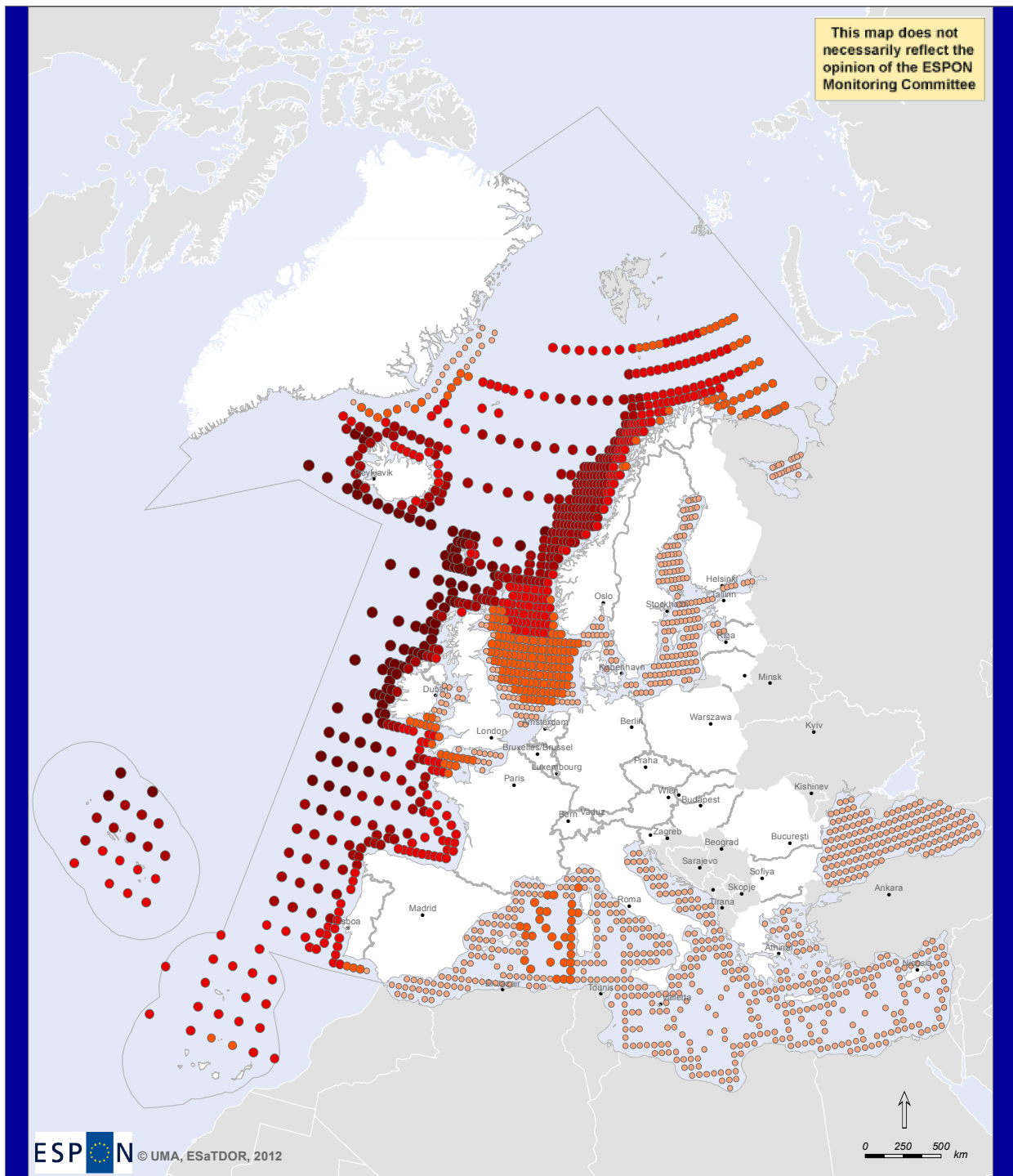
It should also be noted that the presence of oil and gas rigs represents a significant industrialisation of the sea, and also acts as a spatial barrier to other maritime uses, not just because of the infrastructure itself, but also because of surrounding exclusion zones. The industry also generates considerable movement of vessels and helicopters and creates offshore communities on the rigs; the character of parts of the North Sea in particular has been strongly influenced by these factors.

### **Marine Renewables**

Europe's seas hold major potential for the production of renewable energy, by means of wind, wave, current and tidal power. However, the distribution of this potential is far from evenly spread throughout European waters, and the technology needed to tap these different reserves is at varying stages of maturity. Nonetheless, the development of marine renewables, especially wind power in the immediate future, is a major priority of European energy policy.

A considerable amount of research effort is currently going into assessing the energy potential of Europe's seas. For example, the *FP7 ORECCA* project has mapped the likely energy potential of wave, wind and tidal power, as illustrated firstly by Map 34. This shows that western coastal areas fully exposed to the Atlantic have the greatest capacity to develop wave power, followed by open areas in the North Sea and Mediterranean; however, enclosed sea areas have relatively little potential in this regard. Secondly, wind power is also highly variable in its distribution; north western Atlantic areas exposed to frequent weather fronts have the strongest average wind speeds, followed by other western Atlantic areas (Figure 14), the North Sea and southern Baltic (Figure 15). Overall, the Mediterranean and Black Sea have little potential for exploiting wind energy, though even here, localised pockets of high potential exist, such as in the Gulf of Lion to the south of France (Figure 16). Third, effective tidal power is restricted to channels and estuaries where ocean conditions and other physical factors favour strong tidal surges. The UK's and northern French seas hold the greatest potential in this regard, with other localised opportunities such as in the Straits of Gibraltar and Messina (Figure 17). Finally, the possibility of combining marine renewable technologies is being considered, in order to maximise the use of the space, infrastructure and services needed, which could make marine renewables more viable economically and encourage the growth of industrial clusters. The optimum locations for multiple development of this kind are likely to be in the Atlantic region, as indicated in Figure 18.

# Wave Power Potential



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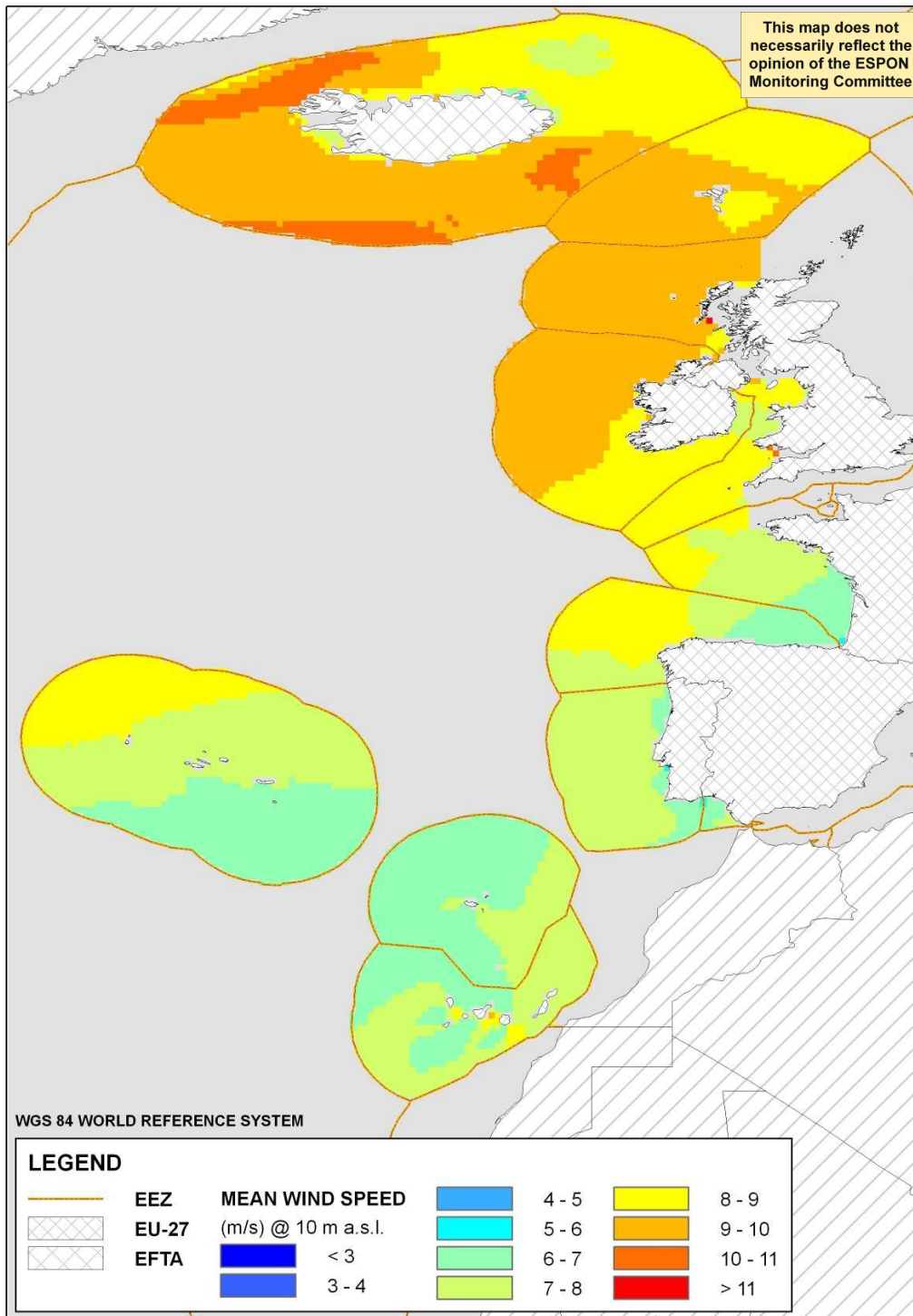
Thematic data: Fugro OCEANOR, Worldwaves, 2008.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Wave power potential (KW/m)

- 0.5 to 11.0
- 11.1 to 24.3
- 24.4 to 39.0
- 39.1 to 55.9
- 56.0 to 81.6

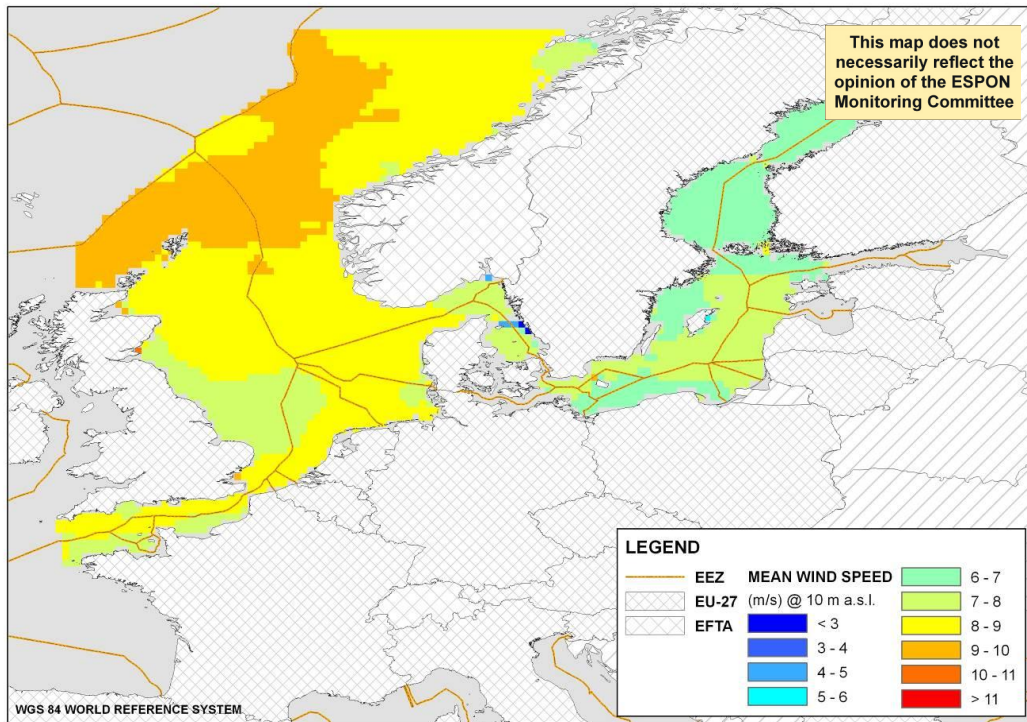
Map 34 Wave power potential

**Figure 14** Average wind speeds for the Atlantic<sup>51</sup>

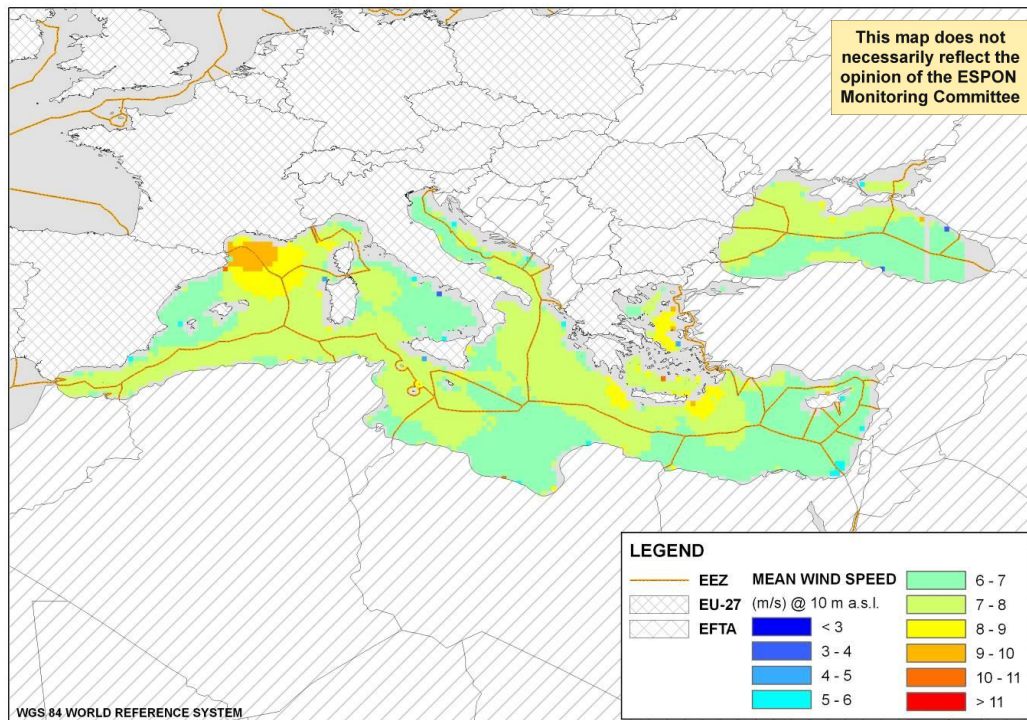


<sup>51</sup> P 24

**Figure 15** Average wind speeds for the North and Baltic Seas<sup>52</sup>



**Figure 16** Average wind speeds for the Mediterranean and Black Seas<sup>53</sup>



NOTE: Figures 14 to 16 were produced by the ORECCA FP7 Project. The Exclusive Economic Zone boundaries shown are based on median lines and not all necessarily agreed by Member States.

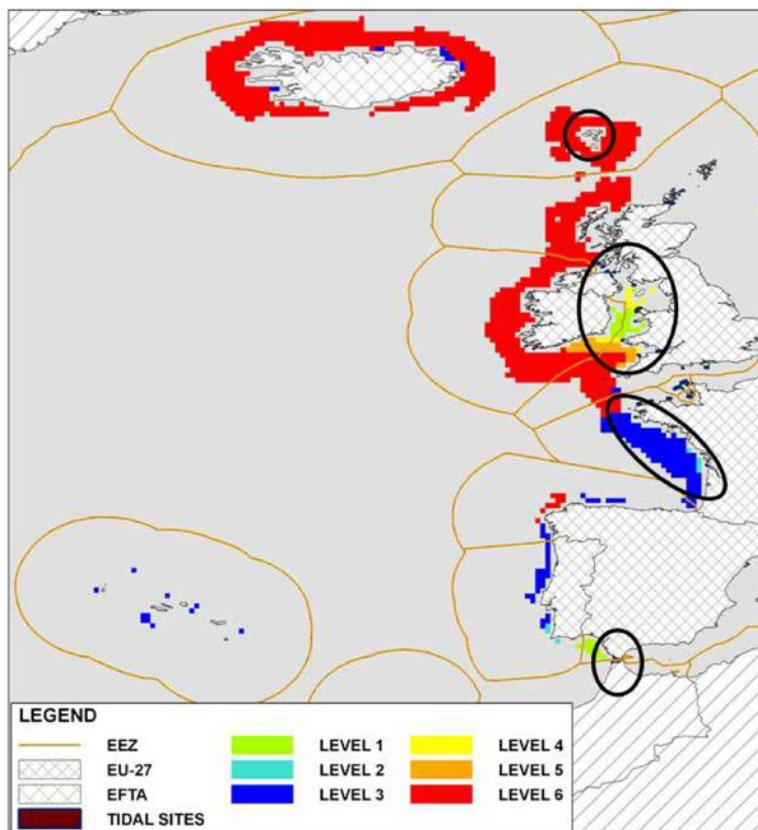
<sup>52</sup> ORECCA (2011) Resource For Offshore Renewable Energy Projects in Data and GIS Tool Europe, p 22: [http://www.orecca.eu/c/document\\_library/get\\_file?uuid=757326c6-102f-4dd3-8790-916755694103&groupId=10129](http://www.orecca.eu/c/document_library/get_file?uuid=757326c6-102f-4dd3-8790-916755694103&groupId=10129)

<sup>53</sup> Ibid, p 23

Figure 17 Tidal stream potential<sup>54</sup>



Figure 18 Combined marine renewable potential (Wind, Wave and Tidal Energy) for the Atlantic<sup>55</sup>



<sup>54</sup> <http://www.aquaret.com/images/stories/aquaret/Downloads/ResourceMaps/tidal%20stream1.jpg>

<sup>55</sup> Ibid, p 57

However, the actual development of marine renewables is dependent upon not only physical resources, but also a range of other factors. Firstly, the ability to apply the technology remains a limiting factor. So far, only offshore wind power technology has reached a sufficient stage of maturity to be developed on a commercial scale. This is partly because it has been able to build upon the experience of wind power on land, and also because of the relatively straightforward mechanism needed for transferring wind power to electricity, making use of rotating blades erected on towers. Wave energy is much more difficult to capture, and technological development remains at an experimental stage. The take-up of tidal energy is also more challenging, especially as the physical opportunities for development are much more limited and are frequently in sensitive coastal or estuarine locations. Secondly, the areas of greatest physical potential are not always the most economically or technologically viable for development. For example, many of the areas of greatest wind power are in water that is too deep for fixed foundations, or at a considerable distance from land, making cable connections to land extremely long. Also, the nearest land-fall may still be distant from an existing grid connection and from points of major electricity demand. Hence many of the areas of greatest potential in the Atlantic and northern North Sea shown in Figures 19 and 20 currently remain out of reach.

Actual offshore wind farm development to date is indicated in Maps 35 and 36. These show that development is centred on the southern North Sea, with an arc of wind farms stretching down the eastern coast of England and up the Belgian, Dutch, German and Danish coasts. These include a number of large-scale schemes at various stages of planning, construction and operation, especially in south-east English waters, which will have a capacity approaching that of many conventional power stations. A second cluster is found in the Irish Sea, and a third, of smaller-scale schemes, in the south western Baltic; a couple of other minor schemes are found in outlying areas. Together, these farms represent not only the vast bulk of Europe's total of marine renewable energy so far, but the largest concentration of marine renewables in the world. These have nearly all been constructed since 2000, and had a combined capacity of over 4,300 MW in mid 2012. The actual distribution of wind farms does not therefore reflect the areas of greatest physical potential, but is concentrated in areas that are technically and economically most feasible. They are all located in relatively shallow shelf waters, where foundations can be constructed more easily, relatively close to the coast, to minimise the length of cable connections, and near to existing grid infrastructure connecting to areas of electricity demand. A further constraint is the lack of agreed EEZs, especially in the Mediterranean, limiting potential offshore wind energy development to coastal waters.



Moreover, there are ambitious national plans in place to expand the implementation of wind energy on a considerable scale over the near future (Figure 19). For example, the UK envisages the development of up to 26 GW of capacity by 2020, by extending the capture of wind energy into larger zones, further out to sea, especially in the North Sea<sup>56</sup>. This is in line with the Commission's policy drive to maximise the potential of wind energy, as described above. There are also plans for more modest expansion in other areas, such as the Baltic, where offshore wind is seen as making a significant contribution to national renewable energy targets (Figure 20). A small number of pilot projects are also underway in southern European waters. Growth in wind energy production will also be encouraged by technological advances, with ever-larger turbines being developed and trials underway with turbines designed for deep-sea application, such as the Beatrice project in Scottish waters, which will enable wind resources to be captured well beyond the current areas of activity.

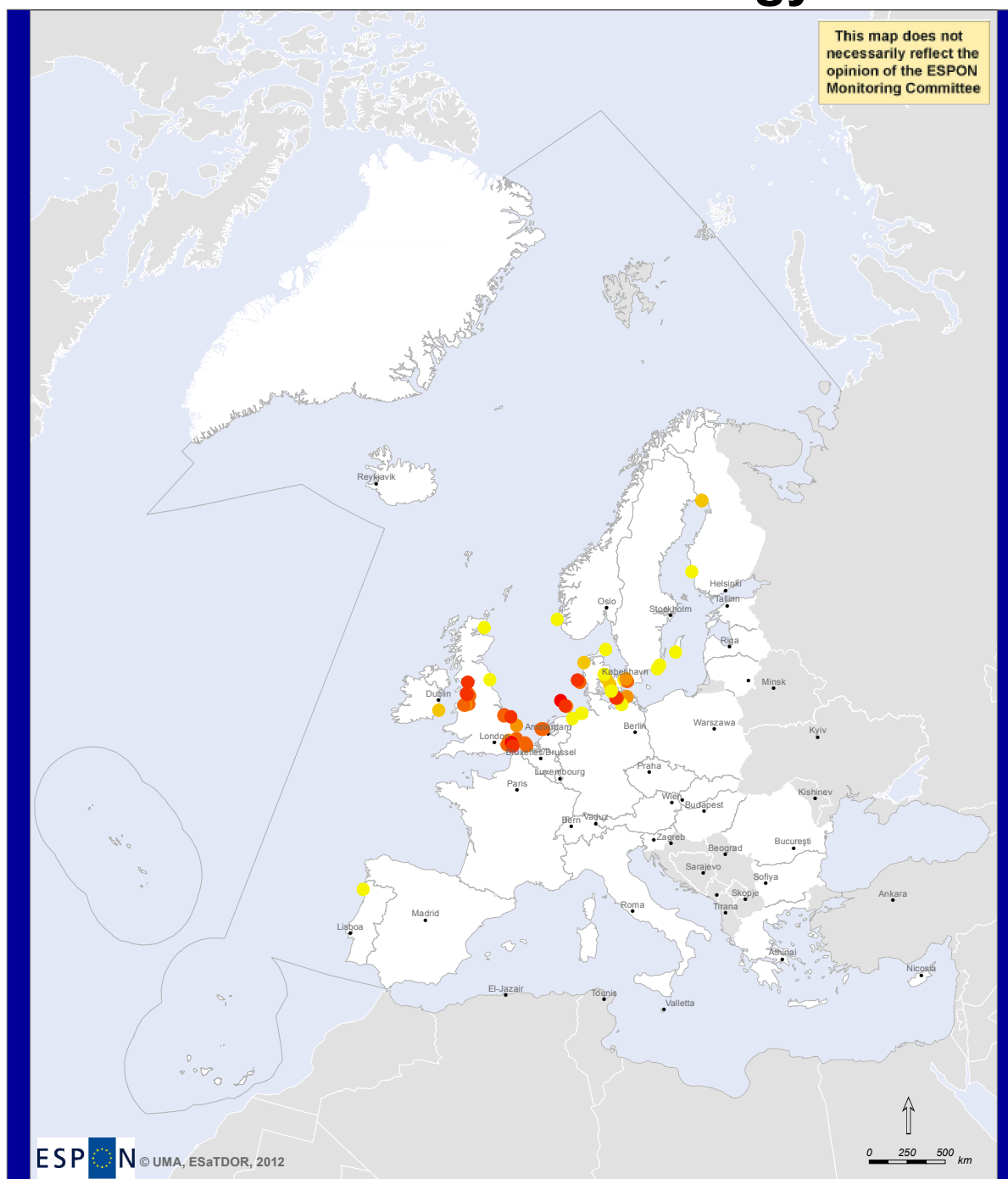
Other marine renewables remain at a much earlier stage of development. France's La Rance tidal power station, completed in 1966, remains the only commercial scheme of its kind in Europe, whilst no wave energy schemes are operational beyond a trial stage. Research efforts are, nonetheless, ongoing; for example, the *Pelamis* wave energy convertor has been trialled in Scottish and Portuguese waters<sup>57</sup>.

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<sup>56</sup> [www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2167-uk-renewable-energy-roadmap.pdf](http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2167-uk-renewable-energy-roadmap.pdf)

<sup>57</sup> [www.pelamiswave.com](http://www.pelamiswave.com)

# Offshore Wind Energy




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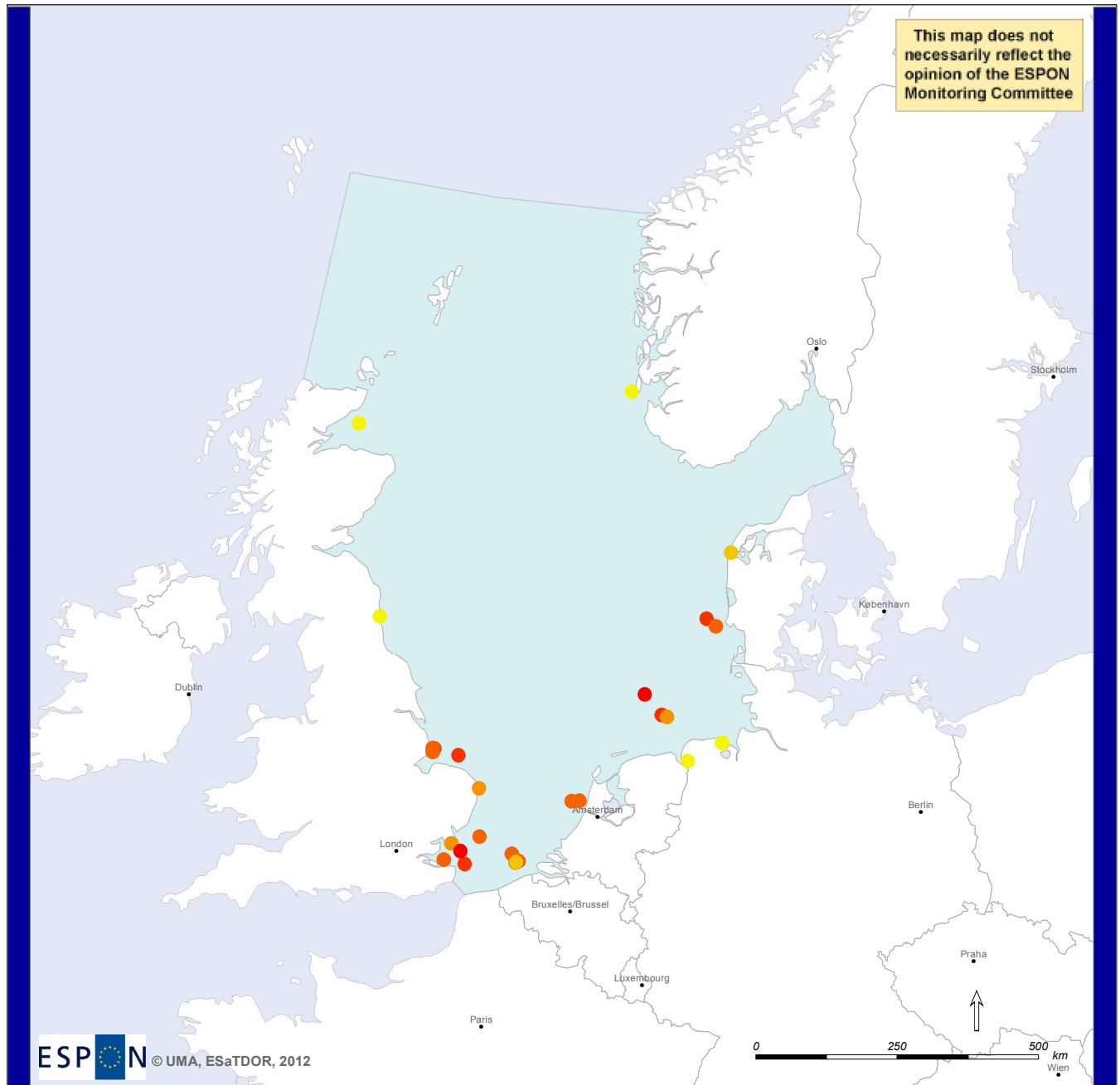
Thematic data: 4c Offshore/LORC Knowledge.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Installed offshore wind energy capacity ( $W/m^2$ )

- 0 to 10.5
- 10.6 to 30
- 30.1 to 60
- 60.1 to 165
- 166 to 317
- 318 to 630

**Map 35** Existing wind farm generation capacity in European seas ( $Watts/m^2$ )

# Offshore Wind Energy in the North Sea



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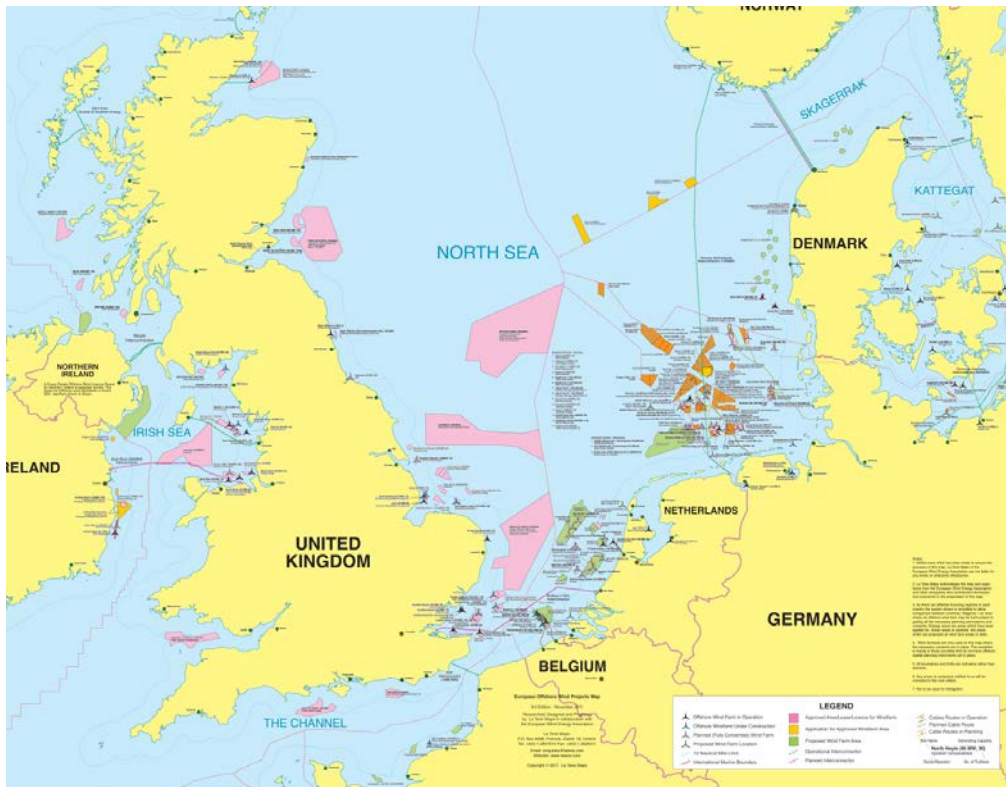
Thematic data: 4c Offshore/LORC Knowledge.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Installed offshore wind energy capacity (W/m<sup>2</sup>)

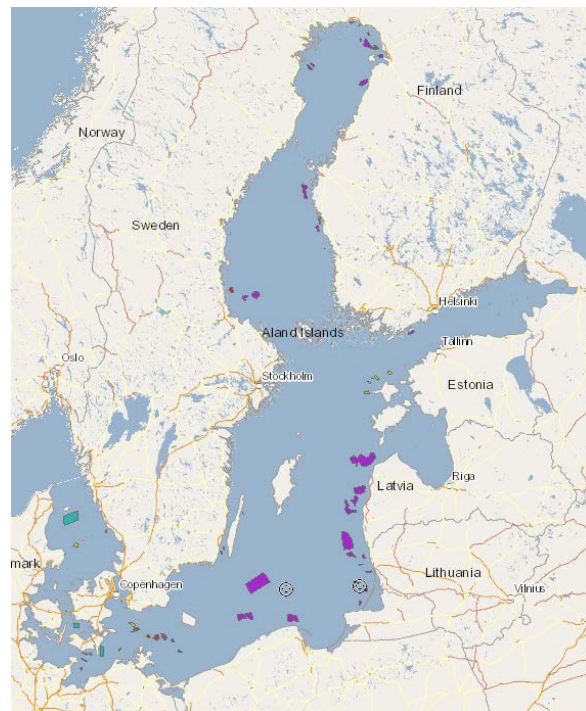
- 0 to 10.5
- 10.6 to 30
- 30.1 to 60
- 60.1 to 165
- 166 to 317
- 318 to 630

**Map 36** Existing wind farm generation capacity in the North Sea (Watts/m<sup>2</sup>)

**Figure 19** Wind farm plans for the North Sea and surrounding areas, 2011<sup>58</sup>



**Figure 20** Planned offshore wind Farms in the Baltic Sea



<sup>58</sup> [http://www.ewea.org/fileadmin/ewea\\_documents/images/graphs\\_maps\\_tables/EuOffwind2011.pdf](http://www.ewea.org/fileadmin/ewea_documents/images/graphs_maps_tables/EuOffwind2011.pdf)

## Networks

Three marine network systems are to be found in Europe's seas, all interlinking with terrestrial systems.

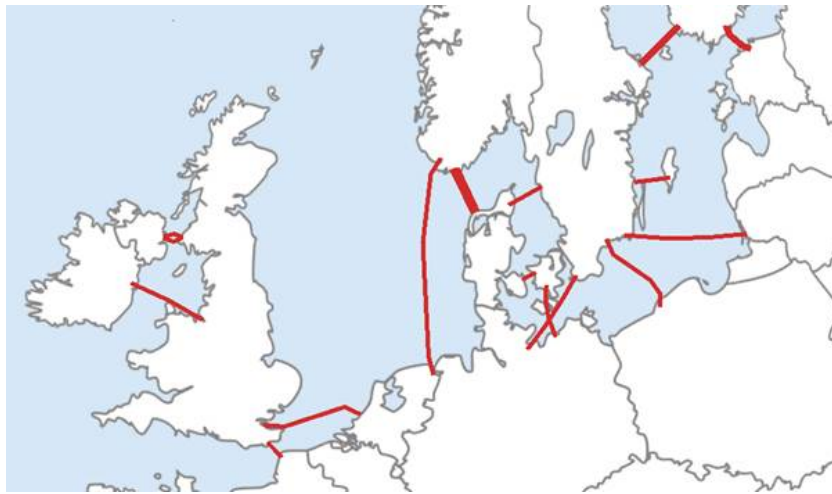
Firstly, electricity cables. There are two types of cable. The first of these are underwater sections of predominantly terrestrial grid systems. These may simply cross waters within a national grid system, such as between the Danish islands, or more importantly may interconnect separate national systems, such as between Sweden and Finland; in the latter case, the cables are used to transfer power from one country's electricity system to another at a time of surplus. The current pattern of these cables for northern Europe is shown in Figure 21. This illustrates the typically bilateral nature of most interconnections. The second type of cable are those now being laid to connect offshore sources of electricity supply, ie. wind farms, to terrestrial grid systems. Most offshore wind farms have a separate connection to land, but more integrated offshore networks are beginning to be developed, so that more than one farm may share a main landward connection.

However, the policy framework outlined above suggests that there is scope for this network to be developed considerably. If offshore wind energy continues to expand rapidly, the number of connections to land will grow accordingly, and farms will be increasingly networked to make more efficient use of cabling. It is also likely that some wind energy will be transferred directly across national borders, so that, for example, power generated in Swedish waters may find a more accessible market in Germany. Greater integration of national grid systems as a whole may also develop, with a growing number of interconnections between countries, in the interests of supply meeting demand more smoothly, strengthening the internal energy market, and serving regions at risk of energy poverty. Connections to neighbouring regions are also conceivable as a means of extending the market beyond Europe, such as into North Africa. Current expansion of offshore electricity networks may therefore be a step in the direction of the intended European supergrid. Figure 22 shows a scenario drawn up by the Intelligent Energy Europe project, *OffshoreGrid*. This suggests a development of offshore grid systems in northern Europe that is based around the currently planned construction of wind farms, and indicates the possible growth of more complex linkages between countries than is occurring at present. Figure 23 shows a more stylised vision for a pan-European and North African supergrid drawn up by the stakeholder group *Friends of the Supergrid*. This would enable not only the transfer of large-scale wind power from the north into the main centres of demand, but also the transfer of solar energy from the south. The *European Network of Transmission System Operators for Electricity* (ENTSO-E) has also begun studies for *2050 Electricity Highways*<sup>59</sup>.

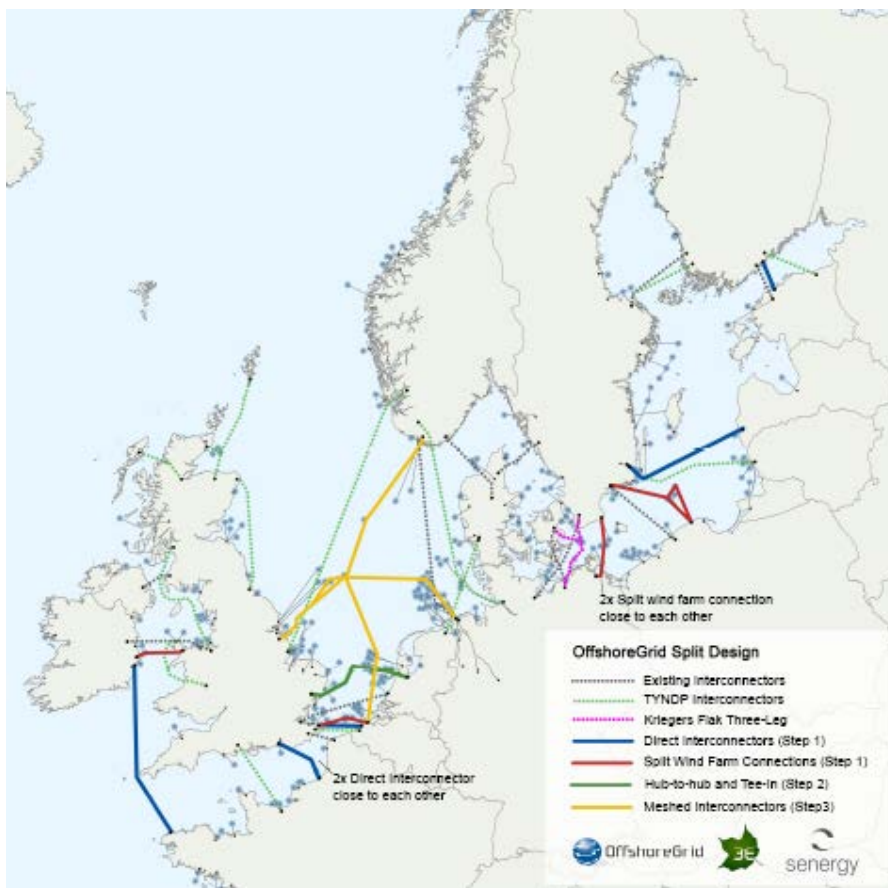
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<sup>59</sup> [www.entsoe.eu](http://www.entsoe.eu)

**Figure 21** Main marine grid connections in Northern Europe<sup>60</sup>



**Figure 22** Scenario for offshore grid development in Northern Europe<sup>61</sup>



<sup>60</sup> Courtesy of 3E (<http://www.3e.eu/sectors/grids-power-markets/offshore-power-transmission>)

<sup>61</sup> [http://www.3e.eu/fileadmin/media/OffshoreGrid/SplitDesign\\_NonTechnical\\_Legend\\_Logos\\_2\\_.jpg](http://www.3e.eu/fileadmin/media/OffshoreGrid/SplitDesign_NonTechnical_Legend_Logos_2_.jpg)

**Figure 23** Vision for a European Supergrid<sup>62</sup>



The second marine network, also energy-related, is that of pipelines carrying oil and gas. By far the greatest concentration of these is associated with the North Sea oil and gas fields, as illustrated by Figures 13 and 24. These transfer offshore supplies directly to producer countries, but also form a network connecting supplies to surrounding North Sea countries as a whole. Gas pipelines in particular link up with terrestrial networks, supplying customers throughout northern Europe. A smaller number of pipelines is found in the other regional seas, for transferring hydrocarbons from isolated fields, such as in the southern Baltic, the western Black Sea, the Adriatic and the Bay of Biscay. Expansion is taking place of these networks, such as the *Baltic Pipe* project between Denmark and Poland.

In addition, some longer-distance pipelines are coming on stream, crossing national borders, making a significant part of their journey by sea. These are designed with the large-scale supply of gas in mind from Russia to Europe (Figure 25). The *North Stream* pipeline through the Baltic is now completed, while the *South Stream* pipeline project through the Black Sea remains a possibility<sup>63</sup>. It appears that the sea route is preferable in some respects to the existing land route for the *Nabucco* pipeline. Similarly, gas pipeline capacity is increasing from North Africa to Europe, crossing the Mediterranean Sea. It should also be noted that essentially land-based long-distance oil and gas pipelines, especially those reaching from the east as far as the Caspian Sea, are being integrated into existing European networks including those referred to above, partly crossing sea areas. So European seas are playing a key role in the development of strategic gas and oil supply routes into Europe. These supply lines clearly counter the diminishing supply of gas from the North Sea, but also increase Europe's reliance on external energy supplies.

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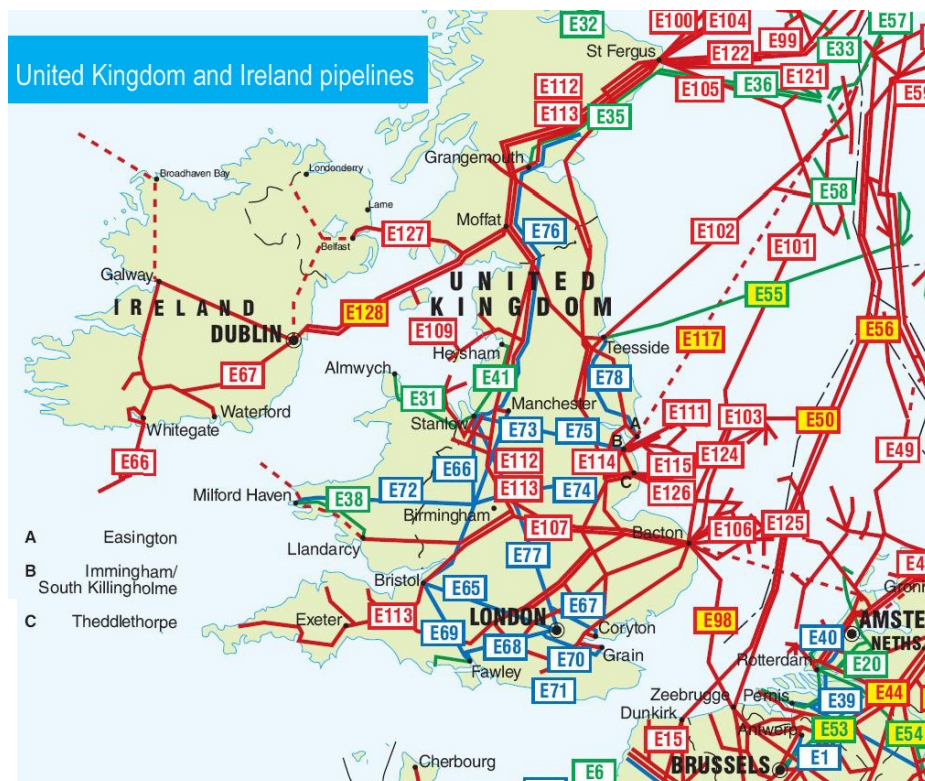
<sup>62</sup> <http://www.aquaret.com/images/stories/aquaret/Downloads/ResourceMaps/tidal%20stream1.jpg>

<sup>63</sup> <http://south-stream.info/?L=1>

The third marine network is that of telecommunications cables, carrying mostly telephone and internet traffic. There is a history of communications cables, starting with the North Atlantic route, stretching back well over a century, but it is only since the development of optical fibres in the 1980s that seabed cable networks have proliferated, and now account for the vast majority of international telecommunications traffic. Map 37 shows the main cable corridors reaching around and out of Europe. The most important route remains that across the Atlantic to North America, with the greatest concentration of cables in the Celtic Sea. The other main intercontinental routes are through the Mediterranean to the Middle East, southern Asia and the Far East, and down the Atlantic around Africa to head across the Indian Ocean. These principal routes are added to by branches, such as from France to the Mediterranean route, and more localised links between European countries, such as across the Baltic and around the Atlantic Arc.

Europe's seas therefore play host to one of its increasingly vital socio-economic elements, and provide a relatively obstacle-free route for global, almost instantaneous communication. Also, it should be noted that although they may stretch for hundreds, or even thousands of kilometres, telecommunications cables are insignificant in width, so that their overall spatial claim is relatively minor. Also, their environmental impact is not generally considered to be serious. It is likely that routes will continue to be reinforced with additional cables, and new routes established in the pursuit of an increasingly comprehensive network.

**Figure 24** Oil and gas pipelines around the UK and Ireland <sup>64</sup>



<sup>64</sup> [http://www.theodora.com/pipelines/united\\_kingdom\\_and\\_ireland\\_pipelines.html#map](http://www.theodora.com/pipelines/united_kingdom_and_ireland_pipelines.html#map)



**Figure 25** Major East-West gas pipelines<sup>65</sup>



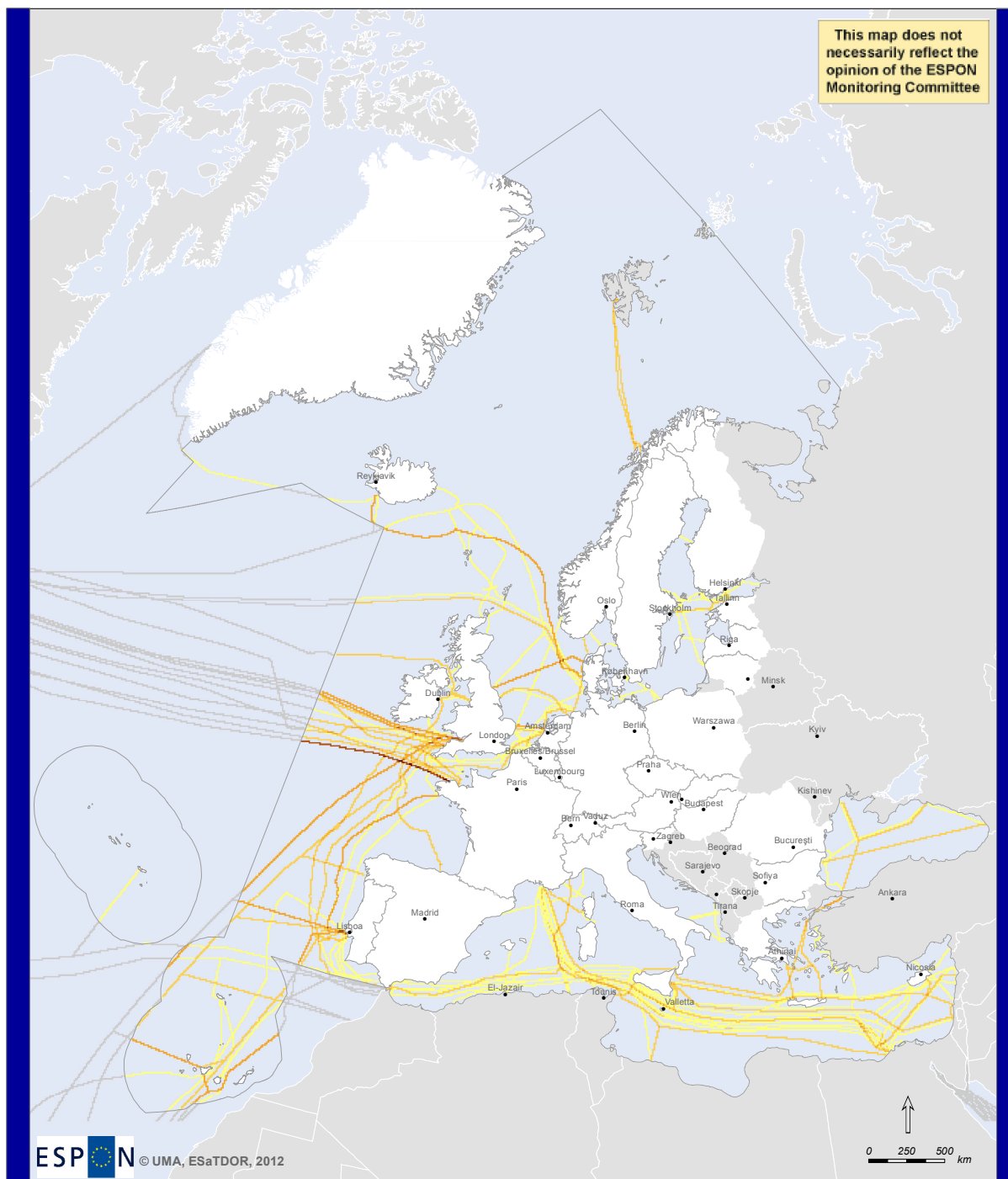
### Carbon Capture and Storage

The capture and long-term storage of carbon dioxide is a significant aspect of EU energy policy, and the possibility of making use of geological strata under the sea bed for this purpose is currently being explored (eg. *FP7 MUSTANG*). Saline aquifers and depleted oil and gas fields have the best potential in this regard. In Europe, the North Sea holds the greatest prospect in terms of available exhausted oil and gas fields (Figure 13). Moreover, it is conceivable that decommissioned pipelines could be used in a reverse direction, for transferring carbon dioxide for storage in these sites. However, the technological feasibility and economic viability of this option remains in doubt. Little progress has therefore been made on commercial-level schemes. Nonetheless, pilot projects are underway, including the *Sleipner* facility in the Norwegian section of the North Sea. These projects are also being monitored<sup>66</sup>, contributing to an understanding of possible future spatial patterns of marine carbon capture and storage facilities.

<sup>65</sup> <http://www.energy.eu>

<sup>66</sup> [www.sccs.org.uk](http://www.sccs.org.uk)







# Undersea Cables (Capacity)




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Thematic data: Greg Mahlknecht, [www.cablemap.info](http://www.cablemap.info), updated 22-02-12  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Cable capacity (Gigabytes/s per 10km grid square)

-  1 to 5,000
-  5,001 to 15,000
-  15,001 to 30,000
-  30,001 to 120,000
-  More than 120,000
-  Cables outside of the area

**Map 37** Undersea telecommunications cable capacity (Gb/s per 10km grid square)

## 6.4 Patterns of Land/sea Interactions for Energy, Cables and Pipelines

Interactions between land and sea are implicit in all aspects of the energy, cables and pipelines theme. These relate firstly to the linkage of physical infrastructure to the land. This is most obvious in relation to the networks, as these are explicitly intended to make connections between land and sea. Pipelines, electricity cables and telecommunications cables deliver their products onshore, or transfer them across sea areas, and are directly integrated to their respective terrestrial networks. For example, the influence of transatlantic telecommunications cables is apparent in the flows composite map (Map 31, see Chapter 5). Nearshore energy-producing infrastructure, whether oil and gas platforms or wind farms, may also have other direct links to land through their environmental effects, especially their visibility from land and their impacts on coastal ecosystems.

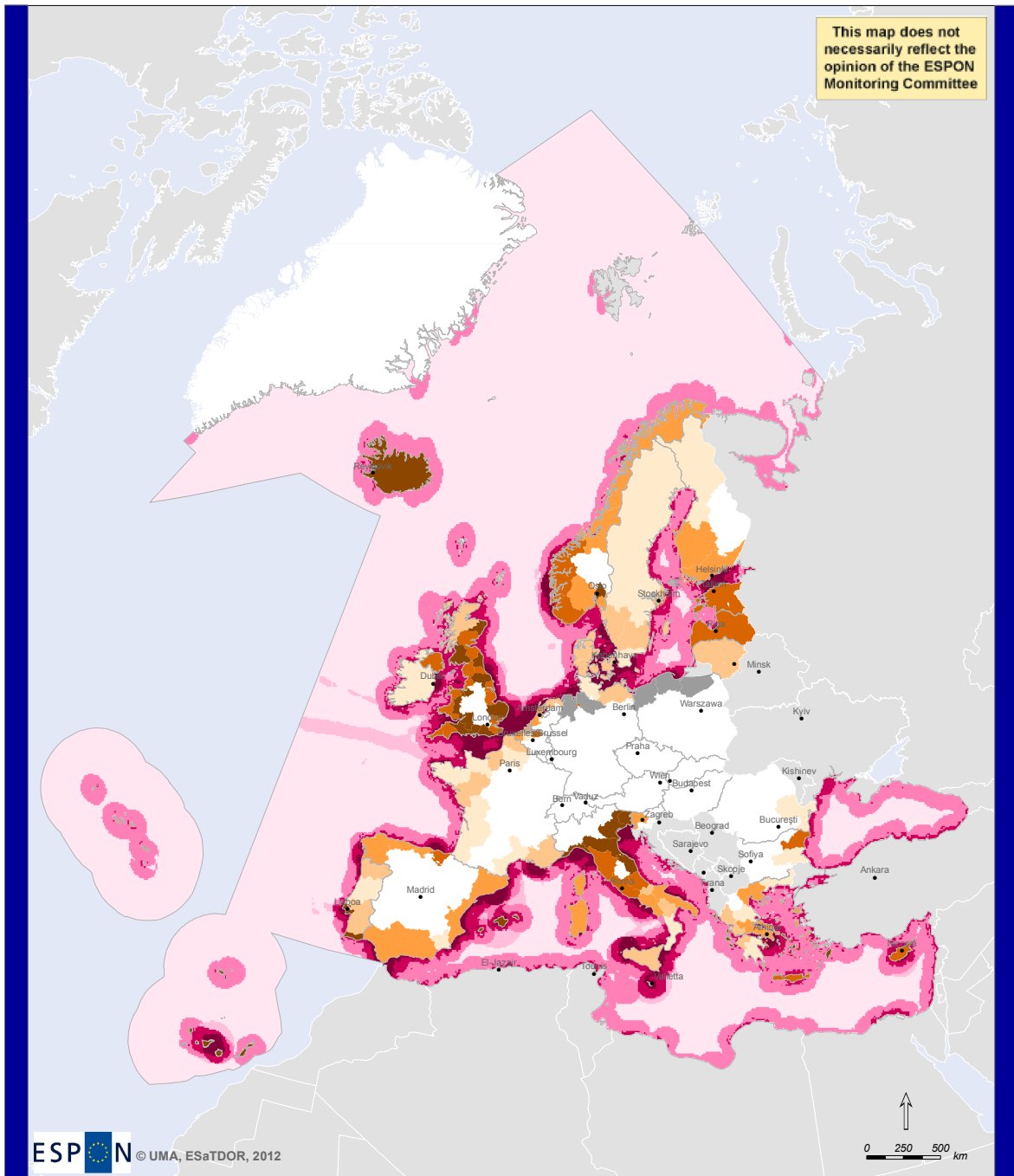
Secondly, offshore energy production and supply lead to significant socio-economic land-sea interactions, as indicated above. The offshore oil and gas industry in particular has been a major source of direct and indirect employment, and has led to economic growth, industrial clusters and population growth in certain coastal areas, especially in the North Sea region. This is reflected in the intensity of use for the region shown in the typology map of land sea interactions (Map 38). The beginnings of similar benefits are now apparent in relation to marine renewable, especially the wind industry, with a number of centres, such as the *Marine Energy Park* in eastern England<sup>67</sup> and *Offshore-Hafen* in Lower Saxony<sup>68</sup>, positioning themselves to be offshore renewable energy hubs. It is conceivable that similar economic benefits could also arise from a future carbon capture and storage industry, though this remains a much less certain prospect.

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<sup>67</sup> [www.ablehumberport.com/marineenergypark.htm](http://www.ablehumberport.com/marineenergypark.htm)

<sup>68</sup> [www.offshore-wind.de/page/index.php?id=12519&L=1](http://www.offshore-wind.de/page/index.php?id=12519&L=1)

# Intensity of Land-Sea Interactions Across Europe





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Thematic data: Typology Map.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Typology Map

### Sea (Environmental Pressures and Flows)

-  Very low intensity
-  Low intensity
-  Medium intensity
-  High intensity
-  Very high intensity

### Land (Economic Significance)

-  Very low intensity
-  Low intensity
-  Medium intensity
-  High intensity
-  Very high intensity
-  No Data

**Map 38** Intensity of land-sea interactions across Europe

## 6.5 Future Prospects for Energy and Undersea Infrastructure

European Seas are being increasingly recognised as an important focus for the achievement of the EU's energy policy, with a particular focus on:

1. Rapid and large-scale deployment of offshore wind energy, especially in the shallower northern seas; this will be followed in the longer term by other marine renewables and wind energy in deeper and more distant sea areas. Although this will contribute to the sustainability and security of supply, it will lead to restrictions on other sea uses and may adversely affect marine environments.
2. Closely associated with the development of renewables, marine grid systems will be expanded and integrated to enable more efficient electricity transmission and sharing across regions.
3. The potential for carbon storage under the seabed (in exhausted gas and oil fields and in deep saline aquifers) will be explored.
4. The seas will also play a continuing role in conventional energy production and supply, and newly discovered hydrocarbon reserves will be exploited, especially in the Arctic Ocean;. Emerging economies of the Black Sea region are also likely to maximise their potential for offshore oil and gas production. However, these opportunities are associated with the risk of increased carbon emissions.
5. The network of gas pipelines will be expanded across land and sea areas, with greater integration of intra-European supply, and with major new external supply routes from the east and the south. Although this will contribute to overall security of supply, and will assist regions at risk of energy poverty, it will also perpetuate reliance on energy imports and associated carbon emissions.
6. The seabed will continue to host the growing network of telecommunications cables.

However, the way in which these features play out in the coming years will vary greatly between the different seas. The broad, likely opportunities and risks for each are as follows.

### ***Baltic Sea***

The main opportunities for the Baltic are the continued expansion of marine wind energy, facilitated by shallow waters, and the further development of a transnational grid system, not least for the transfer of power from marine wind farms and for grid connections to assist regions at risk of energy poverty. Additional telecommunications cables are also likely to be developed. The development of coastal centres for the construction and servicing of marine wind farms should be explored. However, the risks associated with wind farms should also be studied, especially conflict with other interests, such as shipping lanes and environmentally sensitive areas, as should possible synergies with other interests. The Baltic Sea will also be an important corridor for gas transit, with the new major supply line from Russia to northern Europe.

## ***North Sea***

The North Sea has unparalleled opportunities to contribute to European energy goals. It will continue to be an important source of fossil fuels, supporting shore-based industry as well as meeting energy needs. However, associated risks should be highlighted, such as the continuing contribution that use of North Sea oil and gas makes to greenhouse gas emissions, and potential damage to ecosystems, especially from ongoing exploration and the opening up of new fields. But the greatest opportunity is for the North Sea to continue on its trajectory of becoming a major contributor of sustainable energy supply through the large-scale development of marine wind farms, for which it has very favourable conditions. The development of industrial clusters for technological development, manufacturing, construction and servicing of farms in strategic locations along North Sea coasts should also be explored. The development of offshore grid systems and a North Sea grid (as part of a European supergrid) should also be studied, including its potential to assist regions at risk of energy poverty. The outlook for other marine renewables should also be considered. However, the risks associated with marine renewables, especially wind, should also be explored, especially conflict with other interests, such as the major international shipping lanes and environmentally sensitive areas, though possible synergies with other interests should also be considered. In addition, the prospect for the North Sea to become a centre for carbon storage, making use of depleted oil and gas fields, should be investigated.

## ***Arctic Ocean***

The Arctic presents the opportunity of increased supply of fossil fuels to Europe, facilitated by the retreat of the polar ice cap. Although most production will be outside Europe, some is likely in Norwegian waters, and new pipeline connections may enable a wider Arctic supply to Europe, especially from Russia. Means of establishing good energy relations with Russia should be considered. The possibility of supporting related shore-based industry, especially in Norway, should be explored. However, associated risks should also be highlighted, especially increased greenhouse gas emissions, running counter to 20-20-20 targets, and potential damage to sensitive ecosystems.

## ***Atlantic Area***

The Atlantic's main opportunity is in connection with marine renewables. This includes both the expansion of conventional offshore wind farms and the development of new technologies, including the so-far untapped wave, current and tidal options, for which the Atlantic has some of the greatest potential in Europe. It could also be the testing-ground for wind farms designed for more challenging settings, including in deep water. However, the incorporation of marine renewables into areas that are already under considerable pressure, because of intensive shipping and environmental sensitivities, is a risk to other interests. The opportunity for centres of technological development, manufacturing, construction and servicing of marine renewables in strategic locations along Atlantic coasts should be explored. Finally, the development of more comprehensive offshore grid systems to connect renewable energy production to onshore points of demand should be considered. The Atlantic's continuing role as a major corridor for international telecommunications cables should also be recognised.

### ***Mediterranean Sea***

The most important opportunity for the Mediterranean is as a gateway for the import of fossil fuels from relatively nearby sources of supply; its role in building up energy relations with North African countries should be considered, through, for example, infrastructure development (pipelines and terminals) and governance arrangements, with a view to reducing risks of over-reliance on any one source. The potential for new lines of supply to assist regions at risk of energy poverty should also be looked into. In addition, the scope for marine renewables, especially wind farms in favourable locations and their grid connections, should be explored, without overlooking associated risks, such as conflict with other uses, and possible synergies with other interests. The Mediterranean's continuing role as a corridor for international telecommunications cables should also be highlighted.

### ***Black Sea***

A major opportunity for the Black Sea is as a transit zone for the movement of fossil fuels primarily from Russia to surrounding countries and further west into Europe. Its role in establishing good energy relations with Russia should be considered, through continued infrastructure development (pipelines and terminals) and governance arrangements. Associated risks should also be highlighted, especially increased greenhouse gas emissions resulting from greater use of gas. The potential for new lines of supply to assist regions at risk of energy poverty should be looked into. In addition, the scope for marine renewables, especially wind farms, should be explored.

## 6.6 Policy Recommendations for Energy and Undersea Infrastructure

Table 15 below lists policy recommendations that could be made in the light of the information outlined in this chapter.

**Table 15** Energy Etc. policy recommendations

	<b>Audience</b>	<b>Recommendation</b>	<b>Justification</b>
1	European Commission, Norwegian government	Set criteria for acceptable exploration and exploitation of new hydrocarbon reserves, especially in the Arctic	To ensure stringent environmental standards are adhered to, especially in ecologically-sensitive regions
2	ESPON	Europe-wide data-gathering on spatial patterns of offshore oil and gas production and supply	To access and harmonise disparate sources of data
3	European Commission, Mediterranean, Black Sea, Arctic and Baltic national governments	Governance arrangements for establishing good energy relations with surrounding regions, especially North Africa and Russia	To ensure reliable, long-term security of supply of gas and oil from neighbouring regions
4	European Commission, ESPON	Assessment of technical developments and national government plans and forecasts for exploitation of marine renewables, especially offshore wind power	To evaluate trends and likely future spatial demands of marine renewable across Europe, and potential restrictions imposed upon other sea uses
5	Barcelona Convention, member states of the Mediterranean and Black Sea regions	Promotion of marine renewable energy potential	To initiate the development of marine renewables, especially wind energy, in southern European seas
6	OSPAR, HELCOM, VASAB, Irish, North and Baltic Sea governments	Assessment of potential hubs / clusters for the development of marine renewables, especially offshore wind power	To develop a strategic approach to the large-scale mobilisation of the marine renewables industry in north European seas
7	European Commission, OSPAR, HELCOM, VASAB, Irish, North and Baltic Sea governments, Friends of the Supergird, ENTSO-E	Strategy for implementation of north European transnational offshore grid systems	To take forward emerging recommendations on transnational offshore grid systems and the European Supergrid, as put forward by <i>OffshoreGrid</i> project, Friends of the Supergird and ENTSO-E



**Table 15** *Continued*

8	European Commission, Mediterranean and Black Sea governments	Assessment of long-distance gas pipeline options	To optimise future large-scale supply of gas from producer countries
9	European Commission, North Sea governments	Assessment of current technological progress on long-term subsea storage of carbon and potential North Sea storage sites	To evaluate the prospects for carbon storage in the North Sea region and ensure that options for future development are maintained
10	European Commission, national governments, European public	Programme of public information and engagement on the contribution of European seas to future energy needs and possibilities	To gain the trust and participation of communities in the potential consequences of energy policy for the marine environment and coastal economies

## 7. Europe's Coastal and Marine Environment

The Lisbon and Gothenburg Agendas (now called the EU's Sustainable Development Strategy or SDS) are a commitment to renewal in the EU based on the principles of sustainable development. The 2009 Review of the EU Sustainable Development Strategy (EU SDS) confirmed that sustainable development remains a fundamental objective of the European Union under the Lisbon Treaty. Sustainable development comprises three core elements: one of which is environment. Environmental sustainability is a major cross-cutting theme for 2007-2013.

Marine and coastal environmental issues are specifically addressed by a number of directives and policy documents, but may also fall under others with a broader environmental view. Three perspectives can be identified: Integrated Coastal Zone Management, 6th Environment Action Plan, and Integrated Maritime Policy. The Common Fishery Policy, currently undergoing reform, falls to a large degree under the latter. Cohesion among the Water Framework Directive, Marine Strategy Framework Directive and Maritime Policy, specifically on environmental matters, is currently being addressed.

This chapter identifies main issues, risks and opportunities, potential sources of data, and to analyse information found at a Europe-wide scale in relation to the theme "environment".

### 7.1 Key Issues for Europe's Coastal and Marine Environment

#### a. Governance

Global and supra-EU governance is dominated by conventions under the auspices of the United Nations, notably United Nations Environment Programme (UNEP) and the International Maritime Organisation (IMO). Environmental conventions generally focus on giving protection to species (e.g. migratory, mammals, endangered, but also biodiversity in general) and to limiting pollution. The degree of ratification of the various conventions varies. The IMO is primarily involved in the regulation of shipping but is active in environmental issues such as oil spills and, more recently, invasive species (e.g. Ballast Water Convention).

UNEP's Regional Seas Programme has instigated various European regional sea commissions such as HELCOM and OSPAR. While the EU is a part of these commissions, individual member states both in- and outside the EU are also involved. A number of regional sea commissions have developed action plans (e.g. Baltic Sea Action Plan) to orchestrate environmental measures among member nations.

Some supra-EU governance arrangements have origins that do not derive from the UN. These include various transboundary river commissions which explicitly have objectives relating to their effects on the quality of receiving waters.

Marine and coastal environmental issues are specifically addressed by a number of EU directives and policy documents, but may also fall under others with a broader environmental view. Three perspectives can be identified: Integrated Coastal Zone Management, 6th Environment Action Plan, and Integrated Maritime Policy. The Common Fishery Policy, which is currently being reviewed, falls to a large degree under the latter. Cohesion among the Water Framework Directive, Marine Strategy Framework Directive and Maritime Policy, specifically on environmental matters, is currently being addressed. One of the key instruments here is Maritime (or Marine) Spatial Planning.

Early policies affecting the coastal zone were predominantly issue-oriented (e.g. water quality) and reactive in nature, with the governance of coastal and marine areas fragmented across countries and thematic areas (e.g. sectors) at both national and European level. More recently, the EU has begun to address problems related to the state of coasts, treating the coast as a regional entity, and to the marine environment in general (e.g. Water and Marine Strategy Framework Directives).

**b. Opportunities and risks**

Opportunities and risks were discussed in the Environment Briefing Paper included in the ESaTDOR Interim Report, and the situation has not changed. Opportunities and risks from the perspective of the environment theme are interpreted in terms of the impact on societal welfare from environment states and their capacity to generate ecosystem goods and services. Opportunities stem from a good environmental status. Risks stem from bad environmental status. The term 'good environmental status' derives from the EU Marine Strategy Framework Directive (MSFD), which elaborates GES in terms of eleven descriptors and requires member states to achieve GES by 2020. These descriptors may be grouped into two broad classes: those that reflect good, and those that reflect bad, environmental status; the former need to be maintained or restored whereas the latter need to be reduced. The former then lies behind opportunities and the latter behind risks. Tables 16 and 17 present an overview.

As identified in the Environment Briefing Paper which formed part of the ESaTDOR Interim Report, opportunities lie with: ecotourism, conservation, fisheries, and society in general. Ecotourism and conservation, with a focus on naturally-occurring species and habitats, can potentially benefit from the maintenance and restoration of biological diversity, seafloor integrity and marine food webs. Fisheries can potentially benefit from the restoration and maintenance of fish stocks. However restoration may mean that, in the short term, their activities are curtailed (e.g. quotas, decommissioning, imposition of no-fish zones) or that their practices are changed (e.g. gear type, handling of discards). Restoration of ecosystems may increase their capacity to buffer or sequester carbon, for the benefit of human society in general.

**Table 16** Socio-economic activities with opportunities from good environmental status

<b>Descriptor</b>	<b>Brief elaboration</b>	<b>Opportunities</b>
Biological diversity	Biological diversity is an umbrella descriptor, as virtually all descriptors can be linked to this one. From species, through habitat to ecosystem levels; biodiversity is tentatively linked to resilience, and so a good diversity supports the generation of all ecosystem goods and services	Ecotourism; conservation; all sectors dependent on ecosystem goods and services; society in general (via existence values and carbon buffering)
Commercial fish	Maintenance of fish stocks	Fisheries
Food webs	Similar to biological diversity, with emphasis on select species such as top predators	Ecotourism; conservation; society in general (via existence values)
Seafloor integrity	Similar to biological diversity but emphasising the quality of benthic ecosystems that are adversely affected by human activities, such as fishing, as well as other descriptors, such as Eutrophication	Demersal fisheries; in relatively shallow areas, ecotourism (diving); conservation

Ecotourism is an activity that could be promoted to take better advantage of the environment. One possible means of capturing opportunities is via marine protected areas, which are expected to support fish stocks and to maintain marine biological diversity.

Risks are faced by fisheries and aquaculture, tourism and particularly ecotourism, conservation, coastal protection, human health, and society as a whole. Fisheries and aquaculture could be adversely affected by non-indigenous species, poor water quality caused by eutrophication and/or contaminants, hydrographical changes, loss of spawning and nursery habitats, and underwater noise (e.g. from wind farms). Tourism and conservation could be affected by non-indigenous species, water quality and marine litter in particular. Human health could be threatened should contaminants bioaccumulate or biomagnify in edible species.

The same sectors that could benefit from good environmental status are also at risk from bad environmental status. How environmental quality contributes to or compromises development opportunities depends very much on the regional sea being considered. In terms of new economic developments and future environmental quality, we highlight problems of non-indigenous species (largely linked to shipping and aquaculture sectors), marine litter (from all marine and coastal activities), and noise (from offshore wind farms) as the main sources of bad environmental status. These problem areas can be directly linked to shipping, aquaculture, fishing, and offshore wind farms.

**Table 17** Socio-economic activities at risk from bad environmental status

<b>Descriptor</b>	<b>Brief elaboration</b>	<b>Main sectors at risk</b>
Non-indigenous species	NIS can become invasive, causing adverse environmental/ecological impact, direct economic impact, as well as indirect economic impact via environmental state change.	Fisheries (including aquaculture); tourism (especially eco-tourism); conservation
Eutrophication	The most obvious impact relates to water quality. Eutrophication can also affect habitat quality and may result in restructuring of food webs.	Tourism (especially water-based), fisheries and aquaculture
Hydrographical changes	Loss of natural habitat, both its quantity and its quality	Coastal protection (esp. from sea level rise and storms), fisheries (spawning and nursery habitat)
Contaminants	Direct and indirect toxic and sub-toxic effects on species	Tourism (especially eco-tourism), human health
Contaminants in seafood		Human health
Marine litter	Ranging from visual effects to adverse effects on select populations, such as sea bird and mammals	Tourism (especially coastal tourism); conservation; society as a whole through non-use (e.g. existence values)
Noise, energy etc.	Disturbance causing relocation of species and increasing morbidity	Finfish fisheries, tourism

## 7.2 Environment Data Availability

Policy makers rely on good quality information (i.e. data) in the policy making process. Many environmental (and especially marine) problems are cross-boundary and effective policy targeted at these problems requires data from different countries. Unfortunately, several issues hamper the use of such datasets: e.g. such data is often simply missing or is inconsistent, or the data is expensive to use because permission has to be asked to different institutions charging mandatory fees for data use. In response, the EU has adopted the Infrastructure for Spatial Information in Europe (INSPIRE) directive. INSPIRE aims to lay down ground rules which will make the environmental data provided by member states consistent and easily accessible as a means to support environmental policy making. The directive aspires to an EU spatial data infrastructure (SDI) in which environmental spatial

datasets are freely available. INSPIRE lists a set of essential data themes, and INSPIRE thus clearly states its data ambitions to the member states. However, INSPIRE has a terrestrial focus and data ambitions for the marine environment have been less explicitly described.

Further the EU's Marine Strategy Framework Directive (MSFD) requires member states to collect (marine) data as part of its implementation. The MSFD provides a legal framework in which member states improve the environmental status of their coastal and seawaters. In the MSFD Annex III, important coastal and marine pressures are listed for member states to assess the environmental status of their coastal and seawaters. This means de facto that member states are required to collect data on these pressures and impacts. Thus, both INSPIRE and the MSFD have clear data ambitions for the marine environment, and will probably shape data collection and availability in the EU's marine environment in the coming years. Based on the INSPIRE and MSFD texts, we have inferred what datasets are required by these policies and have made an inventory which are already readily available (Table 18).

Over the course of the ESaTDOR project a pragmatic approach has been taken to the collection of data to illustrate key trends in maritime activities and to facilitate mapping and the development of a maritime region typology. As part of work carried out on the Inception Report, an initial attempt was made to establish potential sources of useful information for each regional sea and also on a thematic basis (covering environment, energy, cables and pipelines, economic use and transport). This "long list" of datasets was then refined on the basis of geographical coverage, spatial referencing of the data (and compatibility with GIS formats), and availability over longer periods of time where possible.

**Table 18** Overview of datasets available for the theme “environment”

<b>Dataset:</b>	<b>Geographical coverage:</b>	<b>Year</b>	<b>Time series</b>	<b>Include in Sea Profiles</b>	<b>Include in Typology</b>	<b>Source:</b>
Shipping	Global	2004-2005	N	N	N	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>
Trawling (CPUE)	Incomplete		Y: 1965-2012	N	N	<a href="http://ecosystemdata.ices.dk/">http://ecosystemdata.ices.dk/</a>
Marine fish stocks	Incomplete	2006	N	N	N	<a href="http://ecosystemdata.ices.dk/">http://ecosystemdata.ices.dk/</a>
Bathing Water Directive Statistics 2009	EU (but terrestrial)		Y: 1990-2010	Y	N	<a href="http://www.eea.europa.eu/data-and-maps/data/">http://www.eea.europa.eu/data-and-maps/data/</a>
Waterbase - water quality of transitional, coastal and marine waters	EU (but terrestrial)		Y: 1980-2009	N	N	<a href="http://www.eea.europa.eu/data-and-maps/data/">http://www.eea.europa.eu/data-and-maps/data/</a>
Inorganic pollution	Global		N	Y	Y	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>
Nutrient run-off	Global	1993-2002	N	N	N	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>
Organic pollution (= pesticides)	Global	1992-2001	N	Y	Y	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>
Population pressure	Global	20005	N	N	N	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>
Protection of the marine environment	Europe		N	Y	N	<a href="http://www.eea.europa.eu/data-and-maps/data/">http://www.eea.europa.eu/data-and-maps/data/</a> <a href="http://arcticdata.is/">http://arcticdata.is/</a>
Sea temperature	Global		Y: 1981-2012	Y	Y	<a href="http://www.esrl.noaa.gov/psd/data/gridded/data.noaa.oisst.v2.html">http://www.esrl.noaa.gov/psd/data/gridded/data.noaa.oisst.v2.html</a>
Bathymetry	Global	2008	N	Y	N	<a href="http://www.gebco.net/">http://www.gebco.net/</a>
Acidification	Global	1870 vs. 2000-2009	N	Y	Y	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>
Ecoregions	Global		N	Y	N	<a href="http://geodata.grid.unep.ch/options.php">http://geodata.grid.unep.ch/options.php</a> <a href="http://www.worldwildlife.org/science/ecoregions/marine/item1266.html">http://www.worldwildlife.org/science/ecoregions/marine/item1266.html</a>
Invasive species through shipping	Global	1999-2003	N	Y	Y	<a href="http://www.nceas.ucsb.edu/globalmarine/impacts">http://www.nceas.ucsb.edu/globalmarine/impacts</a>

### 7.3 Environment: Baseline conditions

Environment is elaborated in the ESaTDOR project by seven datasets and accompanying maps that may be grouped into two broad categories: natural environment and human pressures.

The natural environment is represented by maps showing:

- Bathymetry/sea depth,
- Ecoregions, and
- Change in sea surface temperatures (SST) between 1981-1982 and 2012 (Map 43).

Bathymetry and ecoregion maps are presented in the Regional Sea Profiles (Annexes 2-7), having relevance to the general characteristics of Europe's regional seas.

The dataset for SST gives the average sea surface temperature (SST) for each month within the period 1/12/1981-30/1/2012. SST has environmental relevance because marine ecological processes are profoundly influenced by temperature, and important differences are found between ecosystems at different latitudes. This latitudinal difference in temperature is represented in this dataset, although Map EU26 emphasizes change in SST over this time period and so indicates temperature differences due to climate variability. The causes of climate variability may be natural and/or anthropogenic. There are several, highly variable climatic phenomena (North Atlantic Oscillation, Atlantic Multi-decadal Oscillation) that have been shown to influence marine (and terrestrial) ecosystems. The dataset is also useful for investigating climate change, but a 30 year time period is too short to make any firm conclusions here.

Human pressure on the marine environment is indicated on the following maps:

- protected areas (Map 39),
- invasive species (Map 40),
- marine contaminants (organic inputs – pesticides, Map 41), and
- quality of bathing water (Map42).

The Convention on Biological Diversity (CBD) expressed in 1992 serious concerns regarding the ongoing decrease in biodiversity, and the members of the Convention pledged themselves to a number of (legally binding) commitments regarding the sustenance of biodiversity values within their borders. Amongst others, this included the creation of an extensive system of protected areas that could protect valuable species, habitats and ecosystems. This prompted EU regulations regarding NATURA 2000, via Birds and Habitats Directives, in which member states were required to propose a system of interconnected nature reserves. In the Arctic, the Arctic Council designed nature reserves through their Conservation of Arctic Flora and Fauna (CAFF) working group. Although the CBD expressed explicit concerns regarding the protection of the biodiversity of the high seas, marine protected area's (MPA's) in the



North East Atlantic have only recently been designated by OSPAR. The implementation of these MPA's is not yet completed. The dataset focuses therefore on the NATURA2000 and CAFF sites.

Humans have broken down the geographical barriers to dispersion of many coastal and marine species. The arrival of a non-indigenous species in Europe may not be, per se, a problem but some species populations can expand rapidly and so cause ecological and economic damage. Such alien invasive species cause the decline of indigenous species, disrupt ecosystems' structure and function, particularly with the loss of ecosystem-engineers, and can have economic consequences should ecosystem services be compromised. Shipping, aquaculture and the Suez Canal are major sources of non-indigenous species; the opening of a passage between the Atlantic and Pacific Oceans with retreat of polar ice may facilitate the movement of species in both directions. In their use of ballast water, ships transport species across potentially large distances. The dataset derives from models simulating the incidence of invasive species along the European coastline to a maximum of 60m depth (i.e. intertidal or shallow subtidal species). This incidence was modelled as a function of the amount of cargo shipped through European ports, with a diffusion model to mimic the expansion of invasive species around these ports.

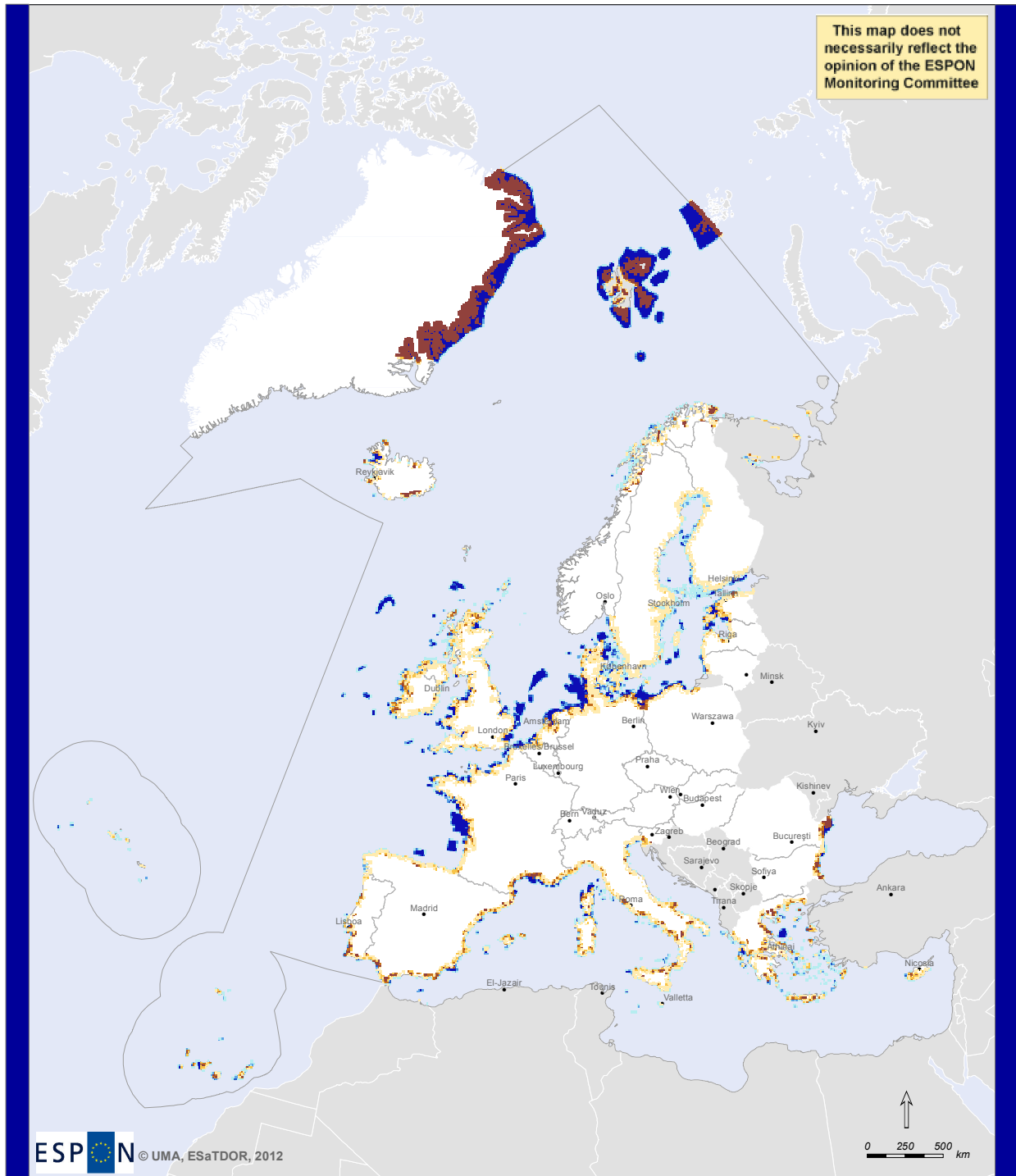
The marine contaminants dataset refers only to the organic load of pesticides, indicating agricultural activity within catchments. Other sources of contaminants (notably point sources such as wastewater treatment plants, industry) are not included. Pesticides can bioaccumulate in organisms and so can become toxic. They can also magnify through foodwebs as each feeding level consumes contaminated prey. Biomagnification has a disproportionately strong effect on top predators due to their longevity and diet. Human consumption of top predators, such as tuna, can engender health risks.

The EU bathing water directive provides broad water quality standards and requires member states to monitor and report on bathing water quality. The dataset indicates compliance of member states with the mandatory and the guide values of the directive. Although the dataset is relatively qualitative, it nonetheless provides one way of looking at the human perspective on water quality. Note that this dataset only provides data for coastal waters, and is not relevant for open sea.

Map 39 shows protected areas specified by NATURA 2000 or CAFF. Such areas may comprise terrestrial and aquatic components, and the map attempts to accommodate both. With only a few exceptions, protected areas tend to be small in size and coastal, so including both terrestrial and aquatic zones. Open waters with protected status are larger in size. Such areas may be found in the North Sea, the northeast Atlantic and, to a lesser extent, the Baltic Sea.

Map 40 shows estimated incidence of invasive species as a result of shipping. Ports in general show highest incidences. The southern North Sea is strongly highlighted, largely because of both the size of ports and the volume of shipping in this area. The potential for invasion is likely to be exacerbated by wind farm development and climate change. The former provides hard substrate that will facilitate establishment of some non-indigenous species; the latter will facilitate the northward movement of species that are already established.





# Protected Areas








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Thematic data: Natura 2000 Network, European Commission - European Environment Agency, 2010.  
 CAFF Arctic Protected Areas, CAFF and PAME Arctic Council, 2011.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Percentage of grid size (Land)

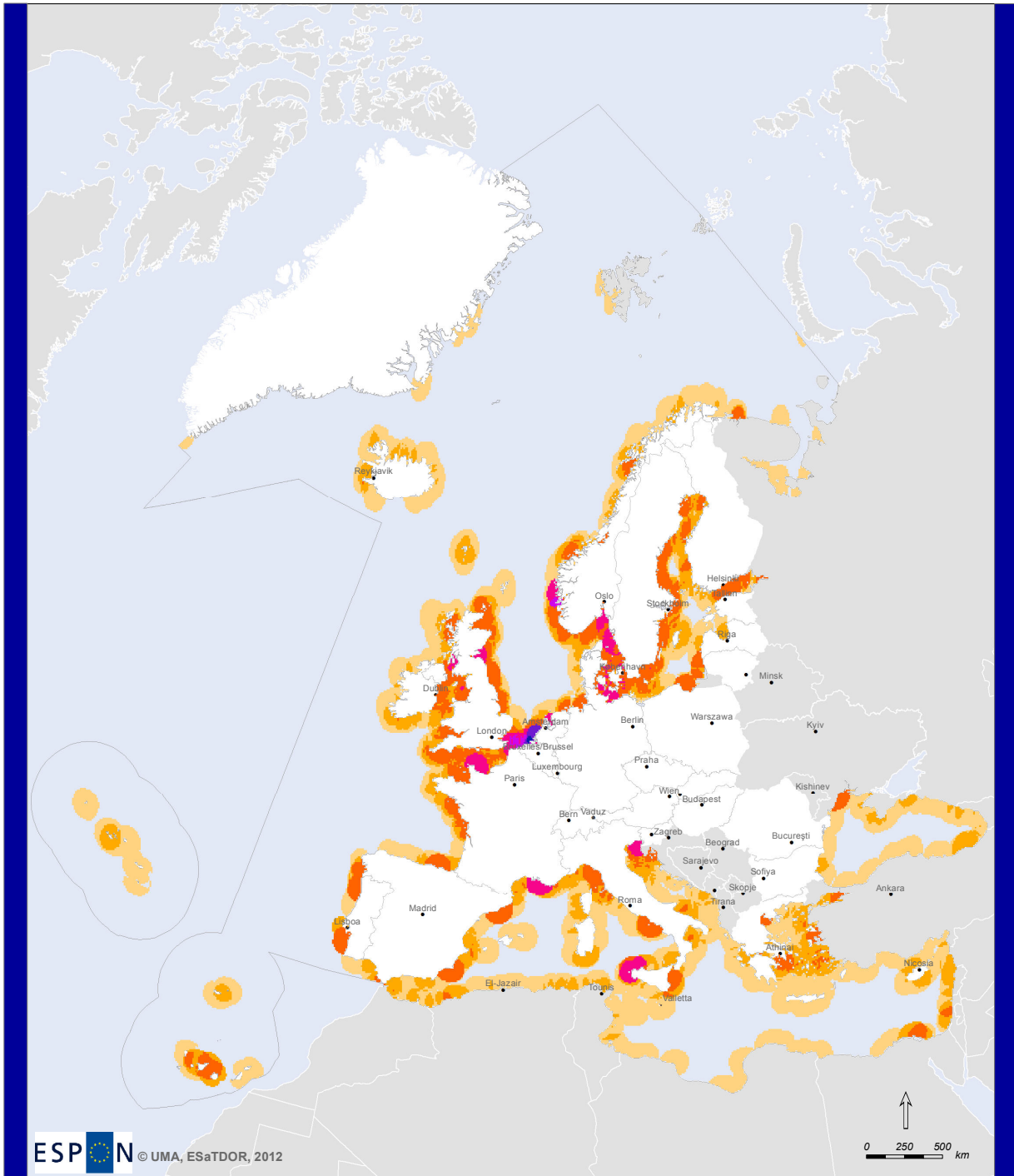
-  > 25%
-  25 to 50%
-  50 to 75%
-  > 75%

## Percentage of grid size (Sea)

-  > 25%
-  25 to 50%
-  50 to 75%
-  > 75%

**Map 39** Protected areas (Natura 2000 and CAFF sites), percentage designated per 10km grid square.

# Incidence of Invasive Species



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Thematic data: Invasive Species, National Center for Ecological Analysis and Synthesis, 2008  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Total number of invasive species per grid (October 2004 - October 2005)



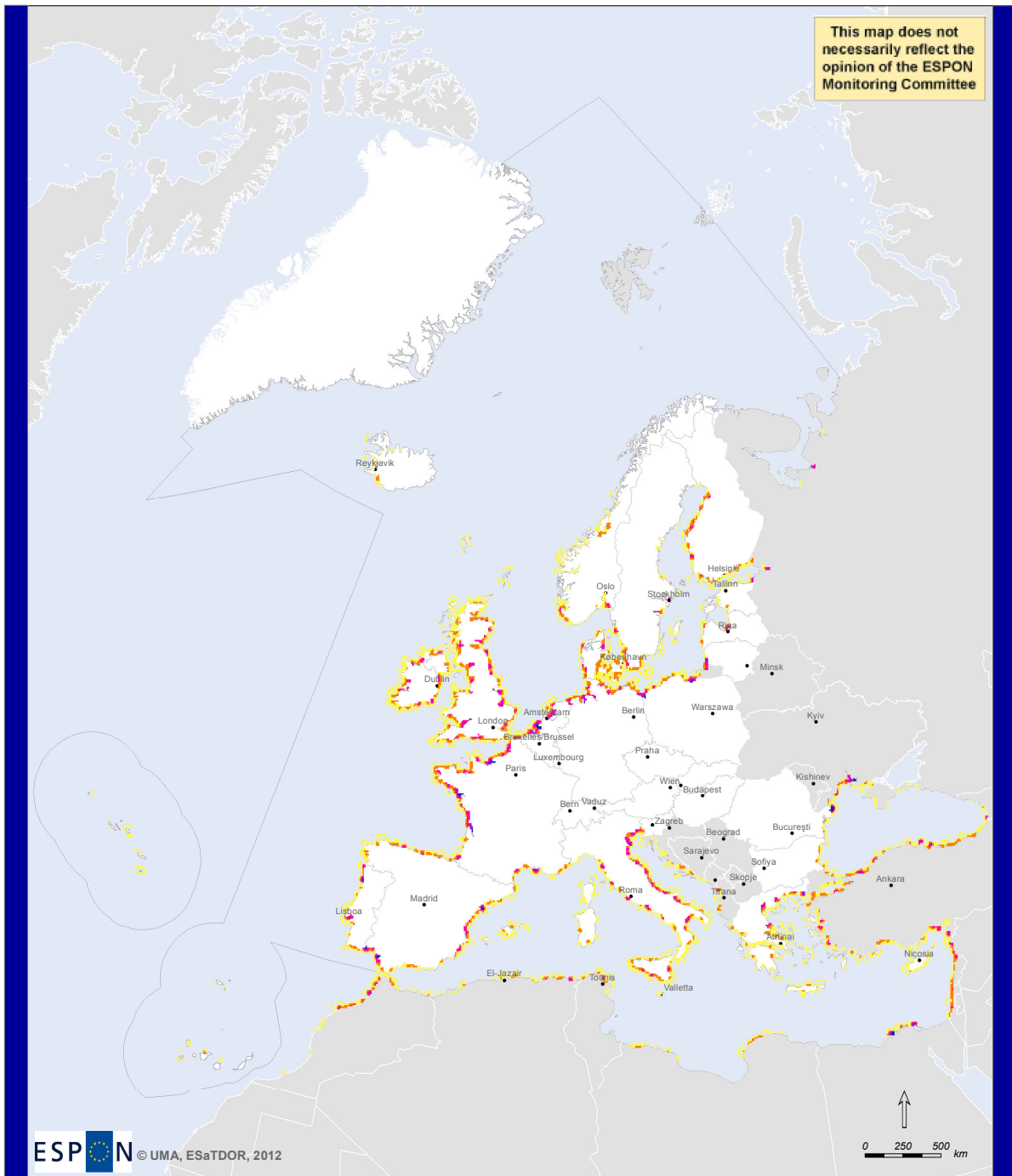
**Map 40** Incidence of invasive species per 10km grid square, October 2004 – October 2005.

Map 41 shows loads of pesticides reaching the coast, and shows that median loads are quite common along much of the coastline. The heaviest loads are associated with rivers draining large and/or intensively developed catchments, such as the Rhine, Rhone, Seine, Vistula, Po and Dnipro.

Map 42 shows that the vast majority of waters along the European coastline conform to mandatory or guide values for bathing water quality. Sites that do not conform are few and are scattered around the coastline, with the exception of a strip between Rome and Naples. Since the dataset does not provide details, it is not possible to attempt an explanation.

Map 43 shows the change in sea surface temperatures (SST) between 1981-1982 and 2012. It shows that over this 30 year period, low latitudes have increased in SST while high latitudes have decreased. SST in the Black Sea and the northeast Atlantic has hardly changed during this period.

# Organic Pollution




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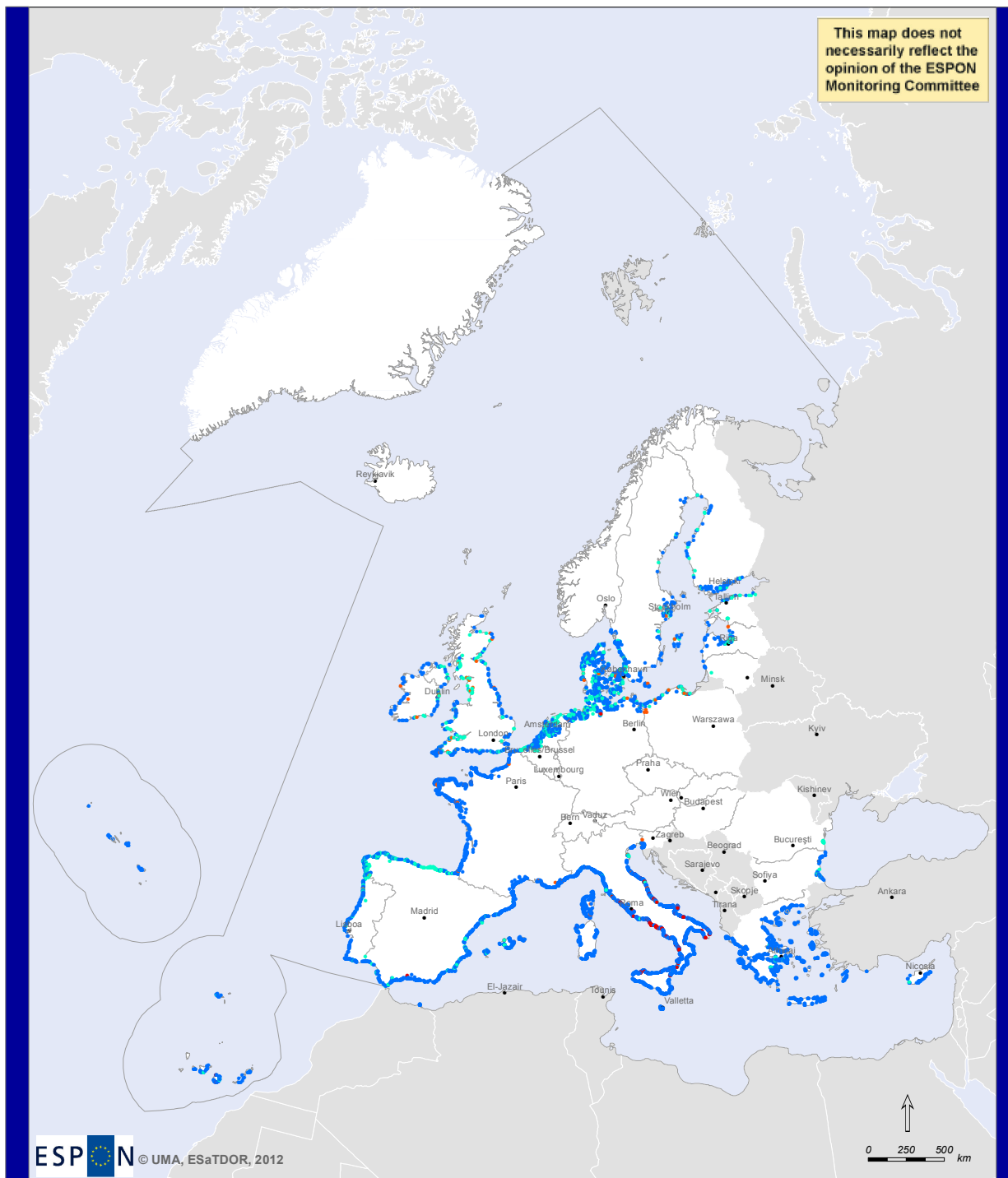
Thematic data: National Center for Ecological Analysis and Synthesis, Organic Pollution, 2008.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Organic pollution (total kg of pesticides per year)



**Map 41** Organic pollution (total kg of pesticides), 2008

# Status of Bathing Waters, 2008



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Thematic data: European Commission, Bathing Water Directive 76/160/EEC Report, 2010  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

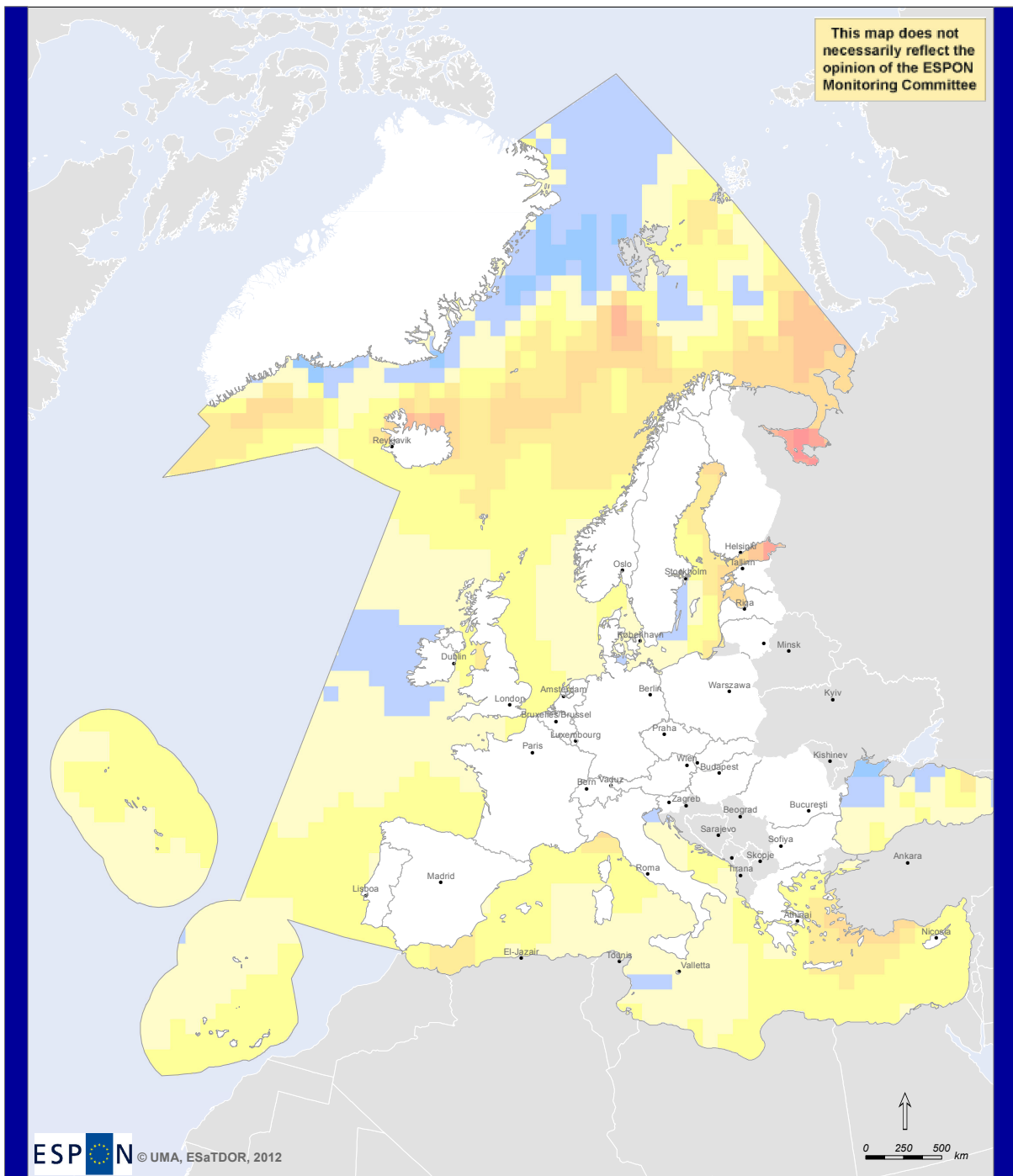
## Status of bathing water for year 2008

(Please note: symbols of upper categories are placed on top)

- Banned or closed (temporarily or throughout the season)
- Not compliant with the mandatory values of the Directive
- Compliant with the mandatory values of the Directive
- Compliant with the mandatory and the guide values of the Directive

## Map 42 Status of bathing waters relative to the Bathing Water Directive, 2008

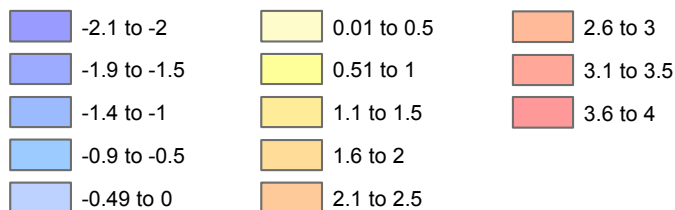
# Increase in Sea Surface Temperature



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Thematic data: National Oceanic & Atmospheric Administration (NOAA), Optimum Interpolation (OI) Sea Surface Temperature (SST) V2, 2012  
Land boundaries: © EuroGeographics Association and ESRI, Regional level: NUTS0.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Increase in sea surface temperature between 1981-2011 (degrees Celsius)



**Map 43** Increase in sea surface temperature, 1981-2011 (degrees Celsius)



## 7.4 Patterns of Land/Sea Interactions

From our datasets, we can deduce that current pressures on the marine environment derive from:

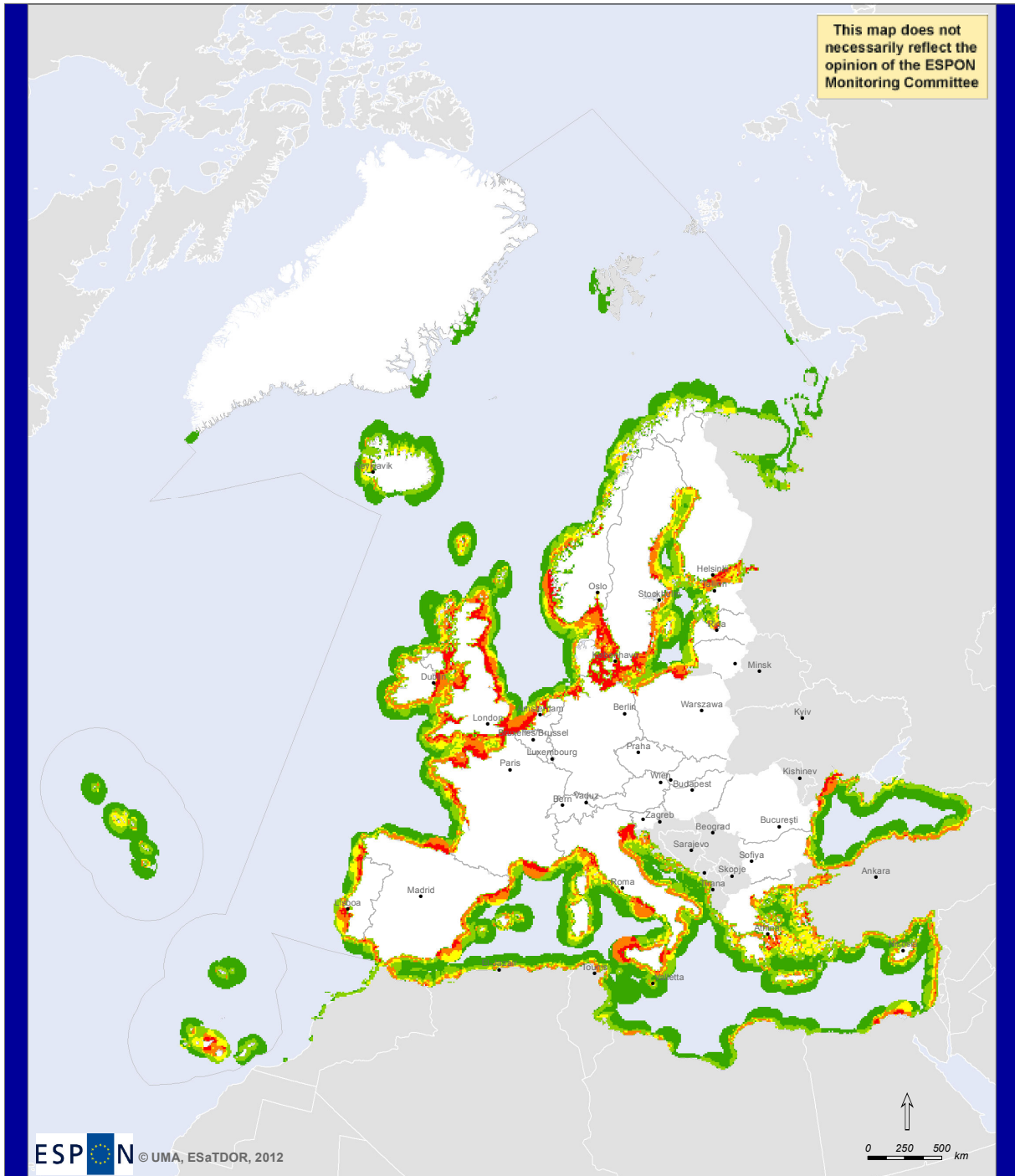
- *River inputs:*  
Rivers form here a transporting medium through which substances from industrial, urban or agricultural land use are transported from land towards sea. This is clearly visible in Map 41 (organic pollution) where plumes of high organic loads are mainly visible around river mouths. Especially heavily populated and industrialized river catchments and/or river catchments with intensive agriculture (e.g. Rhine, Po, Scheldt, Seine, Elbe, etc.) stand out indicating that there is a strong land-sea interaction through river inputs. The collection of further data on nutrient, organic and inorganic inputs could provide further evidence of the links between pollution originating from sources which may be far inland within catchments and the relative health of European seas.
- *Shipping & ports:*  
Shipping is one of, if not the, major source of invasive species in coastal zones and marine environments. Ships take on and release water as ballast, and take unwanted species on board and transport them to new areas. This is the reason why certain locations in Map 40 show a distinctly high modelled incidence of invasive species; i.e. these locations are big ports (such as Rotterdam, Antwerp, Le Havre, Marseille and Trieste) where large tonnage of cargo is being shipped to-and-from. As most sea ports are also located at large rivers, the geographical pattern of this land-sea interaction closely resembles that of the previous one.

Map 44 provides a synthesis map of environmental pressures around the European coast. This map has been produced using three data sets which reflect human impacts on the environment. These are incidence of invasive species, organic inputs and an additional data set on nutrient inputs from fertilisers. The load from fertiliser is based on FAO national statistics for the period 1993-2002. Nutrients are a pressure on marine ecosystems via eutrophication, where the addition of extra nutrients in an ecosystem can favor certain species. These species can then outcompete other species and disrupt the entire ecosystem. It should be noted that the metadata of the dataset merely refers to 'nutrients', but is not specific about which nutrients are concerned (N or P).

This composite map of environmental pressures reinforces the picture of ports and estuaries being the areas where environmental pressures are greatest, for example around major ports such as Dublin, Le Havre, Rotterdam, Naples and Athens (Piraeus), and also around the Canary Islands or in the Kattegat where shipping traffic is relatively high assisting the movement of invasive species. However land-based sources of pollution are also significant in estuaries such as the Dordogne and Loire in France, the Dnieper, and Danube in the Black Sea and the river Po in Italy. Although the land-sea patterns described above follow from our data, we know that there are additional pressures on European marine systems deriving from a much broader spectrum of human activities such as fisheries and aquaculture. But data on

the distribution and magnitude of these sea-uses were not available and therefore they could not be quantified nor be geographically depicted in a map. This makes that the list of land/sea interactions described above should not be considered as exhaustive and that it should be noted that other sources of pressure are grossly underestimated.

# Environmental Pressures




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Thematic data: Environmental Pressures Composite Map.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Environmental Pressures Composite Map

- Very Low
- Low
- Medium
- High
- Very High

*This map is based on three data sets: incidence of invasive species, organic pollution (pesticides) and inorganic pollution (fertilisers).*

**Map 44** Environmental pressures in Europe's coastal and marine regions (composite map)

## 7.5 Future Prospects for Europe's Coastal and Marine Environment

Our maps have clearly shown that land-sea interactions are prominent and that human activity and environmental pressure coincide. Several developments can already be anticipated that will have a likely impact on the marine environment. We will now discuss the most important developments and their consequences.

- *Ongoing globalization* is expected to result in an increase in shipping of goods to-and-from Europe. This increased shipping will inevitably lead to an increased transport of non-indigenous species in the ballast water of ships. Some of these new species will subsequently turn out to be invasive and have negative impacts on the marine environment. Although the Ballast Water Convention set-up by the International Maritime Organization (IMO) is addressing this issue, the convention has only been recently put in place and it will take time before the measures described in this convention will take effect. Although the Ballast Water Convention is likely to alleviate pressure from this source, there are additional developments that increase the risk of invasives. These include the Suez Canal, the opening of the Rhine-Main-Danube canal and aquaculture. A confounding factor is climate change, which enables southern European species to migrate northwards into waters that were previously too cold. These northward immigrating species can also become a pest in their new environment.
- There is considerable societal pressure on the fishing industry to adopt more sustainable methods and to reduce overfishing, by-catch, fleet size, etc. As currently fisheries form one of (if not the most!) significant pressures on the marine environment, this increased societal pressure is likely to make some difference. But it is not yet clear how this will work out in practice as problems with policy enforcement and compliance at high seas are not yet solved.
- Existing policy and directives are tackling a range of environmental problems associated with river discharges (Water Framework Directive). Assuming compliance with these policies, catchments will have a reduced pressure on coastal and marine environments in the future as a reduction of river loads is expected. But past pressures will nonetheless remain, particularly with regards to heavy metals and persistent toxicants, as these substances are in the environment and cannot be removed.
- The socio-economic developments that may have environmental benefits relate mainly to conservation and associated ecotourism. But although ecotourism potentially can provide sustainable economic growth, it also holds some caveats; i.e. individual visitors can have locally an important negative impact on the marine environment (litter, trampling, etc.) and this needs to be adequately controlled.
- Climate change poses considerable challenges for the marine environment, and our ability to predict these changes is limited. Generally, some species are expected to benefit from climate change (i.e. 'winners') and some species are

expected to suffer from climate change (i.e. 'losers'). Species benefitting from climate change are those whose geographical range will expand due to climate change and who are able to migrate to these new environments. The opposite is true for species that are expected to suffer from climate change. Additionally, some species (e.g. cod) are already under such extreme pressure that they might not be able to adapt to yet another extra stress-factor (i.e. climate change).

## 7.6 Environment: Policy Recommendations

To safeguard the ecosystem services from the marine environment, it might be sensible to increase the number of Marine Protected Areas (MPA's). Not only will this contribute to the conservation of the marine environment, but it might also hold opportunities for the associated ecotourism. Moreover, there is already considerable societal pressure on the fishing industry to reduce overfishing. The assignment of extra MPA's might be an important step towards more a sustainable fishery. It could even benefit the European fishing industry in the long term as it can help safeguard fish populations from overfishing and thus help to provide healthy fish stocks to the fishing industry in the future. Clearly, any decision regarding the amount of MPA's will need to be taken at a level higher than individual countries, and this policy recommendation therefore concerns the European and regional seas (transnational) level. An important remark that has to be made in this regard is that off-shore wind farms also hold some potential for marine conservation. Around these off-shore windfarms, fishing is not allowed to avoid accidents and collisions with the expensive wind turbine installations. This means that off-shore wind farms are de facto no-fish zones. But the point is that this does not mean that they are thereby automatically MPA's; i.e. although it does seem apparent that many species will benefit from this less intensive use, MPA's might still have added conservation value compared to these offshore windfarms/no fish zones. This is not yet fully known and research is therefore needed. Thus, our recommendation aimed at the scientific community and its funding agencies (e.g. EU) is that research is needed to determine the relative conservation value of offshore windfarms. If research will confirm that offshore windfarms can have important conservation values, this will allow a search for win-win situations in marine spatial planning.

Another issue is that INSPIRE categories which describe the essential/required datasets, on the whole, mesh poorly with terminology from the Marine Strategy Framework Directive. There are instances where INSPIRE categories are too detailed, whereas other categories are too general. This is unfortunate because a better agreement between both directives has a clear added-value. The MSFD provides a list of important coastal and marine pressures to member states for assessing the environmental status of their coastal and seawaters and this means de facto that member states are required to collect data on these pressures and impacts. The link with INSPIRE is that INSPIRE prescribes guidelines to make environmental data collected by member states consistent and easily accessible, and obviously these guidelines can also be applied to data required for the MSFD. So a common language and definitions of terms between both directives can significantly improve the value of both directives. However, the MSFD could best provide the lead regarding which marine data is really necessary and should be collected by member states: i.e. INSPIRE has a broad scope and a terrestrial focus with limited attention for the marine environment, which makes the data requirements stated in the MSFD much more pertinent for the marine environment. However, it might be opportune if INSPIRE dictates the way in which the data is collected; i.e. INSPIRE aims to lay down ground rules to make the environmental data collected by member states

consistent and easily accessible, and this makes INSPIRE's methodology more comprehensive.

A related issue is that the MSFD uses a terminology in which 'drivers' and 'pressures' are described, but these do not correspond with the 'drivers' and 'pressures' of the European Environmental Agency (EEA). As the Driver-Pressure-State-Impact-Response (DPSIR) approach of the EEA is widely used, using the same terminology but with a different meaning seems not appropriate. A streamlining of the terminology of the MSFD to match that of the EEA seems appropriate.

## 8. Coastal and Maritime Governance

The intensity, nature and extent of sea use demanded varied and complex governance arrangements long before the recent interest in integrated marine policy and planning of sea space. From the UN Convention of the Law of the Sea, to multi- or bi- lateral agreements for the management of sub-regional seas and even to licensing of particular uses, e.g. for aquaculture, or municipal ordinances regulating the navigation of speedboats in an island bay, there existed, and of course still exist, hundreds of such arrangements. The process with which they came into existence, the modalities of decision making, the mode of their implementation and conflict resolution, and the rules of their enforcement require a web of governance styles of different types, especially where conflicting claims exist regarding the use of sea space. To explore these arrangements is a great challenge. Fortunately, what is attempted in this chapter is set within the limits of the recent EU maritime policy and of the focus of the ESaTDOR project. Therefore the key words for this chapter are “maritime affairs”, “territorial development” and “governance”. Apart from reviewing and possibly classifying governance arrangements, the chapter has a second ambition which is to draw attention to the linkages between, on one hand, maritime concerns and marine or coastal policies, and, on the other, the nature and policy implications of economic and sustainable development, cohesion, especially territorial, environmental protection, spatial planning, territorial development and governance. This objective lies behind the analysis of documents and agencies presented here in a series of tables, the comments which accompany the tables in the text of the chapter, or even in the long reference list. It also explains the selection of key documents concerning European regional seas which are being commented upon. It goes without saying that, given the vast number of documents, the choice was inevitably selective and that this chapter should be read in conjunction with other ESaTDOR briefing papers and regional sea profiles. However, the emphasis throughout the chapter remains on the governance aspects of the policies and agreements presented.

Consequently, the aim of this chapter is to present:

- Governance arrangements in relevant:
  - International treaties and conventions.
  - EU policies, regulations, directives and communications.
  - Regional conventions and cooperation agreements.
  - National and local projects.
- Relations (in terms of governance) of maritime issues with major EU policies on e.g. sustainable development, cohesion (especially territorial), growth, environment, maritime affairs, marine space and coastal management.
- Implications of overall EU governance policy for coastal and marine governance and links with ESPON 2.3.2 project on territorial governance.
- Emerging objectives, priorities and types of governance arrangements.
- Interlinkages between (a) territorial planning and maritime policy, (b) maritime spatial planning and integrated coastal zone management, (c) land use planning and maritime spatial planning, and (d) multi-level, trans-national coordination and cooperation.



- References to selected bibliographical sources.
- A discussion of the subject of, and an argument for, a holistic conception and simultaneously a place-based approach, bearing in mind the difficulties arising out to maritime boundary issues.

The concept of governance is naturally of central interest in the context of this chapter, but it was even more so the object of an entire ESPON project. It makes no sense therefore to elaborate further on the subject or to analyze, in terms of governance content and provisions, documents and reports of which the very object is governance, as it is being done with respect to material with a different focus (e.g. maritime policy). Therefore, in contrast to the other tables accompanying this chapter, a different format of table is used in the case of governance. Governance, and in particular territorial governance, has been analyzed exhaustively in ESPON project 2.3.2 on territorial governance, where a bibliographical overview and a long list of references can be found. Table 19 on governance contains mainly quotations from the final report of this project. A special reference to partnerships is made in the table, given their importance in several international, inter-regional and local agreements on maritime and coastal policy and management. The essence of governance, in contrast to formal government, is of course its broad-based, collaborative, cooperative character, which brings together the full range of official, social and private stakeholders, i.e. the dimensions of state, market and civil society, while respecting the principles of participation, vertical and horizontal coordination, partnership, accountability, transparency, sustainability, coherence, effectiveness, and subsidiarity.

The other key concept is that of maritime, sometimes referred to as “marine”, spatial planning, for which several definitions exist in the literature. We quote here only one: MSP is “an integrated, policy-based approach to the regulation, management and protection of the marine environment, including the allocation of space, that addresses the multiple, cumulative and potentially conflicting uses of the sea and thereby facilitates sustainable development” (MSPP Consortium, 2006, p.1). Use conflicts are naturally both the cause and the outcome of user conflicts.

## 8.1 Global Coastal and Marine Governance Arrangements

International concern for the management and protection of sea space on a global scale predates the current flurry of activity at EU level, although the interest of the Union appeared early, albeit tangentially, in various sectoral arrangements before the introduction of specific maritime and marine policies. The main level at which global concern was manifested was that of the United Nations and of cross-country and cross-border cooperation with regard to regional seas and coastal zones.

This section focuses on the global scale in an attempt to place the chapter in a wider governance context. Global governance is evident in managing maritime issues and will remain so in the future in the light of international efforts to combat climate change. Our focus here is the governance implications of conventions, agreements and other arrangements. What concerns us here, mostly presented in tabular form, is:

- International conventions and cooperation arrangements, with EU or ESPON country participation, presented in tables which include treaties, conventions, declarations, agreements, policy documents, strategies and key international bodies.
- International statutory and legal environment regulating single activity sectors, a subject which is also covered, from a different angle, in other chapters of the ESaTDOR Draft Scientific report and briefing papers contained within the Interim Report.
- Outline of the issues concerning maritime boundaries, fisheries zones, exclusive economic zones, the continental shelf and maritime spaces of ecological interest. A brief reference to the special situation in the Mediterranean is to be found in the section on governance in European seas.
- More specifically, the UN convention on the Law of the Seas and UN organizations (e.g. UNEP, UNESCO, FAO and IMO).
- Other international conventions, e.g. Ramsar, Bonn and Bern conventions, Agenda 21 etc.
- The UNEP regional seas programme and its associated projects. Regional seas programmes operating outside the UNEP umbrella are dealt with in the section on governance in European seas.

Consolidation of rights and obligations of national states and other entities regarding the use, exploitation and protection of sea space has been extremely slow in comparison to those on land territories. Even today, especially in cases of closed seas, these rights and / or obligations remain disputed or unresolved. This situation is usually considered as a problem but in some cases it may prove to be an opportunity for effective bilateral, multi-lateral and international cooperation for the development and protection of sea space and marine ecosystems. It is for all these reasons that legal framework and cooperation / partnerships governing the above rights and obligations at the international level are very important for coastal and marine policies and strategies and the respective governance possibilities at lower levels, i.e., in our case, EU, national and local levels.

Of the international legal and cooperation / partnership arrangements those concerning us here refer to:

- Delineation of sea boundaries with respect to allocation of rights;
- Maritime spatial planning and coastal zone management;
- Sea economic use;
- Marine environment protection;
- Maritime transport;
- Sea energy systems.

In the following paragraphs the governance features of the sea and coast relevant international law (conventions, agreements, programmes etc.) and partnerships are presented and analyzed, having in mind their impact on EU, national and local maritime and coastal policies and strategies and ultimately on the prospects of sea development and marine environment protection.

#### International conventions (Table 20)

Within the international legal framework what matters most is international conventions because of their mandatory character, the increased number of signatories enjoyed by the conventions and the formal procedural steps that have to be followed by the signatories before their acceptance. Furthermore, conventions are live, evolving processes, constantly adapting to the changing technological, socio-economic, political and natural environment.

In table 20 we present and analyze the international legal framework in the fields of sea boundaries and delimitation, maritime affairs and planning, coastal zone management, sea use, marine environment protection, maritime transport, sea energy systems, always with an emphasis on the governance dimension, as explained in the introduction. Included here are the UN Convention on the Law of the Sea (UNCLOS), the Agenda 21, which was the outcome of the 1992 UN Conference on Environment and Development (the Rio Conference), the Convention on Biological Diversity, the Mediterranean Action Plan (MAP I, II and III), part of UNEP's Regional Seas Programme, and the Barcelona Convention, the (Bern) Convention on the Conservation of European Wildlife and Natural Habitats, which included several non-EU countries, the (Bonn) Convention on Migratory Species of Wild Animals, the independent Ramsar Convention, the UN Conventions for the Safety of Life at Sea (SOLAS), the Prevention of Pollution from Ships (MARPOL), and the Facilitation of International Maritime Traffic (FAL), and, finally, UNESCO's World Heritage Convention and the "Man and Biosphere" Programme..

Table 20 summarizes the basic governance aspects / parameters of the selected, because of their wider influence, conventions and agreements. In the context of this chapter by influential international conventions we mean those which (a) have framed or have been used as a reference platform for lower level and particularly EU level

law and policy in the field of maritime and coastal affairs, admittedly focusing mainly on economic and environmental issues and much less on social ones, and (b) satisfy basic criteria of good governance, particularly inclusiveness and participation, coordination, effectiveness and accountability.

Table 20 indicates that most of the influential conventions have been produced by or relate to UN processes or UN interconnected organizations (e.g. the UN Convention on the Law of the Sea, Agenda 21 as the outcome of the UN Conference on Environment and Development, the Convention on Biological Diversity –CBD- in the context of the UN Environment Programme, the UNESCO's World Heritage Convention, the IMO's SOLAS Convention etc). Most of these conventions started in the 70's and 80's and are still in process, meaning that they are constantly being amended and that they are continuously accepting new signatories and/or ratifying state-parties. UNCLOS is the most important convention for Maritime Spatial Planning, CBD is probably the prototype of ecosystem-based marine and coastal management while SOLAS and FAL Conventions are fundamental for maritime transport.

As mentioned already, the 1970s in particular were marked by a series of important international conventions and policies on environmental protection, as Tubbs (1983) points out: Ramsar Convention, Bern Convention, Bonn Convention on Migratory Species and EU Birds Directive. These international conventions had a direct influence on the activity of the EU in environmental protection.

Conventions are usually the outcome of Conferences, either UN Conferences or Conferences / Meetings of the contracting parties. From the governance point of view, critical factors (that have been included in Table 20) for a Convention's profile and prestige, are the following:

- The number of signatories and ratifying parties (and their identity), also of those who refused to sign and/or ratify, as well as the reasons of this refusal;
- The predominant governance tools that have been activated and / or invented for the purpose of attracting signatories, achieving compliance to and implementing effectively the convention.

The range / coverage of a convention, i.e. the number of signatories seems to have been determined by certain critical parameters: (a) the age and continuing importance of the convention, (b) the geographical extent of its thematic focus, (c) timeliness of its thematic focus, (d) the capacity of the convention to resolve issues of dispute, (e) recognisability of the initiating agency (for instance UN Conventions enjoy increased numbers of signatories), (f) the benefits and privileges arising from the convention. Consequently UNCLOS has attracted 161 states and the EU, CBD 168, SOLAS Convention has attracted 161 while the World Heritage Convention 188.

The Conference / Meeting of the Parties is the basic governing body in most of the convention cases; this is held once every two to three years. The Conference / Meeting of the contracting Parties is the decision-making body and process producing, amending and reviewing the implementation of the conventions while such bodies as special mission Commissions and Committees are assigned the responsibility of implementation and in some cases function as advisory bodies to the contracting parties. Examples are the UN Commission on the Limits of the Continental Shelf (CLCS), of crucial importance for MSP, the Commission on Sustainable Development promoting implementation of Agenda 21, the Compliance Committee that has been established for implementation of the Barcelona Convention / Protocols, the Standing Committee of the Ramsar Convention, the World Heritage Committee in charge of implementation of the World Heritage Convention etc.

In certain cases (indicative is the case of UNCLOS) conventions establish *ad hoc* executive bodies of increased authority and power to carry out and monitor application processes (e.g. the International Seabed Authority established by UNCLOS, the Regional Port State Control Authorities by FAL Convention etc). This might serve as a tentative indication that formal processes, at least at this level, produce results. The effectiveness of more open governance processes is still being tested at all levels, with both successes and failures. Whatever the success of its performance, governance should not be confused with the workings of the open market.

In most cases conventions become mandatory after ratification by the State-parties, i.e. incorporation in the national law. Prior to this stage the respective international processes and bodies administering a convention promote and encourage inclusiveness, at the highest possible level. In order to provide further stimulus or as a follow up to the stage of ratification, competent bodies and procedures monitor implementation and assess compliance so as to undertake consequent assistance, consultancy, control, review, adjustment and amendment initiatives. It is impossible in the context of this chapter to explore examples of compliance at country level.

The basic tools employed by the conventions in pursuit of the aims of inclusion, compliance and implementation are as follows:

- Informal consultation with candidate states-parties which is undertaken by highly acknowledged as unbiased institutional posts and agencies (indicative is the case of the 3<sup>rd</sup> UN Conference, leading to UNCLOS, which used a consensus process rather than majority vote in order to achieve consensus and partnership enlargement).
- Networking of contracting parties and establishment of agreements with non-contracting parties to encourage implementation of the convention by the latter and probable future inclusion of these parties (indicative is the case of the Barcelona Convention where the contracting parties are encouraged to create networks with non-party states so as to extend the spatial range of implementation of the Convention).

- The institutional regime / provision of external observers or consultants at the meetings and conferences of the contracting parties (without the right to vote). These observers may be not only states but also Intergovernmental and Non-Governmental Organizations (IGOs and NGOs). Representative examples of Conventions employing the mechanism of external observers / consultants are the Barcelona and the Bern Convention.
- Provisions in the conventions which ensure that the latter conform with and respect the provisions of pre-existing conventions and the rights and obligations arising from them.
- Implementation review reports and institutional complaints for breaches of a convention where the right of complaint is given to public and private sector agencies and to individual citizens as well. Good examples of Conventions accepting external complaints (even from individual citizens) regarding Convention breaches are the Bern and Ramsar Conventions.
- Scientific and technical advice institutional agencies (such as the subsidiary body on Scientific, Technical and Technological Advice –SBSTTA- of the Conference of the Parties of the Convention on Biological Diversity, The Scientific and Technical Review Panel of the Ramsar Convention etc.).
- Reference of a matter of non-compliance (self-trigger, party to party trigger, citizen or NGO trigger) to a judging or arbitration agency, usually the responsible Committee and/or the Conference of the Parties, but also ad-hoc bodies such as the International Tribunal for the Law of the Sea (ITLOS).
- Special Funds to financially assist parties in implementation, like the Ramsar Small Grants Fund or the World Heritage Fund in support of the World Heritage Convention etc.
- Action Programmes like the Mediterranean Action Plan to forward implementation of the Barcelona Convention etc.
- The “tacit acceptance” procedure for the quick and simple modification of conventions to keep pace with the rapid advances in science and technology, rapidly evolving environmental crises etc. IMO’s use of the tacit acceptance procedure to enlarge partnership and boost implementation of the MARPOL Convention is a good example.
- The concept of “standards and recommended practices” adopted by certain conventions (such as the FAL Convention) to facilitate continuing process toward uniform measures.
- Ad-hoc coordination units.
- Projection of the prestige which member countries are invested with when they become members of a special international community, for instance the community of the countries which have sites inscribed on the World Heritage List of the World Heritage Convention.

Once again, to provide examples of the use of these tools in more specific instances is beyond the scope of this chapter. It is evident however that international level conventions and agreements relevant to coastal and maritime affairs, especially those that have been crowned with success, owe their acceptance and consolidation to a series of innovative governance tools, at least at the time of their adoption. It remains an open question whether lower and especially local level agreements have already or might take advantage of some of these tools in the future. This might result from the action of individual states or from the encouragement given through international programmes to good practices at local level, as e.g. in the case of SMAP (SMAP Clearing House website).

### International bodies (Table 21)

In table 21 we present and analyze international bodies and partnerships governing the issues presented in table 20. These include the United Nations Environment Programme (UNEP), UNEP's Regional Seas Programme and GEF-MED Partnership, the International Maritime Organization (IMO), FAO's Fisheries and Aquaculture Department, UNESCO's Intergovernmental Oceanographic Commission, the International Energy Agency, the UN Commission on the Limits of the Continental Shelf, the International Seabed Authority, and the International Tribunal for the Law of the Sea, established by UNCLOS. We have also included in this table IUCN, Greenpeace and WWF.

Several of the international level bodies and partnerships with competences relevant to coastal and marine governance are the outcome of conventions and in certain cases these bodies have been established exactly for the purpose of facilitation of the conventions' application (see Table 21). Indicative examples are the UN Commission on the Limits of the Continental Shelf (CLCS) and the International Seabed Authority (ISA) that have been established to facilitate implementation of UNCLOS; the Committee of Fisheries of FAO (COFI) functioning among others as a forum in which global agreements are negotiated; the Intergovernmental Oceanographic Commission (IOC) that has been established as a follow up of UNCED, Agenda 21, in the field of integrated coastal management (and working also for the purposes of UNEP) and the World Heritage Committee to support implementation of the World Heritage Convention.

In general, at the international level, there are three categories of partnership organizations with competences relevant to coastal and sea use management:

- Ad-hoc Commissions and Committees which are embedded in the UN structure and assigned a specific role or mission which is usually either the implementation of a convention / agreement or constant collection of data and information and scientific / technical consultancy to the parties of the convention, their meetings and conferences (e.g. the Commission on Sustainable Development –CSD- to monitor and report on implementation of Agenda 21, the Mediterranean Commission on Sustainable Development -

MCSO—that is attached to UNEP-MAP, the Compliance Committee of the Barcelona Convention, the World Heritage Committee i.e. the main body in charge of implementation of the World Heritage Convention, the UNESCO's Intergovernmental Oceanographic Commission –IOC- aiding and advising policy-makers in the reduction of coastal hazards etc.).

- Autonomous or loosely connected to the UN system organizations and partnerships acting as knowledge suppliers in the field of marine and coastal affairs, as promoters of relevant international dialogue and cooperation for the purpose of producing international policy and regulations and as facilitators of multi-lateral or bi-lateral agreements. These agencies draw their authority and prestige from the degree of inclusiveness and geographical coverage they enjoy and the degree of acknowledgement of the historical process of their formal establishment. Indicative examples of such organizations are the International Seabed Authority (ISA), the International Maritime Organization (IMO) and the International Energy Agency (IEA).
- International NGOs representing the global civil society and drawing their acknowledgement and political power from the large number of national civil societies represented and from their capacity and past successes in influencing powerful international, supra-national (such as the World Bank, OECD, G8, G20 etc.) and national policy-making institutions in the field of marine / maritime and coastal affairs. Representative examples are of course Greenpeace and WWF. Their specific influence and networking within national contexts depend on the conditions of each country and cannot be documented here.

In the first case of Commissions and Committees in the UN system, which have been created for an ad-hoc purpose or mission, the prevailing governance model is that of a horizontal structure where the states / parties are equally represented by a specified national level executive institution (e.g. Ministers for the Environment or Maritime Affairs etc). These Commissions and Committees are accountable to UN Conferences, Meetings of the Parties and to the General Assembly of the UN.

In the second case, the autonomous and semi-autonomous partnership organizations are horizontal arrangements also; but in this case the partners are not only states but IGOs as well. Besides, in several organizations the so called “observer status” and “consultative status” allow for NGO and other bodies' participation in the debates but without the right to vote.

In the third case the International NGOs are network structures which develop and expand horizontally, vertically and diagonally. Their members may vary from regional, national and sub-national NGOs to scientific / research centres, single experts and individual citizens. In certain cases these include also government agencies (e.g. IUCN) but in this case financial or political dependence on governments and inter-governmental organizations is not avoided. In general terms



the funding resources of the work, programme and action of international NGOs are donors and partners including national and regional level NGOs, private agencies, foundations, international conventions, companies, multi-lateral institutions etc.

Certain international NGOs declare explicitly as a key principle their independence from political and commercial interests, meaning that they do not accept money from either companies or governments. The prominence and wide recognition of certain NGOs is due to their bottom-up model of operation. The structure of these NGOs is not centralized and there is no command and control relationship between the central and coordinating governing unit and the national and regional offices or extensions around the world. The latter are independent in carrying out their strategies within their local context and in seeking the necessary financial support. A key factor of success is also the close contact of these NGOs with the general public.

From a governance point of view, we consider as critical factors, mentioned in Table 21, for a partnership's identity, success and influence, the following:

- a) The number of members joining the partnership and the accordingly represented communities, i.e. the societal and geographical coverage of the partnership;
- b) The instruments and processes that the partnership employs to the end of consensus building, agreement upon objectives and their realization.

Regarding governance instruments employed by international partnerships important in this respect is the repeatedly appearing element of negotiation processes to reach global agreements and non-binding policies. Equally important are organizational structures of partnerships that reflect a cross-sectoral outlook and a multi-level organizational pattern, including all responsible or involved administrations / decision-making levels. In individual instances, a further important factor may be the prevailing spatial decentralization philosophy, which depends on the conditions of particular countries and world regions.

## **8.2 UNCLOS and EEZs: Further analysis**

The concepts and institutions introduced by UNCLOS are described in great detail, with extensive comments, by Sharma (2008). He analyzes (pp.26-56 and 93-115) the concepts of internal waters, territorial sea, contiguous zone, archipelagic waters, exclusive economic zone, continental shelf, high seas, coastal baseline, innocent passage, enclosed and semi-enclosed sea, Sharma devotes special chapters to the rights of coastal states in their EEZ, EEZ delimitation and legal status, settlement of disputes and relevant customary law. We cannot of course reproduce here the UNCLOS provisions regarding the various sea functional zones and their delimitation or Sharma's analysis, but we can single out some of his points, particularly when they are relevant in the case of the sensitive realities of the Mediterranean Sea and of the controversies surrounding them. "Most of the EEZ claimants have retained

continental shelf also, which may extend in some cases to more than 200 nautical miles. In such cases sovereign rights for the purpose of exploring, exploiting, conserving and managing the resources of the Continental shelf will extend beyond 200 nautical miles”, which is the maximum breadth of an EEZ (p.99; see also p.337). Geographical conditions in the Mediterranean Sea impose a much more limited continental shelf breadth. However, “the EEZ is a multi-functional resource-oriented zone. The coastal State does exercise within this zone various rights with regard to many different types of activity which were previously exercised separately in all kinds of functional zones, such as exploitation and conservation of living resources in fishery zones” (p.99). And further, “the EEZ contrary to the Continental shelf does not belong to the coastal state *ipso jure*. The EEZ has to be explicitly proclaimed by the coastal state in question. If this has not been done, the EEZ simply does not exist” (p.102). The UNCLOS recognizes the autonomy of the institutions of EEZ and continental shelf (p.109). The two regimes can coexist and, in fact, there is a practical advantage in having a common boundary for EEZ and continental shelf (pp.335-337). Sharma explains the process of delimitation of the continental shelf (pp.338-330) and of EEZs (pp.347-360), as well as the criteria of equidistance and equity (p.347).

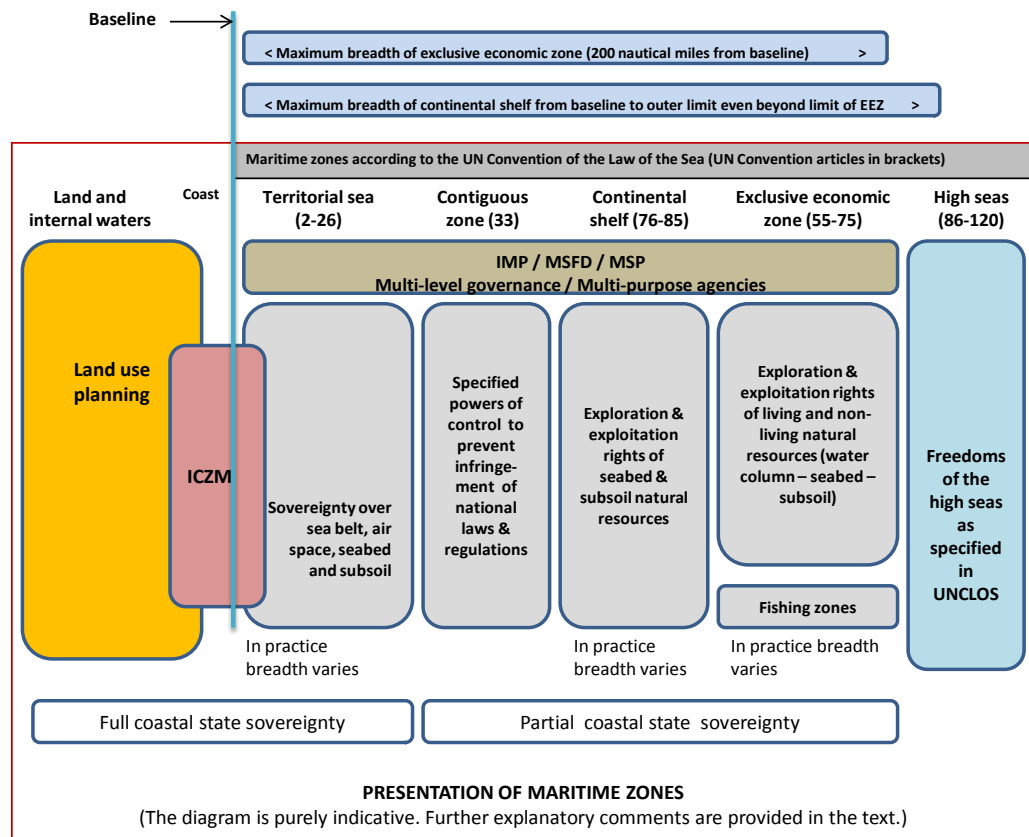
- a. The basic concepts introduced by UNCLOS are also discussed by Chevalier (2005) and Ronzitti (2010) whose papers dwell mostly on maritime claims and boundaries in the Mediterranean (see section 4). Of interest is the German concept of *aquitorium*, a composite of *aqua* and *territorium*, used to describe the entire UNCLOS system of maritime zones (Vitzthum, W.Graf., Hrsg. 2001; Proelss, A., 2009). A full list of maritime claims is available in the UN website (see “United Nations. Maritime space: Maritime zones and maritime delimitation” in the reference list).
- b. In an article by Hoel, Sydnes and Ebbin (in Ebbin, Hoel and Sydnes, eds., 2010, ch.1), the authors provide a concise review of the UNCLOS regime and exclusive economic zones (EEZs). As they point out, In spite of the UNCLOS existence, “substantial variation exists in the character and effectiveness of the regimes that coastal states have put into place to govern activities taking place in their EEZs” (p.6). No doubt this is partly due to arrangements prior to UNCLOS’s coming into force in 1994. “Moreover, the fit between these new institutional arrangements and the biophysical features of the problems they are intended to solve is still far from perfect” (p.6). This important comment is in fact one of the key reasons in favour of more open and collaborative governance arrangements.
- c. The authors try to dispel a misconception regarding the nature of EEZs: “The rights of coastal states in the EEZs are far-reaching, but not identical to the bundle of rights generally associated with sovereignty over territory. By introducing a new configuration of rights, distinct from those exercised in territorial waters or those associated with the high seas, UNCLOS III initiated an institutional experiment in which sovereignty is not approached in absolute or indivisible terms” (pp.11-12). The importance of this remark lies in its relevance for the situation in some European seas, notably in the Mediterranean. In another article, this time by Sydnes, but included in the

same reader (ch.8), on fisheries organizations and management, the author points to the regional variations in institutional arrangements following the introduction of EEZs under UNCLOS, the 1995 UN Fish Stocks Agreement, also emanating from UNCLOS, and the FAO Code of Conduct. In this case too, uniformity of formal governance is not the rule, which points to the need of a more flexible and indicative type of governance.

- d. In the concluding chapter (ch.13) of the reader, Sydnes, Hoel and Ebbin stress that the EEZ by itself is an “enabling institution” facilitating “the establishment of legislation and institutions” performing various tasks (p.211). The authors make a lot out of the notion of institutional interplay, because of which institutions cannot be studied in isolation. Interactions in the framework of institutional interplay (vertical or horizontal) “may enhance or impede a regime’s effectiveness” (p.213). The authors, who deal with fisheries governance, draw attention to “the interactions of the global EEZ regime with regional, domestic and local institutions”, which can be functional or political, positive or negative. A number of issues, under the EEZ regime, remain unresolved particularly at the level of practice. “Fundamental to meeting the implementation challenge is the establishment of EEZs. While most countries have done so, there are still countries that haven’t established extended jurisdictions, leaving the resources in the waters off their coasts open for all to exploit” (pp.217-218).

In the following figure (26) we illustrate diagrammatically the maritime zones, as defined in UNCLOS, and relate them to land planning, ICZM, IMP and MSP.

**Figure 26 Maritime Zones**



The diagrammatic form of the above figure necessitates some short comments on the character of maritime zones and the nature of coastal states' rights, borrowed from the United Nations Convention of the Law of the Sea (UNCLOS).

The sovereignty of a coastal State extends, beyond its land territory and internal waters and, in the case of an archipelagic State, its archipelagic waters, to an adjacent belt of sea, described as the territorial sea.<sup>69</sup> This sovereignty extends to the air space over the territorial sea as well as to its bed and subsoil. Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with UNCLOS. Subject to the Convention, ships of all States enjoy the right of what is called "innocent passage" through the territorial sea. Passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State. Waters on the

<sup>69</sup> Since no coastal State of the European regional seas is an archipelagic State, we do not refer to archipelagic waters in this briefing paper.

landward side of the baseline of the territorial sea form part of the internal waters of the State concerned.

In a zone contiguous to its territorial sea, described as the contiguous zone, the coastal State may exercise the control necessary to (a) prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea, and (b) to punish infringement of the above laws and regulations committed within its territory or territorial sea. The contiguous zone may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured.

The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance. In circumstances specified in UNCLOS the outer limits of the continental shelf can exceed the distance of 200 nautical miles, but cannot exceed 350 nautical miles or 100 nautical miles for the 2,500 metre isobaths. This means that in these circumstances the continental shelf will extend beyond the limits of the EEZ, even if the latter is declared up to the maximum of 200 nautical miles.

The exclusive economic zone (EEZ) is an area beyond and adjacent to the territorial sea. In it, the coastal State has (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds, and (b) jurisdiction with regard to the establishment and use of artificial islands, installations and structures, to marine scientific research and to the protection and preservation of the marine environment, in accordance with the relevant provisions of the Convention. In the EEZ all States enjoy freedoms, subject to the relevant provisions, associated with the operation of ships, aircraft and submarine cables and pipelines. The EEZ shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. A coastal state can declare an EEZ of less than 200 nautical miles.

It is necessary to make the point that the breadth of maritime zones as declared by coastal States depends on regional conditions and inter-state negotiations. As a result, in practice, it may be different from the maximum permitted by UNCLOS.

The provisions of Part VII of UNCLOS on the high seas apply to all parts of the sea that are not included in the EEZ, in the territorial sea or in the internal waters of a State, or in the archipelagic waters of an archipelagic State. The high seas are open to all States, coastal or land-locked. Freedom of the high seas is exercised under the rules of international law and comprises *inter alia* the freedoms of navigation, overflight, fishing and scientific research, as well as the freedoms to lay submarine

cables and pipelines and to construct artificial islands and other installations, always in accordance with the provisions of UNCLOS and other international law.

### **8.3 EU Level Policies and Initiatives on Maritime Governance, Development and Cohesion**

A conscious purpose of this chapter is to trace the parallel development, on one hand, of EU policies for growth and development (economic, sustainable, territorial), cohesion (including territorial cohesion) and environmental protection, and, on the other, from roughly 2006 onwards, of EU maritime and marine policies and maritime spatial planning. Tracing their inter-relationships and linkages, which we attempt to show in Tables 22 – 26, throws into relief the ascent of maritime policy and what we can call the “MSP turn”. This is a key development which is already having a serious horizontal impact. Tables 22 and 23 have a strong sea flavour. Maritime policy concerns (Table 22) may have started in 2006, but ICZM interest (see European seas overview in next section and Table 23) has a longer history. Themes like development (Table 24) and environment (European seas overview section and Table 26) go back to early years of EU policy making and, as a result, we follow their more recent development, since roughly the 1990s. Cohesion (Table 25) is a relative latecomer and territorial cohesion even more so. Because it is the latter which we are mostly interested in, we follow developments from 2004 onwards. In these sectoral Tables (24 and 25) on development and cohesion we inserted comments regarding the presence or absence of references to the maritime and marine dimension. It is impressive to observe how late maritime interests appeared in these policies. Future research work could refine this statement by focusing on various countries, sea regions and sub-sea regions, in order to examine, in comparative terms, how this delay affected their development opportunities.

This section’s emphasis is on selected policies, programmes, cooperation schemes and initiatives at EU level, although ICZM and environment policies are left for the next section, together with regional sea arrangements and local projects, which are often examples of success and innovation or even failure and stalemate. Special attention is given to the land / sea interface and to policies, programmes or plans with a clear spatial planning orientation. The section deals with:

- Key documents on maritime and marine policy, maritime spatial planning and integrated coastal zone management, up to the 2011 review of MSP achievements.
- EU development policies from the Lisbon agenda to the Europe 2020 strategy.
- Sustainable development strategy, from Gothenburg to recent reviews.
- Spatial policy and territorial agenda, from the European Spatial Development Perspective and the Council of Europe CEMAT guiding principles to the Territorial Agenda 2020.
- Cohesion policy, with special attention to territorial cohesion.

- Key environment policy documents.

Undoubtedly the classification adopted in the tables can be disputed and there are inevitable overlaps. But rather than make an undifferentiated list of policy documents, reports etc., we thought that it would be useful to categorize them in a tabular form to highlight the temporal dimension in each category, the delayed inclusion of maritime concerns in sectoral policies (sustainability, cohesion, territorial governance), and the governance content and implications of each policy.

### Maritime policy and maritime spatial planning (Table 22)

Maritime spatial planning (MSP) is receiving increasing attention in the literature and in various reports of international and national agencies, not to mention the pioneering work of experts like Stephen Olsen, to whom we shall refer later. The reason was stated clearly in a speech by the EU Commissioner for Maritime Affairs and Fisheries: “Governments are waking up to the fact that we have just about reached the limit of what can be squeezed from the 29% of the planet that is land. Therefore, it becomes clear that we need to look even more to the sea” (Damanaki, 2011).

According to a report of the MSPP Consortium (2006), from which we have already quoted a definition, a maritime spatial plan can take either a formal statutory (binding) or a non-statutory (non-binding) form (p.2). MSP follows a policy hierarchy from the international down to the local level, a continuum along which interact legal competences at every level (pp.21-22). A maritime spatial plan has relationships with subsidiary plans (spatial or sectoral), other statutory plans with a marine element and non-statutory plans with a marine component. The report stresses the liaison between plans and authorities on either side of the coastal divide (p.25).

In a presentation on the Portuguese maritime spatial plan, Sequeira (2007) singles out the elements of MSP, those he views as components of essential governance, i.e. global vision, adaptive – progressive – integrated management, knowledge and mapping of uses and activities, capacity planning, rigorous and transparent criteria, licensing – surveillance – control, less bureaucracy and lean processes.

In the handbook on MSP by Plan Coast (Plan Coast Project, 2008), the following are considered to be the reasons for integrated maritime spatial planning: Increasing density of use, increasing *spatial* intensity of use, climate change, growing interlinkages between land and sea use, and cumulative and indirect impacts (p.15). A challenge for MSP is that it transfers a land-based approach to a significantly different environment, when “less is known about the marine environment than the terrestrial environment” (p.22). This is a point made long ago by Pritchard (1983), who discussed the difficulty of defining marine conservation as concept and as practice “because most of the familiar conservation concepts relate to terrestrial ecosystems and cannot easily be transposed to the sea” (p.43). White, Mottershead and Harrison (1992) too remark that “coastal systems are thus seen to embrace a

wide range of distinctive environments, quite different in kind from other terrestrial environments” (p.375).

Gilliland and Laffoley (2008) provide a long list of MSP guiding principles and insist that stakeholders should be involved in the entire MSP process, although they also point out that it is important to identify the right stakeholders and bring together all sectors of sea use and ensure that they make a contribution.

In a long document, Blaesbjerg, Pawlak, Sørensen and Vestergaard (2009) identify the elements that may be included in a MSP system (p.15), single out the economic sectors addressed by it (p.70) and list the relevant legal provisions, *fora* and agencies (p.76). They also provide a definition of MSP. In their view, MSP resembles terrestrial land-use planning: “Planning in relation to marine areas today is in many respects similar to early land-use planning, without a clear spatial vision or planned approach, resulting in a lack of certainty for users and developers” (p.16). The MSP plan production process shown in a diagram (p.24) is very much like the typical systems approach. The same remark applies to another diagram, that of the BALANCE project (p.25). The authors emphasize the need for ecosystem-based management and take the view that ICZM can bridge “the gap between land- and sea- based spatial planning systems” (p.17). They refer to international (UN), regional (HELCOM, OSPAR) and EU (IMP, MSP, MSFD, Habitats and Birds Directives) frameworks (pp.19-20), which are also being presented in the tables of this chapter. They also stress the importance of stakeholder involvement and participation: “Stakeholder involvement is a consultation top-down approach, while participation can be characterized as a cooperative approach that offers more possibilities for the engagement of stakeholders and can include the mutual exchange of information and knowledge” (p.53). We shall return to this comment in the conclusions.

In a study published by the Stockholm Resilience Centre, Merrie (2010) too quotes available definitions of MSP (pp.4, 9 and 11), especially that of Douvere, and lists the benefits of MSP (p.4), the threats to European seas (pp.6-7), the economic activities and uses in a typical marine area addressed by MSP (p.7), the principles of the ecosystem-approach (pp.7-8) and the international frameworks of UN, UNEP and UNESCO (p.12), which we too have presented in our Tables 20 and 22. The diagrammatic process of MSP, borrowed from Ehler and Douvere, is, like those presented by Blaesbjerg *et al.*, strongly reminiscent of systems approach models of the 1960s. Merrie refers to the work of UNESCO (p.19) on MSP and to the guide written by Ehler and Douvere (2009) and published by UNESCO, which we have included in Table 22 because it was commissioned by an international organization. Merrie’s report contains a section on national maritime strategies (Belgium, Germany, Netherlands, Norway and UK) (pp.27-32). More information on national maritime strategies can be found in the UNESCO Marine Spatial Planning Initiative website.

The evolution since 2006 of EU maritime policy and the key documents are presented and discussed in Table 22. As shown in the comments, maritime policy had, from its inception, a pronounced emphasis on the key principles of governance.



This is evident in the IMP Green Paper, as well as in the 2007 Commission Communication and its accompanying working document, and there is no need to repeat the content of the table. The effort to establish horizontal links with sectoral policies, e.g. on development and environment, and with territorial policy and planning, is also clear. E.g. the communication on IMP and the 2008 roadmap advocate the integration of MSP, ICZM and terrestrial planning. It is crystal clear that it is the older pedigree of ICZM (see European seas overview section and Table 23) and the great number of ICZM initiatives that justify the delay of the complete merger of MSP and ICZM. Other factors have played their role too. ICZM extends over areas which are more clearly defined and delineated and do not suffer from disputed jurisdictions. In spite of the undoubted influence of each country's style of planning, in general coastal planning can become part of a planning continuum without major difficulty. At the same time, the fact that it involves the management of a zone of sea space and of a complex land-water ecosystem makes ICZM a bridge with MSP, in the framework of a holistic ecosystem approach.

The development of IMP policy is intertwined with that for marine environmental protection which is embodied in the Marine Strategy Framework Directive of 2008, the environmental flip side of the coin of sea-related policy, and the Marine Knowledge 2020 communication. Both throw a bridge toward the Europe 2020 Strategy and consequently with economic growth policy, to which the seas are now clearly expected to make a greater contribution, as we shall indicate in the next subsection. By the time the first achievements of MSP were ripe for review, including the first concrete legislative and policy actions at national level, coherence with spatial planning, ICZM and environmental policy, e.g. with the emphasis on the ecosystem-approach, was even more strongly stressed. This is eloquently described in the EU publication which attempts to answer the question what MSP is about. A series of documents issued by other agencies (UNESCO, EEA, Policy Research Corporation) highlight the linkages of mainstream EU maritime policy with various regional sea initiatives, which the EU supports or funds, with spatial policy, even going back to ESDP, with economic policy, e.g. by pointing to expected MSP economic benefits, and with national maritime planning efforts. Some examples of the latter, either very advanced, or in an embryonic stage, are given in Table 22. A report by the Policy Research Corporation stresses the importance of clear maritime zones and boundaries for effective MSP. In the meantime, the EU proceeds to refine its financial support of IMP and "to foster the development and implementation of integrated governance of maritime and coastal affairs", this time with a regulation. We shall return to environment and ICZM policies in the next section.

### Economic, sustainable and territorial development - Cohesion policy (Tables 24 and 25)

In describing the focus of this section we referred to the importance of territorial cohesion. One is tempted to conclude that although spatial planning made a forceful entry into the EU vocabulary and policy concerns in the 1990s, it was finally the

maturation of the interest in territorial cohesion in the early years of the 2000 decade, until the concept's final inclusion in the Lisbon Treaty in 2007, that played a role in the recognition of the need for an integrated maritime policy and maritime spatial planning. Together with a more urgent recognition of the economic role of the seas at a time of economic crisis, it became apparent that territorial cohesion makes no sense if "territory" does not include the seas as well as land and if territorial cohesion does not embrace maritime space as well as terrestrial space.

In the light of the above conclusion, the remark that there is "a growing sense that a territorially more integrated approach is necessary in order to achieve the goal of structural innovation and sustainable economic growth" (Schön, 2005, p.391) gains in meaning if the notion territory is expanded to include sea space. To some, territorial cohesion is still a somewhat confusing concept, often presented, as Doucet says as "a European Holy Grail" (Doucet, 2006, p.1474), interpreted either as a social justice instrument or as a continuation of the post-war urban and regional planning tradition. Indeed Davoudi feels that "the concept of territorial cohesion brings a new dimension... by extending the application of the principles of 'social models' beyond individuals and social groups to places and territories" (Davoudi, 2005, p.436). Wassenhoven on the other hand expressed the opinion that territorial cohesion is not only about harmonious spatial development and territorial equity, but also about harnessing the productive potential of all territories for the overall goal of growth (Wassenhoven, 2008b; see also Farinós, 2005, 2009a, 2009b).

The reason we have included in a single table (Table 24) economic, sustainable and territorial development is the constant interplay between EU policies addressing these forms of development. At some times these policies come closer, at other times they drift apart. No doubt this reflects not only economic conjunctures but also theoretical conceptions prevailing at any one time. Our starting point in table 6 is the period 1999-2001, when, within a 2-year span, the EU launched the Lisbon Strategy, the Sustainable Development Strategy (SDS), adopted in Gothenburg, and the European Spatial Development Perspective, which is a consultative document, while the Council of Europe presented its own guiding principles for Europe. A lot of what was to follow was included in these EU policies. The near absence of references to maritime affairs is noticeable. The Lisbon process was revised in 2005, following the Kok Report (Kok, 2003) but the expected maritime and marine strategies are now clearly mentioned in the 2005 communications. Contrary to the (tacit?) abandonment of the initial Lisbon ambitions, the 2007 Territorial Agenda remained faithful to ESDP objectives, but is equally deficient as far as sea space is concerned, which is also true of the "Regions 2020" working document. However, the 2009 review of SDS and the key policy document of the Europe 2020 Strategy recognized the importance of maritime policy. This is also the case with the new Territorial Agenda 2020.

Cohesion policy (see Table 25) follows a similar story, although in this case the advent of territorial cohesion, closely related of course with territorial development planning, makes a difference. Although maritime space was ignored in the interim territorial cohesion report of 2004, it was given emphasis in the "territorial state and

perspectives” report a year later, a document with a definite governance philosophy and an emphasis of great interest for maritime policy on innovation, clusters etc. It comes as a surprise that a 2005 communication and in particular the 4<sup>th</sup> Cohesion Report of 2007 ignore maritime space. Fortunately, the balance went the other way in the Green Paper on territorial cohesion of the following year, confirming our impression that a close relationship and interaction exists between territorial cohesion and maritime policies. In the meantime the concept of a place-based approach, as advocated in the Barca report, with its emphasis on local stakeholder involvement, began to gain ground. This may represent an effort to use territorial cohesion as a tool to maintain a balance between top-down and bottom-up approaches. Finally, the 5<sup>th</sup> Cohesion Report sets the scene for future developments along with the Europe 2020 Strategy. Integrated Maritime Policy is given a separate place, which is of importance since cohesion becomes the main investment strategy in the framework of the Europe 2020 Strategy, as explained in the European Commission’s cohesion policy for 2014-2020.

#### **8.4 Overview of Current Governance Arrangements in European Seas and EU Level Coastal and Environment Policies**

Our main concern in this section is the governance arrangements in regional sea conventions and agreements (Table 27) and in local partnerships and projects (see Table 28). A side concern is the special situation of the Mediterranean Sea with respect to maritime zones and maritime boundary delimitation. The problem is especially critical in the Eastern Mediterranean and even more so in the Aegean Sea. The coasts of the European seas have been under pressure for a long time and we have therefore decided to add to this section the sub-section on coasts and ICZM (see Table 23).

An important policy area which stands between the policy areas we discussed in the previous section and those we include here is the area of environment policy. Reference was made in the previous section to the Marine Strategy Framework Directive, the environmental pillar of IMP, which endorses the use of the ecosystem-based approach. Of interest however, are also some key documents of environment policy, which are presented in Table 26. Included here are seminal directives, e.g. the Habitats, Water, Strategic Environmental Assessment, Birds, Floods and Renewables Directives, the importance of which for MSP varies, but is nonetheless clear when we consider both the environmental and the economic value of sea space. We have added the European Landscape Convention and the EU policies for a low carbon economy and adaptation to climate change. The list is not presumed to be exhaustive, but, from a maritime perspective, we must draw attention to documents which predate the emergence of maritime policy concerns. It is in fact interesting to observe the delayed explicit and substantial integration of the latter in environment policy. E.g. the difference, in this respect, between the 5<sup>th</sup> and the 6<sup>th</sup> Environment Action Programmes is striking. Some of the documents listed in table 8 have obvious relationships with international conventions mentioned earlier, e.g. in

the case of habitats, biodiversity and protected species. As with policies with a direct maritime interest, environment policies are now being adjusted to economic priorities, even if they are supposed to counterbalance their effect. The reference to the Europe 2020 Strategy in the EU biodiversity strategy of 2011, in climate change policy and in the roadmap to the 7<sup>th</sup> Environment Action Programme is significant in this respect. This is a situation similar to the Lisbon – Gothenburg equilibrium of 2000 – 2001.

Therefore, and apart from environment policies, this section deals with

- EU and transnational initiatives for regional seas.
- Integrated coastal zone management
- Maritime boundaries and exclusive economic zones in the Mediterranean
- Examples of regional and local marine and coastal initiatives and cooperation arrangements.

Dealing with these themes permits to throw light on the presence (e.g. VASAB) or absence of a spatial planning content in regional sea cooperation agreements, on relationships with integrated coastal zone management initiatives and on the governance implications of the initiatives outlined in this section. As before, we use the tables to pinpoint the governance provisions in regional sea arrangements.

#### Coastal zones (Table 23)

The coastal zones of European countries and seas have been the focus of attention from an early stage. In 1973 the Council of Europe expressed concern for coastal environments in Europe and their “biological degradation and aesthetic disfigurement” (Tubbs, 1983, p.64). The reason is explained succinctly by White, Mottershead and Harrison (1992): “Coasts are characterized by a distinctive set of environmental conditions and are acted upon by a distinctive set of processes. The coastal zone itself consists of a number of subdivisions, each associated with particular sets of processes and conditions” (p.357). A geomorphology view of these subdivisions is expressed by Pritchard (1983) with a diagram of coastal zones, i.e. the sub littoral zone, the continental shelf etc. (p.45). In their article included in a collection of short papers on coastal management (EU DG Environment News Alert Service, 2010), J. Brenner, J.A.Jiménez, R. Sardá and A.Garola emphasize the need to pay attention to ecosystem services in coastal management: “An ecosystems service is the flow of benefits provided by nature to people. Traditionally ecosystems services are not fully incorporated into coastal zone management. However, their economic valuation could help develop emergent EU policy such as the Marine Strategy Framework and the recent protocol on ICZM in the Mediterranean”.

Participation in coastal management is strongly advocated by R.Ernsteins (EU DG Environment News Alert Service, 2010): “Effective participation of all stakeholders is needed to create fair decision-making processes in integrated flood risk management... Participatory and integrated coastal governance is multi-scalar and

works across boundaries (research, professional, sectoral and administrative boundaries". The value of participation, cooperation and partnership is well illustrated in the examples of British partnerships included in Table 28, which follow a long tradition of nature conservation. "Nature conservation in Britain has been remarkably successful because partnerships have existed between the statutory bodies responsible for it and the non-governmental organizations" (Pritchard, 1983, p.50). A recent report by COWI (2011) for DG Environment stresses the value of ICZM as a governance tool for more sustainable development of coastal areas and points out that "the perception of stakeholders is that ICZM provides for better governance, better understanding between stakeholders and authorities, better resource use and conflict resolution, better planning and management of the coastal zone and improvements to the coastal environment". Another report for DG Environment, this time by THETIS (2011a), considers that "consultation processes ... are of utmost importance in identifying and associating main actors of the sea and coastal zones".

Having included a remark on the history of ICZM in the above discussion on maritime policy (previous section), there is not much to add to our comments in Table 8.5 on coasts and ICZM. All ICZM documents urge the adoption of governance arrangements which are based on stakeholder involvement and participation and the improved coordination between coastal management and terrestrial planning. They include references to horizontal and vertical relationships with e.g. ESDP, the EU Sustainable Development Strategy, the 6<sup>th</sup> Environment Action Programme and regional sea conventions. From 2007 onwards, particularly in the 2009 follow-up report to the EU ICZM recommendation, which speaks of "the emergence of the overarching Maritime Policy with tools such as maritime spatial planning", IMP and MSP are regularly mentioned. In the Council Decision of December 2008, ICZM is considered "one component of the EU Integrated Maritime Policy". Table 23 contains commentary on two documents which are not related to Europe, but have an indirect interest. The first is a feasibility assessment for an ICZM protocol in the Western Indian Ocean Region, which takes the Mediterranean ICZM Protocol as a model and contains a lengthy discussion on the Mediterranean Action Plan. The second is a follow-up UNEP document proposing an ICZM protocol to be added to the Nairobi Convention for the same region. There are no doubt more such reports, but the reference to these two suffices to show the paradigmatic role of the Mediterranean ICZM Protocol.

### The particular case of the Mediterranean

Before we turn our interest to the section on European regional seas, we believe that a brief reference to the particular case of the Mediterranean Sea is justified. This is because with regard to the implementation of UNCLOS and EEZ claims the situation in the Mediterranean differs from that prevailing in other European seas. A review of territorial disputes in the Med is provided in a report for the Directorate-General for Internal Policies of the European Parliament (Suárez de Vivero, J.L. *et al.*, 2010). "Mediterranean states have so far been reluctant to proclaim EEZs, or at least to give effect to such a claim in the Mediterranean" (Chevalier, 2005, p.43). In spite of recent

developments several problems remain, particularly in the Eastern Mediterranean,<sup>70</sup> and above all in the Aegean Sea. The reason is the problem of delimitation rooted in a “complex political and geographical situation” which is “politically sensitive”. But, as Chevalier adds, “from a legal point of view ... there is nothing to prevent Mediterranean states from establishing an EEZ if they wish to do so” (p.43). Disputes are not limited to EEZs. They also exist with regard to the continental shelf, e.g. between Greece and Turkey (p.49), an issue which Turkey considers a *casus belli* and refuses to have the case referred to the International Court of Justice (Ronzitti, 2010, p.8). Notwithstanding the problems, a small number of zones have been proclaimed in the Mediterranean, i.e. fisheries zones, zones of ecological protection, as well as EEZs as in the case of Cyprus and Israel. A result of the limited establishment of EEZs is that much of the Mediterranean is subject to high seas status (Chevalier, 2005, p.50). A further result is the difficulty of promoting maritime spatial planning. A report on the potential of MSP in the Mediterranean considers that only sub-seas where EEZs have been proclaimed or are likely to be proclaimed are suitable for MSP and clearly excludes certain sub-seas in the Eastern Mediterranean, especially the Aegean Sea (Policy Research Corporation, 2011b).

As to the continental shelf, its delimitation in the Mediterranean is almost completed (Ronzitti, 2010, p.9). In comparison, Ronzitti remarks, delimitation of EEZs and fisheries zones is not well advanced. In his view “fisheries are the real source of dispute in the Mediterranean” (p.9). It is not to be ignored that four Mediterranean countries (Israel, Libya, Syria and Turkey) have not yet ratified UNCLOS (*ibid.*, p.24). A further cause of friction in the Eastern Mediterranean concerns the existence of a secessionist entity in Turkish occupied northern Cyprus, which is not recognized by the international community with the sole exception of Turkey, which takes the view that northern Cyprus is entitled to its own EEZ (*ibid.*, p.4).

Serious differences between Greece and Turkey are present in the Aegean Sea (see Dokos, 2011; Balezdrova, 2011; Öztürk and Başeren, 2008; Turkish Marine Research Foundation; Tsaltas *et al.*, 2009). A particular source of friction is Kastelorizo, a small, inhabited Greek island east of Rhodes and off the southern coast of Turkey. Greek views (see Rozakis, 2011; Kariotis, 2007, 2011a and 2011b) and Turkish ones<sup>71</sup> diverge on whether the island has a continental shelf and is entitled to an EEZ. The delimitation of both continental shelf and EEZ, even of territorial sea, is still an unresolved issue in the Aegean.

#### Regional seas conventions and local partnerships (Tables 27 and 28)

Material on the European regional seas is primarily provided in the regional seas profiles, which all include sub-sections on governance arrangements, with comments on conventions, policies and organizations not all of which are discussed in this chapter. Here we review, from a governance perspective, selected key documents

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<sup>70</sup> The current situation can be seen in the UN website (see “United Nations. Maritime space: Maritime zones and maritime delimitation” in the reference list).

<sup>71</sup> See <http://www.mfa.gov.tr/data/ENFORMASYON/Turkish%20FM%20sets%20out%20terms%20for%20Aegean.pdf>.

listed in Table 27, in which we have included, apart from the six seas, the Danube basin, because of its importance as the object of an EU strategy and trans-national character. In this sub-section we also refer briefly to a small sample of initiatives which are not trans-national, and take the form of partnerships and/or projects (see Table 28).

*Arctic Ocean.* The EU presence in the Northern Dimension (ND) policy is secured by the Union as a whole being one of four equal partners, the others being non-EU countries. This is a reason for the ND policy's broad range of participants cooperating with the partners and for the strong emphasis on fundamental governance principles. ND is the object of an ESaTDOR case study. EU policy in the Arctic is stated in the 2008 communication which stresses broad dialogue, negotiated solutions and multilateral agreements in an area already rich in international legal arrangements under UNCLOS.

*Atlantic Ocean.* We selected three documents, all contained in the relevant sea profile. The OSPAR Convention (the object of one of the North Sea case studies) is one of the best known models of regional sea cooperation, with a complex system of management and strong emphasis on stakeholder involvement. The Atlantic Arc, object of an ESaTDOR case study, is one of the geographical commissions of the Conference of Peripheral Maritime Regions of Europe which comprises 160 regions. The Atlantic Spatial Development Perspective is the work of the Atlantic Arc Commission, with CPMR as project leader. ASDP, which has some affinities with VASAB, focuses on joint projects within defined priorities which could grow into long-lasting partnerships. Inter-regional cooperation is therefore present at all levels of the Commission's work. The choice of focusing their attention on limited issues which have a trans-national character is repeated in the 2011 guidelines for an integrated strategy. Broad participation and horizontal cooperation are also stressed.

*Baltic Sea.* The Baltic is often mentioned as the model region of territorial cooperation and as the prototype of EU sea regional strategy. Like OSPAR, HELCOM (Helsinki Commission) is a prominent example of regional sea cooperation, created by the Helsinki Convention. The convention contains rules for negotiation and arbitration and provisions for participation. The EU strategy for the Baltic, as stated in the 2009 communication and its accompanying action plan, insists on the widest possible cooperation of stakeholders, joint action with HELCOM and VASAB and implementation, rather than plan production or new institutions. Concepts like integrated spatial planning for land and sea, place-based approach, sustainable development and territorial cohesion are fully endorsed. What distinguishes the VASAB cooperation is its integrated spatial development approach, territorial and maritime, probably unique so far. Its background synthesis document and long-term perspective are models likely to be emulated in the future. The ASDP mentioned earlier is a similar attempt, although with different priorities. Both HELCOM and VASAB are studied in the context of ESaTDOR case studies. Our Baltic Sea table includes one more example, albeit of a smaller scale, i.e. the three-nation initiative STRING, the main characteristic of which is its role as mediator and facilitator, to ensure horizontal and vertical coordination.

*Black Sea.* In our table we included the EU Black Sea synergy and the Bucharest Convention. The latter is being discussed in the Black sea profile and in a separate case study. The synergy is not a strategy like the EU Baltic Sea strategy, but rather an initiative under the European Neighbourhood Policy. Because of its cross-border character, cooperation with regional agencies and civil society is of great importance. ICZM, the ecosystems-approach and integrated river basin management, as well as public involvement, figure prominently in the Strategic Action Plan produced in the framework of the Bucharest Convention.

*Mediterranean Sea.* A long list of governance arrangements have been already discussed in the relevant regional sea profile, including the MedGovernance project, the Adriatic Sea Partnership and the ICZM Protocol to the Barcelona Convention (one of the protocols of the Mediterranean Action Plan), which are also being studied in case studies. We have included the Mediterranean Action Plan in Table 20, because it is a UNEP-administered regional sea programme. All the policy documents and initiatives included in table 9 apply to the entire basin and not just to its EU component. The Commission communications in the table concern actions placed in the framework of the European Neighbourhood Policy and have a clear cross-border character, including the Horizon 2020 initiative. This naturally entails the encouragement of synergies, constant dialogue with partner countries, NGO involvement and consistent coordination. An important implication is the need to exploit the possibilities offered by UNCLOS for maritime zone delimitation. The Blue Plan initiatives are part of UNEP's MAP activities. Blue Plan's central role is in the core of governance, i.e. coordination, mobilization, awareness raising, communication, horizontal cooperation and civil society involvement. Finally, the Union for the Mediterranean, as clearly seen in its 2008 declaration, is a political cooperation initiative super-imposed on existing initiatives, such as the Barcelona process and MAP.

*North Sea.* The OSPAR Convention is of relevance here too, but we referred to it in the paragraph on the Atlantic Ocean. We have included here two bi- or tri-lateral initiatives of a smaller geographical scale, namely Arc Manche (see North Sea profile) and the Forum Skagerrak II project. The involvement of a variety of agencies and stakeholders and the encouragement of partnerships are dominant themes.

*Danube Region.* We decided to include a reference to the Danube River because, although it is not a maritime space, it is a body of water of pan-European importance and symbolism and the cooperation between the European countries through which it flows is a crucial challenge. The EU strategy for the Danube is an integrated, very ambitious and multi-faceted undertaking. Its governance is a key factor of success, hence the decision to entrust policy coordination to the European Commission. It is significant that the Danube strategy is linked to the Europe 2020 Strategy. The international convention for the river, implemented by an international commission, is one more example of a very important convention with environmental objectives, employing the full arsenal of consultations, joint activities, communication, dispute settlement and arbitration. Arrangements for the Danube basin have to be seen in the context of the EU Water Framework and Floods Directives.



*Local partnerships and projects.* We could only include in Table 28 a small number of such initiatives in full knowledge that a large number of them exist in Europe. The problem of finding information on such local but important initiatives is certainly an obstacle. Included in our table are three most interesting and active British partnerships, i.e. Severn Estuary, Morecambe Bay and Moray Firth. Another such partnership (Solway Firth) has been presented in an ESaTDOR case study. They are all good examples of grassroots partnership working, relying on the mobilization of local groups and citizens and supported by a broad range of organizations. The other examples, found in the valuable OurCoast database,<sup>72</sup> provide useful lessons. These lessons range from the obstacles encountered (Pays de Brest initiative and Wadden Sea Net Forum) to the effects of poor coastal management (Tuscany Region) and the impact of unsustainable coastal development on tourism (Gran Canaria).

## **8.5 Governance Typology and Information**

### Critical parameters and typology problems

Our attention turns here to qualitative parameters that may be monitored in the future and which can help to develop a typology. A series of observations can be made on these issues.

- Problems of inadequate information bases of governance arrangements.

This problem revolves around an issue which has been highlighted already. As in the case of relatively poor knowledge of the maritime environment in comparison to terrestrial environments, governance arrangements in maritime space are much less studied than their land space counterparts, on which there is a substantial literature and have been extensively explored in the ESPON 2.3.2 project on territorial governance. In addition, the terrestrial planning system of European states has a long history and has reached an elaborate, mostly hierarchical, structure. There is no equivalent maritime spatial planning system, which is not likely to reach the same level in the near future. The question is whether the MSP system will be modelled on the land planning system with its zoning emphasis or whether a new approach, of e.g. a more cooperative nature, will be adopted if this is at all feasible.

- Relationship with taxonomic systems of territorial governance arrangements. Relevance of ESPON 2.3.2 classifications.

The problem of taxonomy is related to the previous paragraph. Planning systems and styles, usually the product of constitutional and government systems, have been classified and studied both in the academic literature and in EU studies, like the Compendium of Spatial Planning Systems and Policies, the ESPON 2.3.2 project and other research reports. However, land-based planning systems are usually an internal, domestic affair, for reasons of sovereignty and, in the EU context,

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<sup>72</sup> See also the SMAP Clearing House website.

subsidiarity. In contrast, maritime space is regulated by complex international conventions and treaties. No doubt this is sometimes the case in land territories too, but the status of sea use is of a totally different scale and nature. Classification is made much more difficult and sea space is full of local variations. We must point out however that there are already transnational, cross-border spatial planning arrangements in place which escape from the closed domestic model. Sovereignty is not interpreted in terms similar to those prevailing in sea space under international law.

- Types of governance arrangements in terms of key governance parameters. Layers of cooperation arrangements.

The development of typologies is hampered by the absence of clear hierarchical administrative structures like those predominating within national sovereign spaces, as pointed out above. The less advanced is the delimitation of sea boundaries and zones and the respective allocation of competences, the more difficult it becomes to speak of types of governance parameters. In relatively well regulated maritime spaces, the hierarchy of e.g. “UNCLOS – EU policy and regional treaty and/or agreement – national maritime policy and possibly maritime spatial plan – regional / local partnerships”, an admittedly simplified model, offers itself as a possible “type”. But at the other extreme, when sub-sea level agreements and zone delimitation are absent or impossible, types are extremely nebulous. What counts much more in such cases is national and local politics and sensitive cultural parameters.

- Application of criteria and principles of good governance.

All established and mature maritime governance arrangements apply, at least as proclaimed in their formal documents, the full range of good governance criteria, i.e. horizontal and vertical cooperation and structure, participation, consultation, inclusiveness, coordination, effectiveness, accountability, transparency, sustainability and subsidiarity. It must be remarked however that all policy or planning documents, everywhere and without exception, state that they espouse these principles. It is only intimate knowledge of local realities that can confirm the application of these principles in practice. We have referred already to the repeated reference to participation with respect to coastal management and governance. A statement by Stephen Olsen is pertinent: “Participation is the heart of governance. It mediates in conflicts, provides transparency and generates new knowledge and alternatives. Participation implies the sharing of power”.<sup>73</sup>

- Possibilities of using types of tools and instruments, processes of decision making and processes of conflict resolution for purposes of classification.

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<sup>73</sup> Stephen Olsen: “Participation is the heart of governance in coastal management”. Lecture at the University of La Coruña, Campus do Mar, 1 February 2012. Available at [http://campusdomar.es/?post\\_type=noticia&p=1966](http://campusdomar.es/?post_type=noticia&p=1966) [Accessed 19 March 2012].

At least at the level of formal conventions very definite procedures are stipulated for conflict resolution and settlement of disputes, through negotiation, arbitration and finally resort to courts. At a lower level the key words are negotiation, consultation, stakeholder involvement and participation. Formal instruments of consultation (e.g. special techniques) are not mentioned and tools which at one stage had received publicity (e.g. Open Method of Coordination) have fallen out of fashion because they were found ineffective. It is significant that there are suggestions that use should be made in maritime space of terrestrial land-use planning tools. The planning process models proposed in reports which we reviewed in this chapter are identical to models developed for land-based spatial planning.

- Selected examples at various levels.

A large number of examples were reviewed in Tables 20 – 28 accompanying this chapter, e.g., at the international level, of UN arrangements (UNCLOS, IMO), at EU level, or, at a regional level, of regional sea cooperation agreements. EU policies presented were not limited to maritime, marine or ICZM policies, but included policies in related field, such as development, cohesion, territorial planning, and the environment.

- Suggestions for a presentation of coastal and marine governance arrangements in the relevant EU website.

The matter of “missing data” and information on governance arrangements had been raised in the final report of the ESPON 2.3.2 project on territorial governance. If this is a recognized need for territorial governance, it is even more urgent in the case of maritime space governance. The difficulties have been mentioned above and have to do with the diffuse nature of maritime governance.

#### Indicative classification and comments

A classification of governance arrangements could follow the critical factors/parameters of “good governance”. The broad range of documents we have reviewed (policies, conventions, agreements, directives, communications, official reports etc.) makes categorization under governance labels extremely difficult. The main difficulty lies in the distinction between global - international and regional – transnational arrangements, let alone national and local, but also between formal and (fairly) informal ones. The extreme formal character of conventions leading to international legal statutes places them in a category of their own.

A further problem is that policies have to be classified (and then judged, which is surely the final purpose) not on their own but in a cross-cutting perspective, particularly when the criteria used are e.g. coherence or coordination. This immediately shifts the focus from the policy itself to its interaction with other policies and then to the institutions (or part of them) which propose and promote the policy. This is a field which is hardly touched in this chapter and for good reasons.

However, an attempt is made here to distinguish elements of a possible future and far more ambitious cross-classification, based hopefully on empirical evidence.

#### *Openness and consultation.*

The sheer nature of the process of reaching an agreement on an international convention or an EU decision, which is then translated into a binding direction or remains at the level of guidance and advice, makes certain that the process is open and based on consultation with a broad range of stakeholders. There is plentiful evidence for this in the process leading to an international convention, a regional agreement or a policy such as that for coastal management. Given however the political pressures and bargains that surround these processes, at least at the international level, and the quality of consultation that can realistically take place at lower levels, one should hesitate to declare that these criteria are fully satisfied uniformly, even at the level of stakeholder consultation.

#### *Participation and civic engagement.*

If we accept the view that stakeholder consultation remains an element of a top-down approach, while participation is a bottom-up process, then we must examine it separately. Participation in this sense is bound to be more localized. When filtered upwards it becomes hierarchically institutionalized and transformed into consultation of the first type. One cannot but be realistic and accept that this is inevitable. There is a problem however in the sense that the subject of the marine environment, of maritime use and coastal management is linked with the behaviour of users, small businessmen, leisure entrepreneurs, fishermen, citizens and the like. Participation and civic engagement, of which we have even in this chapter few but admirable examples, are by no means a given fact. Case studies will no doubt provide further information. Quite rightly, several policies which we have reviewed insist on parallel actions of information, awareness-raising and education.

#### *Cooperation and structure.*

Cooperation can be conceived as horizontal, vertical, diagonal, public-public, public-private, public-private-civil society etc. It can be argued that the magnitude of an organization's membership or of adherence to an agreement is evidence of at least horizontal cooperation. Among international organizations, IMO for instance includes 170 member states and three associate members. Besides, IMO may enter into an agreement of cooperation with other inter-governmental organizations for matters of common interest with a view to ensuring maximum coordination. Finally IMO may grant consultative status to non-governmental international organizations that have a capability to make a substantial contribution. Similarly, the EU itself and various European conventions (e.g. landscape) have by definition a similar character of horizontal cooperation. As with consultation, cooperation at the international level is a prerequisite of good policy governance, but is also part of a political bargaining process, over issues which cannot be fully regulated in national and supra-national decision making in that they touch on individual grassroots decisions and actions. "Structure" at the latter level is less meaningful.

### *Coordination.*

Coordination is not identical to cooperation and does not follow automatically. It can be secured through rigorous command structures, but this may violate other governance principles and its effectiveness would be questionable. In the examples we looked at the most interesting device is that of the adoption and diffusion of similar institutional arrangements, i.e. planning strategies, decision making instruments and implementation tools. This is evident in several cases from the conciliation and arbitration procedures foreseen in international conventions, to the introduction, even imposition, of strategies or instruments. Examples are maritime spatial strategies, climate change adaptation strategies, coastal management plans, environmental assessments etc. This “production of uniformity” in governance and administration processes is bound to secure coordination, simply by making certain that they all do things in a similar manner.

### *Effectiveness.*

The explanation of the principle of effectiveness offered in the White Paper on European Governance is that “policies must be effective and timely, delivering what is needed on the basis of clear objectives, an evaluation of future impact and, where available, of past experience”. The choice of the right tools should certainly be added.

To judge, in terms of effectiveness, at the international level, a large number of conventions, treaties, protocols, conference declarations, agreements, memoranda of understanding, action plans and programmes, policy documents, implementation strategies, directives, recommendations, regulations, background studies, environmental assessments and a whole array of similar texts is indeed a tall order. If we take literally the requirements of good timing, convincing grounding on clear objectives, impact evaluation and use of past experience, we may be left with serious doubts. Timing is frequently ill-judged or over-optimistic or decided because of extraneous pressures. Developments, such as economic crises, may prove that timing was wrong. Objectives are frequently subjective and one-sided or simply a pretence. Impact evaluation is bound to have an element of guesswork. Past experience is often neglected and errors may be repeated. But in all policies we presented in this chapter, the problem seems to be recognized and the essential steps are taken to avoid the pitfalls of ineffectiveness. The study of past experience and the effort to predict impacts is now a *sine qua non* in all policy design.

EU strategies for regional seas or river basins and transnational action programmes are now good examples of the effort to secure effectiveness. On a more global scale, an example is the study of the International Council for the Exploration of the Sea which identified 11 European marine regions on the basis of bio-geographic and oceanographic features and existing political, social and management divisions. Another example is the 2005 Millennium Ecosystem Assessment by the International Seabed Authority. The tools activated by global level governance, i.e. international initiatives and organizations, are basically conventions, treaties, protocols and

agreements, where the EU employs directives, recommendations and regulations to be consequently incorporated in the national law of member states.

#### *Coherence.*

Coherence and effectiveness of policy must be mutually reinforcing and supportive. Here the key problem, repeatedly stressed in EU documents, is cross-sectoral coherence. Within the strand of maritime policy, including MSP, coherence is much more evident than it is cross-sectorally, with policies on cohesion, sustainable development, climate change and so on running more or less in parallel lines. Coherence is also a desired outcome with respect to terrestrial planning and ICZM. This is of course an area where policy coherence and institutional cooperation (or antagonisms) are aspects of the same problem.

#### *Efficiency.*

Efficiency, in contrast to effectiveness, concerns rather the final delivery of services. In this sense the policies examined can be assessed only partially, i.e. only to the extent they touch on the final stages of a process which at the end affects the citizens. By their nature, these policies are radically different in this respect. ICZM policy goes a long way towards defining the outcomes at the citizens' end and the services that the coastal environment offers. In the case of other policies the final outcome is much more difficult to specify.

#### *Inclusiveness.*

By and large, policies addressing the maritime environment stress the need for inclusiveness, i.e. the necessity not to ignore groups of stakeholders with an interest in its management and planning. In this sense this criterion has a lot in common with participation, although even if a policy is inclusive, participation is not necessarily achieved, often for cultural or political reasons. Still, an agreement or convention which manages to include all the potential parties achieves a high degree of inclusiveness. For instance UNCLOS enjoys the highest level of inclusiveness. The Convention was adopted as a "package deal" with one aim above all, namely universal participation in the Convention. With nearly all states now adhering, even on a provisional basis pending ratification or accession, the threat to the Convention has been eliminated. Reservations regarding the motives of being included have been expressed already, but whatever the case the situation regarding an international formal convention is different e.g. from that of a coastal management implementation plan or the allocation of an area of sea space for particular, frequently competitive, activities.

### *Sustainability.*

The strong interests in the protection of the marine environment and the initial impetus to safeguard it have endowed maritime policy with a sustainability flavour, which is evident in EU documents. However, even environmental protection pure and simple was often made possible when economic parameters turned the balance in its favour. This may be the case in the current interest in maritime planning and it is of course equally welcome. Real life practice, in the midst of a violent economic crisis, will put these intentions to the test. In formal terms however the European policy documents we reviewed place environmental sustainability at the top of their criteria, even to the detriment, it could be argued, of social sustainability.

### *Transparency, accountability and decision making.*

Transparency and accountability are important governance criteria, which in our view are tested at a lower level, national or local. At the level of our analysis they are viewed as self-evident. As with openness, transparency was present throughout the process of policy making at the level that concerned us here. We did not touch the local level, with the exception of a limited number of examples. However, the partnership cases we looked at seemed to pay a great deal of attention to these principles. As far as decision making is concerned, clarity and equality are two essential ingredients. Clarity, as far as formal procedures are concerned, is fairly easy to ascertain. Equal access to decision making is a much more complex issue, which may in fact affect clarity as well. At an international level, access to decision making is supposedly ensured by the formal rules applying in each situation, e.g. in the United Nations or the European Union, but as we pointed out already they may well be dependent on the balance of interests and behind-the-scenes bargaining. Far more questionable is the issue of access to decision making at national and sub-national levels, but this escapes the scope of this chapter.

### *Conflict resolution.*

International conventions provide for fixed processes of conflict resolution through arbitration and the courts. This is a major issue in maritime space, as we have already made clear, and the existence of such processes does not solve problems where practical political realities leave no alternative but negotiation and are hampered by procrastination. It may be argued that this is equally the case in land disputes and cross-border differences, but sea space is less regulated especially in certain regional seas, as in the Mediterranean, thus making forward planning more difficult. Even successful national initiatives in Europe lack an international perspective and consideration of impacts across national boundaries. National boundaries are not necessarily meaningful from an ecological perspective.

## **8.6 Priorities, principles, goals and conclusions for maritime governance**

In this section we attempt to summarize briefly the key priorities and concerns identified in governance arrangements. In this chapter we relied mainly on our detailed analysis of a large number of reports and documents, but also on other ESaTDOR material, on governance literature, and on prior projects such as the ESPON 2.3.2 project on territorial governance. Our remarks in the previous section on governance typology contain comments which are in fact part of our conclusions. The following paragraphs are but an extension of these comments.

### ***The emergence of maritime policy and planning.***

An undoubted development, which we stressed on several occasions, is the gradual acceptance of an increased emphasis on sea space and its incorporation in other policy fields which until fairly recently had ignored it completely. This was the reason we looked in this chapter at EU policies for growth and development (economic, sustainable and territorial), cohesion (including territorial cohesion) and environmental protection. Their increasing attention in the last 6 years to the maritime dimension marks, as we put it, a clear “MSP turn”. The effect of this turn is already noticeable.

Recent policy documents of great importance, as the 2009 review of the Sustainable Development Strategy and the “Europe 2020” Strategy testify to this recognition. The economic importance of the seas is no doubt the key reason, but we have expressed the opinion, by following the course of cohesion policy, that the acceptance of territorial cohesion played an important role. At the same time, important environmental policies stress their link with the same development-oriented strategies, indicating that an economy - environment balance is again being sought as at the time of the Lisbon and Gothenburg agendas. The maritime dimension is an issue which asserts its importance in both economic and environmental agendas.

Having said that, we must hail the pioneering activity of certain countries, as described in this chapter, in developing national maritime strategies, transnational cooperation initiatives and agreements and/or regional and local partnerships. The examples of VASAB, HELCOM and OSPAR spring to mind, as well as national strategies for the North Sea.

### ***Maritime and terrestrial planning.***

Compared with land-based spatial planning, maritime planning suffers from its relative infancy. Terrestrial spatial planning systems have been the object of a huge number of theoretical studies, academic papers and official international and national reports. Countless plans and programmes have been produced at national, regional and local levels giving these systems the substance of reality and implementation on the ground. Spatial impacts of sectoral policies do of course exist and they are both serious and frequently contradictory, hence the repeated insistence on horizontal and vertical coordination, which is the cornerstone of good governance. But by and large spatial and land use planning and territorial policy provide a horizontal coordination framework, the effectiveness of which depends on the maturity of the given planning system. With maritime policy and maritime spatial planning the situation is totally



different. As pointed out already, the object of planning (marine space) is poorly understood in comparison to land space. Knowledge about it is inadequate. Secondly, policy making is much more fragmented, both geographically and administratively. Thirdly, stakeholders are diverse and prone to conflict and their interests are little understood and recorded. Fourthly, jurisdictions often escape the convenience of sovereign control and involve several administrations and levels of legal regime, particularly in shared marine spaces and sea basins. These differences and difficulties make the classification of existing planning and governance situations chaotic and subject to ambiguities. They also make the blending of planning arrangements in land and sea almost impossible, simply because of the totally different regimes regulating one and the other.

The coordination of planning “on both sides of the littoral divide”, as someone put it, is a necessity frequently repeated. However, experience of coordinated spatial planning is limited, in spite of few well known examples. As emphasized in this chapter, the ample experience in ICZM can play a key role in bridging this divide. Increasingly, ICZM is referred to as a crucial component of maritime spatial planning, which will be providing an overarching framework.

#### ***Spatial organization of the maritime realm.***

A clear definition of jurisdictions and of distribution of responsibilities and competences is a priority in all advanced governance arrangements of maritime space. The delimitation of maritime zones is of utmost importance because it facilitates planning and makes possible the satisfaction of other preconditions. Problems arise when for reasons of a political nature this is not feasible, as in the case of exclusive economic zones and fisheries zones in particular regional seas.

The delimitation of maritime zones and boundaries and the importance which is rightly attached to it as a prerequisite of effective spatial planning have the side effect of overvaluing formal processes as producing results, which relatively flexible governance arrangements cannot deliver. This is complicated by the erroneous view held by some that governance is coterminous with the open market. The desirable balance between formal and less formal arrangements in sea space is however a key issue.

It is useful to repeat here the remark made by Hoel, Sydnes and Ebbin that “the fit between these new institutional arrangements [under UNCLOS] and the biophysical features of the problems they are intended to solve is still far from perfect”. As we have already emphasized, this is one more reason to think hard about more flexible governance approaches. It is not of course only because of biophysical features, but also because of sensitive local political, social and cultural realities, as we have remarked earlier.

#### ***Coordination, decentralization, administration.***

Coordination among sectors (horizontally) and among government levels (vertically) is a governance prerequisite in land-territorial arrangements. When it comes to sea space the difficulty of securing coordination is vastly more difficult because in most situations sectoral fragmentation is far greater and government competences are not

well defined. For good reasons, in the governance arrangements we reviewed coordination is considered as a key objective. The horizontal character of maritime concerns not only demands sectoral policy coordination but will also force institutional contacts and closer cooperation of administrative units, even at the European Commission level.

Decentralization is certainly considered of importance but solely to the extent that it does not impede the formulation and implementation of policies which can only be pursued at a central level. Therefore, what is attempted in more advanced arrangements is a combination of central guidance and control for strategic issues and decentralized, place-based partnerships and projects.

Administrative inadequacies, lack of preparedness and ill-defined and/or overlapping competences create problems of policy making and implementation. Overcoming these problems is acknowledged as a priority.

### ***Societal involvement.***

Genuine participation and early stakeholder involvement is a governance principle constantly and repeatedly, not to say monotonously, emphasized. The argument is that in a field of planning which is in its early stages, participation is even more essential than in a well tried field, like land-use planning. In both cases countries with a long tradition of partnership-working and consultation have a clear advantage. This is obvious in the cases which have attracted attention as examples of good practice.

The distinction made by Blaesbjerg *et al* between “stakeholder involvement” and “participation” is at the roots of democratic governance and is by no means limited to maritime spatial planning. It is however certainly the case that participation in sea space planning presents itself in different terms than that in land space planning. This probably accounts for the fact that a mere extension of terrestrial planning into sea space is theoretically and practically untenable. The profile of potential participant actors is totally different and the delimitation of space-determined interests is of a different order, no matter how much national jurisdictions and boundaries are decided and enforced. The real boundaries when it comes to practical realities are less clear. The valuable experience which has been accumulated in ICZM and is now being acquired in national MSP strategies will be of great assistance to future planners, but is not easily transferable in different geographical, social and cultural contexts. This is already true of terrestrial planning, but is even more so in MSP.

This is the right point to turn again to Stephen Olsen, to whose views on participation in ICZM we have already referred. Olsen (2003) takes the view that the goals of integrated coastal management (ICM) are improvements in the bio-physical environment and in the quality of life of the human population in the area concerned. Initiatives towards these goals must be sustained over long periods of time, be capable of adaptation to changing conditions and encourage particular forms of resource use and collaborative behaviour. For Olsen, ICM is “a process for negotiating and implementing public policy to achieve sustainable coastal development goals”, so as to produce outcomes in successive orders. First order

outcomes are the societal actions and enabling conditions needed for the task, as well as the creation of the necessary constituencies and institutional capacity. Second order outcomes are new forms of collaborative action, the actions of state – civil society partnerships and behavioural change of resource users. Third order outcomes are socio-economic and environmental, marking the physical evidence of progress. After these “intermediate” outcomes, the fourth order or end outcome is sustainable coastal development.

Governance instruments which only a few years ago were widely promoted, like the Open Method of Coordination, have been abandoned. This has not affected participation and partnership arrangements, as highly successful examples of marine and coastal management demonstrate. It must be pointed out however that maritime spatial planning process models proposed in relevant documents remain faithful to 1960s systems approach prototypes. This may be due to the universal acceptance of the ecosystem-approach.

***Policy making and policy congestion.***

Maritime policy and planning is obviously suffering from what we can call “policy congestion” much more than their land counterparts, because of the addition of an international, supra-EU level and the proliferation of sectoral policy-making. The problem is exacerbated by the existence at the EU level of policies that run in parallel and in competition, thus creating confusion and uncertainty. This explains the occasional arguments for the adoption of a system of limited strategic guidelines, in a more holistic spirit.

Fundamental governance principles, such as subsidiarity, horizontal and vertical cooperation, transparency, participation, stakeholder involvement etc. retain their significance and relevance. However, they are in an embattled position in the current extraordinary conditions of economic and social crisis. The isolated “worlds” of policy makers, experts, institutions, administrators and economic or social stakeholders present an additional threat to good governance.

**Table 19** Governance (including territorial governance)

<b>Governance (including territorial governance)</b> (Document titles follow the list of references. Works by individual authors are not included.)
<p><b>Commission White Paper COM (2001) 428 final of 25 July 2001 on European governance.</b></p> <p>According to the White Paper on European Governance, the basic governance principles are: openness (enhanced communication and information about EU actions and decisions, using a language accessible to and understandable by the general public), participation (from conception to implementation), accountability (so that the roles in the legislative and executive processes become clearer), coherence (presupposing political leadership and a strong responsibility on the part of the institutions to ensure a consistent approach within a complex system), and effectiveness.</p>
<p><b>BSFH (Building and Social Housing Foundation), 2002. <i>New Frontiers in Good Urban Governance, Consultation (28-30 June 2000, St. George's House, Windsor Castle).</i> London.</b></p> <p>Partnerships and networking are the keys to success. The United Nations Centre for Human Settlements (UNCHS) defines good governance as "an efficient and effective response to urban problems by accountable local governments working in partnership with civil society". According to the above definition the main characteristics of good governance are: sustainability (balancing the social, economic and environmental needs of present and future generations), subsidiarity, cooperation (developing collaboration between spheres of government and shared competencies), equality of access in decision-making, efficient delivery of services, transparency and accountability, civic engagement and citizenship.</p>
<p><b>OECD, 2001. <i>Local partnerships for better governance.</i> Paris: Organisation for Economic Co-operation and Development.</b></p> <p>"Improving governance has been the main contribution of partnerships ... Partnerships have improved the ways society collectively solves its problems and meets its needs (p.123).</p> <p>"The main obstacle to partnership effectiveness is the inconsistency of national policy frameworks with regard to the local objectives pursued" (p.125).</p> <p>"Another major obstacle to the effectiveness of partnerships is found in the issue of accountability. Partnerships have failed to have their work monitored and evaluated properly" (p.126).</p>
<p><b>UN ESCAP, 2012. <i>What is good governance?</i> United Nations Economic and Social Commission for Asia and the Pacific.</b> <a href="http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp">http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp</a> [Accessed 14 January 2012].</p> <p>"The concept of "governance" is not new. It is as old as human civilization. Simply put 'governance' means: the process of decision-making and the process by which decisions are implemented (or not implemented). Governance can be used in several contexts such as corporate governance, international governance, national governance and local governance".</p> <p>"Good governance has 8 major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. It assures that corruption is minimized, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society".</p>

**Table 19** Governance (Including territorial governance) Continued

**ESPON project 2.3.2, 2007. Governance of territorial and urban policies from EU to local level. Final report and annexes. European Spatial Planning Observation Network and University of Valencia.**

[http://www.espon.eu/main/Menu\\_Projects/Menu\\_ESPON2006Projects/Menu\\_PolicyImpactProjects/](http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_PolicyImpactProjects/)

[Accessed 14 January 2012].

**Quotations from final report summary:**

“We define territorial governance as a process of the organization and coordination of actors to develop territorial capital in a non-destructive way in order to improve territorial cohesion at different levels” (p. 13).

In dealing with territorial governance “we are referring to a ‘spatial’ vision” (p.17).

“The outcomes of governance processes ... should be aimed at helping territorial cohesion and sustainable and balanced spatial development” (p.17).

“In general terms, territorial governance could be defined as the process of the coordination of actors in order to develop social, intellectual, political and material capital, and of territorial development based on the creation of sustainable territorial cohesion at different levels” (pp.17-18).

“The notion of territorial capital refers to the potential of a territory and is the summation of six other forms of capital”, i.e. intellectual, social, political, material, cultural and geographical. (p.18).

“Territorial governance actions ... a) guarantee vertical (multi-level) and horizontal (among territories, actors, policies) coordination and cooperation), b) allow participation and, as a result, c) promote spatial sustainable development. Hence, territorial governance is related to the concept of spatial development and, also, strongly related to territorial cohesion” (p.19).

“Participation, openness, effectiveness, and accountability seem to be the central elements of ‘good governance’ in urban and territorial policies ... [F]avourable pre-conditions for governance are experiences (and experiments) with participation processes and partnership formation, combined with processes of devolution of powers or general decentralization ...” (pp.22-23).

**Quotations from Annex Report B of final report annexes – Synthesis of national overviews (National Technical University of Athens).**

On partnerships: “Working with partnerships presents a wide spectrum of varying intensity and depth of application. The most frequent, sometimes the only one, pattern of horizontal partnership is “public-public” partnership between regions, cities, local authorities, various government agencies etc. There are countries where national guidance on partnerships is still awaited or where legislation on public – private partnerships (PPPs) is imminent or has just been enacted. Public-private cooperation is invited mostly for infrastructure and construction projects and, in more advanced situations, for urban regeneration plans and local development. In a limited number of countries the operation of PPPs is a regular practice” (p.150).

Concluding comment on governance: “The European Union is creating its own distinctive profile, rightly, and hopefully, building on European traditions. But similarities should not conceal its enormous diversity, especially after, and because of, its recent enlargement, and even more so after its future one. This diversity, also emphasized in documents such as the European Spatial Development Perspective, is apparent in the ESPON 2.3.2 national overviews, in spite of the effort to bring out the unifying influence of EU policies. Diversity exists in national attitudes and policies in other sectors too, but governance is a case of policy (not the only one) where national cultures and traditions play a very significant role. Individual aspects of governance are understood, let alone implemented, in widely different ways, especially when their application touches on everyday social interests and practices. This is a lesson which the authors of the synthesis of national overviews have learnt by reading the overviews, often between the lines, and by communicating with their authors. It may be a lesson for future policy makers too” (pp.338-339).

**Table 20** International Level Framework for Coastal/Maritime Governance

<b><u>International level Legal Framework in the fields of Maritime Spatial Planning, Coastal Zone Management, Sea Economic Use, Marine Environment Protection, Maritime Transport, Sea Energy Systems</u></b>				
<b>Title of Convention/ Treaty / Agreement</b>	<b>Area of Coverage/ Jurisdiction</b>	<b>Focus of Activity / Objectives</b>	<b>Signatories (among them EU and ESPON Countries)</b>	<b>Tools to achieve inclusiveness, compliance and implementation</b>
<p><b>UN Convention on the Law of the Sea</b> of 10 December 1982 (UNCLOS III). Entered into force in 1994</p>	<p>The whole ocean space</p>	<p>The Convention is the legal basis for sea exploitation, the right to allocate activities and the duty to protect the marine environment.</p> <p>It defines the maritime areas in which coastal states can exercise jurisdiction regarding MSP.</p> <p>The Convention includes provisions relevant to setting limits, navigation, archipelagic status, transit regimes, EEZs, continental shelf jurisdiction, deep seabed mining, the exploitation regime, protection of the marine environment, scientific research and settlement of disputes.</p> <p>The convention lays the foundations of Marine Spatial Planning as it foresees the delimitation of sea spaces and areas that can be regulated through MSP by sovereign states (e.g. in territorial seas) or states declaring EEZs.</p>	<p>The Convention is the product of the 3<sup>rd</sup> UN Conference which started in 1973 and lasted 9 years (up to 1982). It has been ratified by 161 States and the EU. USA has signed but not ratified the Convention.</p>	<p>The 3<sup>rd</sup> UN Conference used a consensus process rather than majority vote in order to achieve consensus and inclusiveness. Part XI of the Convention regarding mining of minerals in the international seabed area had raised concerns from the industrialized States. The Secretary General used informal consultation among States to resolve disputes.</p> <p>For settlement of disputes the Convention provides for both third party judges or arbitrators and direct negotiations between the disputing states. In the first case the mechanisms / procedures provided by the Convention are: Submission of the dispute to the International Tribunal for the Law of the Sea, adjudication by the International Court of Justice, submission to binding international arbitration procedures and submission to special arbitration tribunals with expertise in specific types of disputes.</p> <p>A number of special institutions (some constitute part of the UN system) govern specific aspects of the Convention; predominant cases are the UN Commission on the Limits of the Continental Shelf (CLCS), the International Seabed Authority (ISA), the International Tribunal for the Law of the Sea (ITLOS) and ITLOS Trust Fund (see table on International bodies).</p>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU and ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
UN Department of Economic and Social Affairs - Division for SD – <b>Agenda 21</b>	Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by UN organizations, Governments, and Major Groups in every area in which humans impact on the environment.	Chapter 17 of the Agenda sets out a framework Programme of action for achieving protection and SD of the marine environment and its resources. Programme areas include: Integrated management and SD of coastal areas including EEZs, marine environment protection, sustainable use and conservation of marine living resources of the high seas and those under national jurisdiction, SD of small islands, addressing critical uncertainties for the management of the marine environment and climate change, strengthening international and regional cooperation/ coordination.	Agenda 21 and the Rio Declaration on Environment and Development were adopted by more than 178 Governments at the UN Conference on Environment and Development (UNCED), Rio de Janeiro, 1992. The term "Governments" includes the EU within its areas of competence.	The Commission on Sustainable Development (CSD) was created in December 1992 to ensure effective follow-up of UNCED, to monitor and report on implementation of the agreements at the local, national, regional and international levels. It was agreed that a five year review of Earth Summit progress would be made in 1997 by the United Nations General Assembly meeting in special session.  The full implementation of Agenda 21, the Programme for further Implementation of Agenda 21 and the Commitments to the Rio principles, were strongly reaffirmed at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa from 26 August to 4 September 2002.
Rio +20 UN Conference on Sustainable Development (Earth Summit, Rio de Janeiro, 20-22 June 2012).	Global	The objective of the Conference is to secure renewed political commitment for sustainable development, assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and address new and emerging challenges. The Conference will focus on two themes: (a) a green economy in the context of sustainable development and poverty eradication; and (b) the institutional framework for sustainable development.	Potentially interested stakeholders from all over the world.	The UNCSO Secretariat together with its partners has prepared a series of Rio+20 Issues Briefs to provide a channel for policymakers and other interested stakeholders to discuss and review issues relevant to the objectives and themes of the conference, including the institutional framework for sustainable development.  Among these is the "Issues Brief 4 – Oceans" which focuses on sustainable ocean development and the protection of marine resources. This brief is aimed at providing an overview of international commitments, successes in implementation, remaining gaps, challenges and emerging issues in the area of oceans, with a view to facilitating constructive discussion around oceans and marine resources in the course of the preparation for UNSD. It recalls previous relevant conventions, consultative processes and resolutions with the aim to stress the importance of two management approaches: the precautionary and the ecosystem-based approach.

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU and ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p>UNEP - <b>Convention on Biological Diversity (CBD)</b>, 1992 (entered into force in 1993).</p>		<p>The Convention has three main objectives: The conservation of biological diversity, the sustainable use of the components of biological diversity and fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The CBD programme of work covers aspects relevant to marine spatial planning, including the central role that is given to marine and coastal protected areas. Decision VII/5 of the CBD describes the various elements of an ecosystem-based marine and coastal management framework. Central to this is an integrated network of marine and coastal protected areas consisting of (a) areas where extractive uses may be allowed and (b) areas where these uses are excluded.</p>	<p>168 signatories but 193 parties have entered the process leading to ratification.</p>	<p>The Convention on Biological Diversity provides a global legal framework for action on biodiversity. It brings together the Parties in the Conference of the Parties (COP) which is the Convention’s governing body that meets every two years, or as needed, to review progress in the implementation of the Convention, to adopt programmes of work, to achieve its objectives, and provide policy guidance.</p> <p>The COP is assisted by the Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA), which is made up of government representatives with expertise in relevant fields, as well as observers from non-Party governments and the scientific community. Other subsidiary bodies have been established by the COP to deal with specific issues as they arise. These are called “ad hoc open-ended Working Groups” because they are established for a limited mandate and period of time, and because they are open to all Parties as well as the participation of observers. Among the WGs is the WG on Protected Areas of which the first mandate is “to explore options for cooperation for the establishment of marine protected areas in marine areas beyond the limits of national jurisdiction, consistent with international law, including the UNCLOS (see above).</p>



**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU and ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p>United Nations Environment Programme (UNEP) – Regional Seas Programme - <b>Mediterranean Action Plan (MAP)</b></p>	<p>Mediterranean Sea and the countries bordering it</p>	<p>The main objectives of the MAP were to assist the Mediterranean countries to assess and control marine pollution, to formulate their national environment policies, to improve the ability of governments to promote alternative patterns of development, and optimize the choices for allocation of resources. Although the initial focus of the MAP was on marine pollution control, it gradually shifted to include integrated coastal zone planning and management as the key tool through which solutions are being sought. Key MAP priorities are:</p> <ul style="list-style-type: none"> <li>- to bring about reduction in pollution from land-based sources;</li> <li>- to protect marine and coastal habitats and threatened species;</li> <li>- to make maritime activities safer and more conscious of the marine environment;</li> <li>- to intensify integrated planning of coastal areas;</li> <li>- to monitor the spreading of invasive species;</li> <li>- to limit and intervene promptly on oil pollution;</li> <li>- to further promote SD.</li> </ul>	<p>In 1975, 16 Mediterranean countries and the European Community adopted the Mediterranean Action Plan (MAP) The MAP was the first-ever plan adopted as a Regional Seas Programme under UNEP's umbrella. Today MAP involves 21 countries bordering the Mediterranean as well as the European Community</p>	<p>The Contracting Parties decide on MAP strategies, budget and programme at their Ministerial level meetings, held every two years. They appoint Focal Points to review progress and ensure implementation of recommendations at the national level.</p> <p>Since 1982, the MAP Coordinating Unit (MEDU) based in Athens (on the basis of a Host Country Agreement signed between Greece and UNEP) is the Secretariat of the MAP. It performs diplomatic, political and communication roles, supervising the main MAP components (Regional Activity Centres or RACs) and organizes major meetings and programmes.</p> <p>MAP's activities are primarily financed by the Contracting Parties through their contributions to the Mediterranean Trust Fund. Other sources of funding include voluntary contributions from the EU, UN agencies, and the Global Environment Facility (GEF).</p> <p>The Mediterranean Commission on Sustainable Development (MCSD) is an advisory body to the Contracting Parties. It has a unique structure of representatives of the 22 Contracting Parties as well as rotating representatives from local authorities, business community and NGOs, forming, on equal footing, a think-tank on policies for promoting SD in the Mediterranean Basin. The MCSD coordinated the preparation of the Mediterranean Strategy on Sustainable Development (MSSD), which was adopted by the Contracting Parties in 2005.</p> <p>The Programme for the Assessment and Control of Marine Pollution in the Mediterranean Region (MED POL) is the scientific and technical component of MAP. It is responsible for the implementation of the Land-Based Sources, Dumping, and Hazardous Wastes Protocols. MED POL assists Mediterranean countries in the formulation and implementation of pollution monitoring and control programmes. Six MAP Regional Activity Centres (RACs) are based in Mediterranean countries, each offering its own environmental and developmental expertise.</p>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p>UNEP – Regional Seas Programme – Mediterranean Action Plan (MAP II)- <b>Convention for the protection of the Marine Environment and the Coastal region of the Mediterranean (Barcelona Convention)</b> (amended version of 1995 was put in force in 2004)*</p> <p>* See in addition table on coasts and ICZM.</p>	<p>Mediterranean sea area, meaning the maritime waters of the Mediterranean Sea proper, including its gulfs and seas bounded to the west by the straits of Gibraltar and to the east by the southern limits of the straits of the Dardanelles.</p> <p>Application may be extended to coastal areas as defined by each contracting party within its own territory. Any Protocol to this Convention may extend the geographical coverage to which that particular Protocol applies.</p>	<p>The Convention's main objectives are: to assess and control marine pollution; to ensure sustainable management of natural marine and coastal resources; to integrate the environment in social and economic development; to protect the marine environment and coastal zones through prevention and reduction of pollution, and as far as possible, elimination of pollution, whether land or sea-based; to protect the natural and cultural heritage; to strengthen solidarity among Mediterranean coastal States; to contribute to improvement of the quality of life. Although MAP's initial focus was aimed at marine pollution control, its mandate gradually widened to include integrated coastal zone planning and management.</p> <p>The Barcelona Convention has given rise to seven Protocols addressing specific aspects of Mediterranean environmental conservation: Dumping Protocol, Prevention and Emergency Protocol, Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities, Protocol concerning Specially Protected Areas and Biological diversity, Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil, Hazardous Wastes Protocol and ICZM Protocol.</p>	<p>22 contracting parties, among them European Union and the European countries with coastal regions facing the Mediterranean Sea</p>	<p>Important governance provisions of the Convention are:</p> <ul style="list-style-type: none"> <li>• Nothing in the Convention/Protocols will prejudice the rights and positions of any state concerning the UNCLOS of 1982.</li> <li>• The contracting parties shall take individual or joint initiatives through the relevant international organizations to encourage implementation of the Convention by the non-party states.</li> <li>• The contracting parties may enter into bilateral or multi-lateral agreements including regional or sub-regional agreements for the promotion of SD etc, provided that such agreements are consistent with the Convention/Protocols and conform to international law. Contracting parties should make use of existing organizations/ agreements in the Mediterranean Sea.</li> <li>• The parties designate UNEP as responsible for coordination between the parties and with NGOs and the general public.</li> <li>• The parties may decide to admit as observer at their meetings and conferences (without the right to vote) any state which is not a contracting party, an IGO or an NGO.</li> <li>• The EEC can exercise the right to vote with a number of votes equal to the number of their member states which are CPs.</li> </ul> <p>The Compliance Committee (2008) as well as the Rules of Procedure (2009) is the official body and mechanism of effective implementation of the Convention/Protocols supporting the Meeting of the Contracting Parties. The role of the Committee is to facilitate, promote, monitor and secure compliance. The compliance procedure is non-adversarial, transparent, effective, preventive in nature and oriented in the direction of “helping” Parties and takes into account the specific situation of each Party.</p> <p>The Committee may consider an issue after this has been raised by the Parties, the Secretariat or on the basis of the reports submitted by the Parties. The Committee's guiding rule is to pursue consensus; if it is not possible, the Committee's measures may be adopted by at least six members present and voting. The Meeting of the Parties may decide to: (a) assist a Party to comply with Committee's recommendations, including capacity-building; (b) make recommendations to the Party; (c) request the Party to submit progress reports on compliance and as a last resort, publish cases of non-compliance.</p>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p>Council of Europe – <b>Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1979)</b> (entry into force 1982)</p>	<p>The natural heritage of the European Continent and some States of Africa</p>	<p>Its aims are to conserve wild flora and fauna and their natural habitats and to promote European co-operation in that field. The Convention places importance on the protection of endangered habitats and vulnerable species, including migratory. All countries that have signed the Convention must take action to:</p> <ul style="list-style-type: none"> <li>• Promote national policies for the conservation of wild flora / fauna, and their habitats;</li> <li>• Have regard to the conservation of wild flora / fauna in their planning policies, and their measures against pollution;</li> <li>• Promote relevant education and information;</li> <li>• Encourage and co-ordinate related research.</li> <li>• Co-operate to enhance the effectiveness of measures through co-ordination.</li> </ul>	<p>50 countries have ratified/ accessed the Convention up to 2/2/2012, among them EU</p>	<p>The Bern Convention benefits from a number of tools that contribute to regular monitoring of the implementation of the Convention. This monitoring system includes Reports and the Case-File System, fully accessible to Parties and observers alike. The Standing Committee reviews reports, processes case-files and adopts Recommendations.</p> <p>The Case-File System is based on complaints for possible breaches of the Convention. Its purpose is to find a solution to problems encountered in implementing the Convention and to monitor the means chosen to resolve them. Many case files are at the origin of Recommendations adopted by the Standing Committee. The Complaint form includes the following points:</p> <ul style="list-style-type: none"> <li>- Please state the reason of your complaint in detail.</li> <li>- Which are the specific species or habitat/s included in one of the Appendices of the Bern Convention potentially affected?</li> <li>- What might be the negative effects for the species or habitat/s involved?</li> <li>- Do you know if potentially affected species or habitats also fall under the scope of other international Conventions (RAMSAR, etc.) or if the area has been identified as a NATURA 2000 site?</li> <li>- Do you know if there are any pending procedures at the national or international level regarding the object of your complaint?</li> <li>- Any other information (size of projects, maps existence of an Environmental Impact Assessment).</li> </ul>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p><b>Convention on the Conservation of Migratory Species of Wild Animals</b> (CMS or Bonn Convention), 1979.</p>	<p>The biotopes and routes of migratory species on a global scale.</p>	<p>The Convention aims to conserve terrestrial, aquatic and avian migratory species throughout their range. Migratory species threatened with extinction are listed in Appendix I of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. Besides establishing obligations for each State party, CMS promotes concerted action among the Range States of many of these species.</p> <p>Migratory species that need or would significantly benefit from international co-operation are listed in Appendix II of the Convention. For this reason, the Convention encourages the Range States to conclude global or regional Agreements.</p>	<p>Since the Convention's entry into force, its membership has grown steadily to include 115 (as of 1 March 2011) Parties from Africa, Central and South America, Asia, Europe and Oceania.</p>	<p>CMS is an intergovernmental treaty, concluded under the aegis of the United Nations Environment Programme. As the only global convention specializing in the conservation of migratory species, their habitats and migration routes, CMS complements and co-operates with a number of other international organizations, NGOs and partners in the media as well as in the corporate sector.</p> <ul style="list-style-type: none"> <li>• CMS acts as a framework Convention. The Agreements which are encouraged by the Convention may range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding, and can be adapted to the requirements of particular regions. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS. CMS develops in addition Action Plans and Special Initiatives.</li> <li>• A Secretariat under the auspices of the UN Environment Programme (UNEP) provides administrative support to the Convention. The decision-making organ of the Convention is the Conference of the Parties (COP). A Standing Committee provides policy and administrative guidance between the regular meetings of the COP. A Scientific Council gives advice on technical and scientific matters.</li> <li>• As a Party to the Convention on Migratory Species, any given country will: (a) demonstrate its commitment to the conservation, including sustainable use, of migratory species on a global scale; (b) strengthen its legal and technical capacity to utilize valuable natural resources on a sustainable basis; (c) benefit from co-operation with other countries sharing the same migratory animals or experiencing similar conservation challenges; (d) improve access to relevant technologies and data, and benefit from a regular exchange of information and expertise; (e) have a full mandate, including voting rights, to participate in meetings of the Conference of the Parties, where decisions are taken on matters as the allocation of financial resources, preparation of triennial work programmes, adoption of financial regulations and rules of procedure, as well as specific resolutions and recommendations; and be eligible to participate in the work of other organs of the Convention.</li> <li>• CMS has also developed a code of conduct governing its relationships with the private sector.</li> </ul>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPO Countries)	Tools to achieve inclusiveness, compliance and implementation
<p><b>Ramsar Convention,</b> Ramsar, Iran, 1972 (entry into force 1975)</p>	<p>It is the only global environmental treaty that deals with a particular ecosystem: wetlands of international importance. Number of sites designated for the Ramsar List up to 27.1.2012: 1,994 Total surface area: 191,860,656 hectares</p>	<p>The Parties have committed themselves to:</p> <ul style="list-style-type: none"> <li>- Work towards the wise use of all their wetlands through national land-use planning, appropriate policies and legislation, management actions, and public education;</li> <li>•</li> <li>- Designate suitable wetlands for the List of Wetlands of International Importance ("Ramsar List") and ensure their effective management;</li> <li>- and also to cooperate internationally concerning trans-boundary wetlands, shared wetland systems, shared species and development projects that may affect wetlands.</li> </ul>	<p>Number of Contracting Parties: 160 (up to 27.1.2012)</p>	<p>Unlike the other global environmental conventions, Ramsar is not affiliated with the United Nations system of Multilateral Environmental Agreements, but it works very closely with the other MEAs and is a full partner among the "biodiversity-related cluster" of treaties and agreements.</p> <p>The Convention and its implementation is governed by the following bodies/procedures:</p> <ul style="list-style-type: none"> <li>- The Conference of the Contracting Parties (COP) meeting every three years and promoting policies and guidelines.</li> <li>- The Standing Committee, made up of Parties representing the six Ramsar regions of the world and guiding the Convention between meetings of the COP.</li> <li>- The Scientific and Technical Review Panel.</li> <li>- The Ramsar Secretariat,</li> <li>- The MedWet Initiative, with its Secretariat in Athens, provides a model for regional wetland cooperation.</li> <li>- Nationally, each Contracting Party designates an Administrative Authority as its focal point.</li> <li>- Ramsar sites facing problems in maintaining their ecological character can be placed in a special list, the "Montreux Record", and technical assistance to help solve the problems can be provided.</li> <li>•</li> </ul> <p>Eligible countries can apply to a Ramsar Small Grants Fund and Wetlands for the Future Fund for financial assistance.</p>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p><b>International Convention for the Safety of Life at Sea (SOLAS), 1974</b> as amended (entry into force 1980)</p>	<p>The whole Ocean space</p>	<ul style="list-style-type: none"> <li>Shipping safety (merchant ships)</li> <li>Compliance of the ships of flag states with minimum safety standards in construction, equipment and operation</li> <li>The SOLAS Convention in its successive forms is generally regarded as the most important of all international treaties concerning the safety of merchant ships</li> </ul>	<p>Number of contracting states / parties: 161 (among them European). The parties represent 98,91% of world tonnage</p>	
<p><b>International Convention for the Prevention of Pollution from Ships (MARPOL), 1973</b> (entry into force 1983)</p>	<p>The global marine environment being at risk from pollution by ships</p>	<ul style="list-style-type: none"> <li>The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It is a combination of two treaties adopted in 1973 and 1978 respectively and also includes the Protocol of 1997 (Annex VI).</li> <li>(MARPOL) was adopted on 2 / 11 / 1973 at IMO and covered pollution by oil, chemicals, harmful substances in packaged form, sewage and garbage.</li> </ul>	<p>Number of contracting states / parties for MARPOL 73/78 (Annexes I/II): 151 (among them European).</p> <p>MARPOL 73/78 (Annex III): 136 (among them European).</p> <p>MARPOL 73/78 (Annex IV): 129 (among them European).</p> <p>MARPOL 73/78 (Annex V): 143</p>	

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p><b>Convention on Facilitation of International Maritime Traffic (FAL)</b>, 1965, entry into force 1967</p>	<p>International maritime traffic</p>	<p>The Convention's main objectives are to prevent unnecessary delays in maritime traffic, to aid co-operation between Governments, and to secure the highest practicable degree of uniformity in formalities and other procedures. FAL defines standards as internationally-agreed measures which are "necessary and practicable in order to facilitate international maritime traffic" and recommended practices as measures the application of which is "desirable".</p>	<p>Number of contracting states / parties: 115 (among them European). The parties represent 90,77% of world tonnage</p>	<ul style="list-style-type: none"> <li>• The Convention provides that any Contracting Government which finds it impracticable to comply with any international standard, or deems it necessary to adopt differing regulations, must inform the Secretary-General of IMO of the "differences" between its own practices and the standards in question. The same procedure applies to new or amended standards.</li> <li>• In the case of recommended practices, Contracting Governments are urged to adjust their laws accordingly but are only required to notify the Secretary-General when they have brought their own formalities, documentary requirements and procedures into full accord.</li> <li>• This flexible concept of standards and recommended practices, coupled with the other provisions, allows continuing progress to be made towards the formulation and adoption of uniform measures in the facilitation of international maritime traffic.</li> </ul>

**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
<p>United Nations Educational, Scientific and Cultural Organization (UNESCO) – <b>The World Heritage Convention, 1972</b></p>	<p>The cultural and natural heritage worldwide and especially sites which the Convention defines as appropriate for inscription on the World Heritage List. Among these is the Wadden Sea (the Dutch Wadden Sea Conservation Area and the German Wadden Sea National Parks of Lower Saxony and Schleswig-Holstein), one of the last remaining natural, large-scale, intertidal ecosystems where natural processes continue to function largely undisturbed.</p>	<p>The most significant feature of the Convention is that it links together in a single document the concepts of nature conservation and the preservation of cultural properties. The Convention recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two.</p> <p>The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them. By signing the Convention, each country pledges to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage. The States Parties are encouraged to integrate the protection of the cultural and natural heritage into regional planning programmes, set up staff and services at their sites, undertake scientific and technical conservation research and adopt measures which give this heritage a function in the day-to-day life of the community.</p>	<p>Currently, the number of States Parties to the Convention is 188. States Parties are countries which have adhered to the Convention. They thereby agree to identify and nominate properties on their national territory to be considered for inscription on the World Heritage List. When a State Party nominates a property, it gives details of how a property is protected and provides a management plan for its upkeep. States Parties are also expected to protect the World Heritage values of the properties inscribed and are encouraged to report periodically on their condition.</p>	<ul style="list-style-type: none"> <li>• The overarching benefit of ratifying the World Heritage Convention (WHC) is that of belonging to an international community of appreciation and concern for universally significant properties that embody a world of outstanding examples of cultural diversity and natural wealth. The prestige that comes from being a State Party to the Convention and having sites inscribed on the World Heritage List often serves as a catalyst to raising awareness for heritage preservation.</li> <li>• A key benefit of ratification, particularly for developing countries, is access to the World Heritage Fund. Emergency assistance may also be made available for urgent action to repair damage caused by human-made or natural disasters. In the case of sites included on the List of World Heritage in Danger, the attention and the funds of both the national and the international community are focused on the conservation needs of these particularly threatened sites.</li> <li>• The Convention stipulates the obligation of States Parties to report regularly to the World Heritage Committee on the state of conservation of their World Heritage properties. These reports are crucial to the work of the Committee as they enable it to decide on specific programme needs and resolve recurrent problems. It also encourages States Parties to strengthen the appreciation of the public for World Heritage properties and to enhance their protection through educational and information programmes.</li> <li>• The World Heritage Committee, the main body in charge of the implementation of the Convention, has developed precise criteria for the inscription of properties on the World Heritage List and for the provision of international assistance under the World Heritage Fund.</li> <li>• Established in 1992, the World Heritage Centre is the focal point and coordinator within UNESCO. Ensuring the day-to-day management of the Convention, the Centre organizes the annual sessions of the World Heritage Committee and its Bureau, provides advice to States Parties in the preparation of site nominations, organizes international assistance from the World Heritage Fund upon request, and coordinates both the reporting on the condition of sites and the emergency action undertaken when a site is threatened.</li> </ul>



**Table 20** International Level Framework for Coastal/Maritime Governance (Continued)

Title of Convention/ Treaty / Agreement	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Signatories (among them EU/ ESPON Countries)	Tools to achieve inclusiveness, compliance and implementation
UNESCO – Man and Biosphere Programme (MAB), 1970s	The global environment interacting with human populations.	<p>The Man and Biosphere (MAB) Programme is an Intergovernmental Scientific Programme aiming to set a scientific basis for the improvement of the relationships between people and their environment globally.</p> <p>MAB develops the basis within the natural and social sciences for the rational and sustainable use and conservation of the resources of the biosphere. It predicts the consequences of today's actions on tomorrow's world and thereby increases people's ability to efficiently manage natural resources for the well-being of both human populations and the environment. MAB proposes an interdisciplinary research agenda and capacity building that target the ecological, social and economic dimensions of biodiversity loss and reduction of this loss.</p>	The members of the General Conference of UNESCO.	<ul style="list-style-type: none"> <li>• The main MAB governing body, the International Co-ordinating Council of MAB Programme, usually referred to as the MAB Council or ICC, consists of 34 Member States elected by UNESCO's biennial General Conference. The MAB ICC decides upon new biosphere reserves and takes note of recommendations on periodic review reports of biosphere reserves.</li> <li>• Government-appointed MAB National Committees play a fundamental role in the implementation of the MAB Programme. In order to ensure maximum national participation and to define and implement its national participation, every Member State is invited to establish a permanent, fully-functioning national committee</li> <li>• The agenda of the MAB Programme is defined by its main governing body, the International Coordinating Council in concert with the broader MAB Community.</li> <li>• Sub-programmes and activities focus on specific ecosystems: mountains; drylands; tropical forests; urban systems; wetlands; and marine, island and coastal ecosystems. Interdisciplinary and cross-sectoral collaboration, research and capacity-building are promoted. The "marine, island and coastal ecosystem" sub-programme includes the UNESCO's "Ecosystem-based Marine Spatial Management Initiative" helping countries operationalize ecosystem-based management by finding space for biodiversity conservation and sustainable economic development in marine environments.</li> <li>• For implementation of its interdisciplinary work on-ground, MAB relies on the World Network of Biosphere Reserves (WNBR), and on thematic networks and partnerships for knowledge-sharing, research and monitoring, education and training, and participatory decision-making. Composed of 580 sites in 114 countries, the WNBR promotes North-South and South-South collaboration and represents a unique tool for international co-operation through sharing knowledge, exchanging experiences, building capacity and promoting best practices.</li> <li>• To fulfil its mission, the WNBR relies on: Individual biospheres reserves, Regional and Sub-regional collaboration, MAB Networks, and the Clearing-House Mechanism. Among its regional networks is the EuroMAB (for Europe and North America) which is the largest and oldest of the MAB Regional Networks covering 52 countries, including Canada and the USA, and 262 biosphere reserves.</li> </ul>

**Table 21** International bodies / partnerships governing issues relevant to Sea Boundaries, Maritime Spatial Planning, Coastal Zone Management etc.

(Also including economic use of the sea, marine environment protection, maritime transport and sea energy systems)

<b><u>International Bodies / Partnerships governing issues relevant to Sea Boundaries, Maritime Spatial Planning, Coastal Zone Management, Economic Use of the Sea, Marine Environment Protection, Maritime Transport, Sea Energy Systems</u></b>				
<b>Name of the Body/ Partnership</b>	<b>Area of Coverage/ Jurisdiction</b>	<b>Focus of Activity / Objectives</b>	<b>Membership – EU and ESPON Country Involvement</b>	<b>Instruments to achieve agreement upon and/or realize objectives</b>
<b>UN Commission on the Limits of the Continental Shelf (CLCS)</b>	The zones of potential continental shelves beyond 200 nautical miles (M) from the baselines	The purpose of the CLCS is to facilitate the implementation of the UNCLOS in respect of the establishment of the outer limits of the continental shelf beyond 200 nautical miles (M) from the baselines from which the breadth of the territorial sea is measured.	In accordance with Annex II to the Convention "the Commission shall consist of twenty-one members who shall be experts in the field of geology, geophysics or hydrography, elected by States Parties to the Convention from among their nationals, having due regard to the need to ensure equitable geographical representation, who shall serve in their personal capacities".	<p>The limits of the shelf established by a coastal State on the basis of recommendations by CLCS shall be final and binding. These recommendations however should not prejudice matters relating to the delimitation of boundaries between States with opposite or adjacent coasts.</p> <p>The Commission ordinarily meets twice a year. The convening of these sessions and services to be provided are subject to approval by the General Assembly of the United Nations in its annual resolutions on oceans and the law of the sea.</p>

**Table 21** International Bodies / Partnerships (Continued)

<b>Name of the Body/ Partnership</b>	<b>Area of Coverage/ Jurisdiction</b>	<b>Focus of Activity / Objectives</b>	<b>Membership – EU and ESPON Country Involvement</b>	<b>Instruments to achieve agreement upon and/or realize objectives</b>
<b>International Seabed Authority (ISA)</b>	International Seas beyond national jurisdictions (the so-called “Area” by UNCLOS- see Table on the Legal Framework)	It is an autonomous international organization (established under the 1982 UN Convention on the Law of the Sea and the 1994 Agreement) that administers the mineral resources in the Area (seas beyond national jurisdiction)	There are one hundred and sixty two (162) members of the ISA as at 15 May 2011 (among them EC). There are also 33 states connected to the Authority under an observer status (among them USA)	The organs of the Authority are the Assembly, Council, Legal and Technical Commission, Finance Committee and the Secretariat. As “the executive organ of the Authority”, the Council establishes specific policies in conformity with the Convention and the policies set by the Assembly. It supervises/coordinates implementation of the elaborate regime established by the Convention to promote and regulate exploration for / exploitation of deep-sea minerals by States, corporations etc. Under this system, no such activity may legally take place until contracts have been signed between each interested entity and the Authority. The Council’s task is to draw up the terms of contracts, approve contract applications, oversee implementation and establish environmental and other standards.

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
<p><b>International Tribunal for the Law of the Sea (ITLOS)</b></p>	<p>The whole ocean space (the same as that of the Convention on the Law of the Sea).</p>	<p>ITLOS is an independent judicial body established by UNCLOS to adjudicate disputes arising out of the interpretation / application of the convention.</p>	<p>The Tribunal is open to States Parties to the Convention (i.e. States and international organizations which are parties to the Convention). It is also open to entities other than States Parties, i.e., States or intergovernmental organizations which are not parties to the Convention, and to state enterprises and private entities "in any case expressly provided for in Part XI or in any case submitted pursuant to any other agreement conferring jurisdiction on the Tribunal which is accepted by all the parties to that case" (Statute, article 20).</p>	<p>The Tribunal is composed of 21 independent members, elected from among persons enjoying the highest reputation for fairness and integrity and of recognized competence in the law of the sea.</p> <p>The mechanism established by the Convention provides for four alternative means for the settlement of disputes: the International Tribunal for the Law of the Sea, the International Court of Justice, an arbitral tribunal constituted in accordance with Annex VII to the Convention, and a special arbitral tribunal constituted in accordance with Annex VIII to the Convention. If the parties to a dispute have not accepted the same settlement procedure, the dispute may be submitted only to arbitration, unless the parties otherwise agree.</p> <p>The Tribunal has formed the following Chambers: the Chamber of Summary Procedure, the Chamber for Fisheries Disputes, the Chamber for Marine Environment Disputes and the Chamber for Maritime Delimitation Disputes. The Seabed Disputes Chamber is competent to give advisory opinions on legal questions arising within the scope of activities of ISA (see above).</p>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/ or realize objectives
<p><b>United Nations Environment Programme (UNEP)</b> (established in 1972)</p>	<p>The global environment</p>	<p>UNEP is the voice for the environment within the UN system. It acts as a catalyst, advocate, educator and facilitator to promote the wise use and SD of the global environment. UNEP work includes:</p> <ul style="list-style-type: none"> <li>• Assessing global, regional, national environmental conditions,</li> <li>• Developing international &amp; national environmental instruments,</li> <li>• Strengthening institutions for the wise management of the environment,</li> <li>• Facilitating transfer of knowledge/ technology for SD,</li> <li>• Encouraging new partnerships and mind-sets within civil society and the private sector.</li> </ul>	<p>UN member States</p>	<ul style="list-style-type: none"> <li>• Governing bodies of the UNEP are the Governing Council / Global Ministerial Environment Forum and the Committee of Permanent Representatives.</li> <li>• The Governing Council reports to the General Assembly through the Economic and Social Council. 58 members of the Council are elected by the General Assembly taking into account the principle of equitable regional representation. The Global Ministerial Environment Forum is convened annually to review emerging policy issues in the field of the environment, with the Governing Council constituting the forum either in its regular sessions or special sessions.</li> <li>• UNEP works with a wide range of partners, including UN entities, international organizations, national governments, non-governmental organizations, the private sector and civil society.</li> <li>• UNEP's global and cross-sectoral outlook is reflected in its organizational structure. UNEP supports six regional offices, plus a growing network of centres of excellence such as the Global Resource Information Database (GRID) centres and the UNEP World Conservation Monitoring Centre (UNEP-WCMC). UNEP also hosts environmental convention secretariats including CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) and the Convention on Biological Diversity.</li> </ul>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
<p>United Nations Environment Programme (UNEP) – Regional Seas Programme - Mediterranean Action Plan (MAP)- <b>The GEF-MED Partnership *</b></p> <p>* GEF: Global Environment Facility</p>	<p>The UNEP/MAP - GEF MedPartnership is a collective effort of leading organizations (regional, international, non-governmental, etc.) and countries sharing the Mediterranean Sea, towards the protection of its marine and coastal environment.</p>	<p>The MedPartnership's overarching goal is to enable a coordinated and strategic approach to catalyze the policy, legal and institutional reforms, and the investments necessary to reverse the degradation trends affecting the Mediterranean, including its coastal habitats and biodiversity. The Med Partnership works through two lines of actions:</p> <ul style="list-style-type: none"> <li>- technical and policy support led by UNEP/MAP (Regional Project); and</li> <li>- project financing led by the World Bank.</li> </ul>	<p>The structure of the MED-Partnership consists of Partners (Executing Partners, Donors and participating countries), the Steering Committee, the Coordination Group and the Project Management Unit (PMU) which is located in UNEP/MAP and is responsible for the execution of the project. Among the major donors beyond the Global Environment Facility (GEF) are the Mediterranean Trust Fund, the EU, the Spanish Agency for International Development and the Ministry of Foreign Affairs of Italy.</p>	<p>The MedPartnership is led by UNEP/MAP and the World Bank and is financially supported by the Global Environment Facility (GEF), and other donors, including the EU and all participating countries. The Regional Project is executed by eleven leading organizations in the Mediterranean: These are the following:</p> <p>FAO, Global Water Partnership - Mediterranean (GWP-Med), Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE), UNEP/MAP Priority Actions Programme Regional Activity Centre (PAP-RAC), UNEP/MAP Regional Activity Centre for Cleaner Production (CP-RAC), UNEP/MAP Regional Activity Centre for Information/ Communication (INFO-RAC), UNEP/MAP Regional Activity Centre for Specially Protected Areas (SPA-RAC), UNEP/MAP-MEDPOL, UNESCO International Hydrological Programme, UN Industrial Development Organization (UNIDO), and WWF Mediterranean Programme Office (WWF MedPO).</p> <p>The project is being implemented in close association with other relevant regional initiatives, such as the Horizon 2020 Initiative to de-pollute the Mediterranean, the Integrated European Maritime Policy, and the World Bank/GEF Sustainable Mediterranean Program, etc.</p>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
<p><b>International Maritime Organization (IMO)</b> Formal establishment after a Conference and a Convention in 1948 under the name Inter-Governmental Maritime Consultative Organization, or IMCO – The IMO Convention entered into force in 1958.</p>	<p>The whole oceanic system</p>	<p>The IMO is the United Nations specialized agency with responsibility for the safety and security of shipping and prevention of marine pollution by ships. IMO's mission, according to the Strategic plan for the Organization (2010-2015) is:</p> <p>".. to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation. This will be accomplished by adopting the highest practicable standards of maritime safety and security, efficiency of navigation , prevention and control of pollution from ships, as well as through consideration of the related legal matters and implementation of IMO's instruments with a view to their universal, uniform application."</p>	<ul style="list-style-type: none"> <li>• 170 Member States, 61 Intergovernmental Organizations (IGOs) with observer status and 78 International NGOs in consultative status.</li> <li>• All EU countries have joined IMO.</li> <li>• Membership represents more than 98% of the world merchant shipping tonnage.</li> </ul>	<ul style="list-style-type: none"> <li>• IMO adopts legislation (treaties, conventions, codes)</li> <li>• For the establishment of a Convention the basic procedural steps to be followed are: adoption, entry into force, signature, ratification, acceptance, approval and accession, also amendment and enforcement. In the case of IMO, adoption is the part of the process with which IMO is most closely involved. Before the convention comes into force - that is, before it becomes binding upon Governments which have ratified it - it has to be accepted formally by individual Governments. Each convention includes appropriate provisions stipulating conditions which have to be met before it enters into force. When the appropriate conditions have been fulfilled, the convention enters into force for the States which have accepted - after a period of grace.</li> <li>• Governing bodies of IMO are the Assembly, the Council and the Committees (the Maritime Safety, the Marine Environment Protection, the Legal Committee, the Technical Co-operation and the Facilitation Committee) while operational processes adopting a Convention include International Conferences &amp; Tacit Acceptance.</li> <li>• Planning/ implementation tools used by IMO are: <ul style="list-style-type: none"> <li>- The Strategic Plan (covering a six year period),</li> <li>- The High Level Action Plan,</li> <li>- Performance Indicators,</li> <li>- Regional Port State Control Organizations,</li> <li>- The IMO member State Audit Scheme (mandatory in 2015).</li> </ul> </li> </ul>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
<p><b>Food and Agriculture Organization of the United Nations (FAO) – Fisheries and Aquaculture Department (FI)</b></p>		<p>The Department promotes policies and strategies aiming at sustainable and responsible development of fisheries and aquaculture in inland and marine waters. For this purpose:</p> <ul style="list-style-type: none"> <li>• It analyzes and disseminates information on the sector operations (catch, production, value, prices, fleets, farming systems, employment).</li> <li>• It assesses and monitors the state of wild resources and elaborates resources management advice.</li> <li>• It advises on the development of aquaculture.</li> <li>• It supports and assists a network of regional fishery commissions and promotes aquaculture networks.</li> <li>• It monitors and advises on technology development, fish processing, food safety and trade.</li> </ul>	<ul style="list-style-type: none"> <li>• FAO has 191 Member Nations, two associate members and one member organization, the European Union.</li> <li>• Regarding membership of the Committee of Fisheries (COFI) which is connected to the Fisheries and Aquaculture Department, it is open to any FAO Member and non-Member eligible to be an observer of the Organization.</li> <li>• Representatives of the UN, UN bodies and specialized agencies, regional fishery bodies, international and international non-governmental organizations participate in the debate, but without the right to vote. COFI has 142 members including EU as member organization.</li> </ul>	<ul style="list-style-type: none"> <li>• FAO is a United Nations specialized agency, accountable to the FAO Conference of member governments. FAO participates in the United Nations Economic and Social Council (ECOSOC) which coordinates economic, social and related work of the 14 UN specialized agencies as well as regional commissions.</li> <li>• FAO Fisheries and Aquaculture Department (FI) provides discussion <i>fora</i>, information, legal and policy frameworks, codes and guidelines, options for strategies, scientific advice, training material, etc. Within the mandate given by FAO's Governing Bodies, the FI is committed to working with its Members, and to forging closer and more effective partnerships with national and international institutions, academia, the private sector and civil society to achieve long-term sustainable results in the fisheries sector.</li> <li>• The Committee on Fisheries (COFI), a subsidiary body of the FAO Council, constitutes the only global inter-governmental forum where major international fisheries and aquaculture problems and issues are examined and recommendations addressed to governments, regional fishery bodies, NGOs, fishworkers, FAO and international community, periodically on a world-wide basis. COFI has also been used as a forum in which global agreements and non-binding instruments were negotiated.</li> </ul>



**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
<p><b>UNESCO – Intergovernmental Oceanographic Commission (IOC)</b></p>		<ul style="list-style-type: none"> <li>• The IOC aids and advises policy makers and managers in the reduction of risks from tsunamis, storm surges, Harmful Algal Blooms (HABs) and other coastal hazards by focusing on implementing adaptation measures to strengthen the resilience of vulnerable coastal communities, their infrastructure and service-providing ecosystems.</li> <li>• IOC Global Climate Change Programmes help monitor the ocean response to climate change and help coastal nations adapt.</li> <li>• Ecosystem health IOC marine science programmes investigate issues of ocean ecology / ecosystem health.</li> <li>• Environmental Management: IOC supports a variety of marine ecosystem-based management and marine information programmes.</li> </ul>	<p>IOC membership amounts to 142 member states</p>	<ul style="list-style-type: none"> <li>• The purpose of the IOC Assembly is to review the work of the commission, including the work of the member states and the secretariat, and formulate a common work plan for the following two years. The Executive Council reviews issues and items from on-going work plans, and makes preparations for the Assemblies.</li> <li>• IOC's regional structure consists of regional sub-commissions, regional committees, regional programme offices, project offices. Among these are BSRC (IOC Black Sea Regional Commission), the IODE Project Office of Ostend, Belgium, and the DBCP Argo Project Office (JCOMMOPS) of Toulouse, France.</li> <li>• The objective of IOC marine management activities is to assist IOC Member States in their efforts to build marine scientific and technological capabilities in the field of integrated coastal management as follow-up of UNCED, Agenda 21. The IOC strives to provide reliable marine scientific data, develop methodologies, help countries operationalize ecosystem-based management, disseminate information and build interdisciplinary capacity through symposia, workshops, seminars and training courses.</li> </ul>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
<b>International Energy Agency (IEA)</b>	Energy issues in the global context.	<ul style="list-style-type: none"> <li>• Policy analysis and preparation, reviews, monitoring and forecasting of developments related to conventional and renewable forms of energy production and supply; also sustainable energy and energy technology policy.</li> <li>• Today, the IEA's four main areas of focus are:   <b>Energy security:</b> Promoting diversity, efficiency and flexibility within all energy sectors  <b>Economic development:</b> Ensuring the stable supply of energy to IEA member countries and promoting free markets to foster economic growth and eliminate energy poverty  <b>Environmental awareness</b> to tackle climate change  <b>Engagement worldwide:</b> Working closely with non-member countries to find solutions to shared energy environmental concerns</li> </ul>	OECD countries except Chile, Estonia, Iceland, Israel, Mexico and Slovenia.	<ul style="list-style-type: none"> <li>• IEA is a knowledge intensive and supplier organization, consultant of the G8 / G20 / OECD countries.</li> <li>• IEA (through its Directorate of Global Energy Dialogue-GED) works with member and non-member countries to promote cooperation and dialogues on all aspects of energy policy and technology.</li> <li>• IEA promotes closer engagement between the IEA members and major energy consumer, producer or transit countries which are not IEA members ("dialogue" countries).</li> <li>• IEA through GED (Global Energy Dialogue) conducts in-depth reviews of energy policies of IEA members.</li> <li>• IEA cooperates with OECD in the field of Climate Change (OECD/IEA Climate Change Expert Group)</li> <li>• IEA has produced 40 multi-lateral technology initiatives (among them the Implementing Agreement on Ocean Energy Systems, 2001).</li> </ul>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
International Union for Conservation of Nature ( <b>IUCN</b> )	IUCN has offices in more than 45 countries and runs hundreds of projects around the world. IUCN's European Region covers the whole of Europe, Russia, Central Asia and the overseas territories of European Union Countries. This is IUCN's largest programmatic region and contains three global biodiversity hotspots - the Mediterranean basin, the Caucasus and New Caledonia (a French overseas territory).	The IUCN Programme provides the framework for planning, implementing, monitoring and evaluating the conservation work undertaken by the Commissions and the Secretariat with and on behalf of IUCN Members. It is discussed and approved by Member organizations every four years at IUCN's World Conservation Congress	IUCN is a membership organization made up of more than 1,000 organizations, as well as 10,000 individual scientists and experts structured in six Commissions. The priorities and work of IUCN are set by Member organizations every four years and subsequently coordinated by a professional secretariat with 1,100 staff in more than 60 countries. The 1,000 member organizations of IUCN include more than 80 States, more than 110 government agencies, and more than 800 non-governmental organizations (NGOs). Members meet every four years at the IUCN World Conservation Congress to express their views, guide IUCN's policy and approve its programme of work.	<ul style="list-style-type: none"> <li>• IUCN member organizations elect the Council every four years at the IUCN World Conservation Congress. Along with a President, Treasurer and three representatives from each of the Union's eight regions, the Council also includes the Chairs of the six Commissions. The Council functions in a similar way to a Board of Directors, meeting once or twice a year to direct Union policy, approve finances and decide on strategy.</li> <li>• The six Commissions of IUCN, networks of volunteer scientists and experts, are principal sources of guidance on conservation knowledge, policy and technical advice, and implement parts of IUCN's work programme. The Commissions are "Ecosystem Management", "Education and Communication", "Environmental, Economic and Social Policy", "Environmental Law", "Protected Areas" and "Species Survival". The priorities and work of the Commissions are also set every four years at the IUCN World Conservation Congress.</li> <li>• Members within a country or region often organize themselves into National and Regional Committees to facilitate cooperation and help coordinate IUCN's work.</li> <li>• The IUCN Programme is implemented by several components of the Union: Regional Programmes, Global Thematic Programmes, Commission Programmes, Corporate Strategies Group, Administrative Units and the IUCN Innovation Fund.</li> </ul>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
Greenpeace	Global environment	<p>Greenpeace is an independent global campaigning organization that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace by:</p> <ul style="list-style-type: none"> <li>- Catalysing an energy revolution to address the number one threat facing our planet: climate change,</li> <li>- Defending our oceans by challenging wasteful and destructive fishing, and creating a global network of marine reserves,</li> <li>- Protecting the world's ancient forests,</li> <li>- Working for disarmament and peace by tackling the causes of conflict and calling for the elimination of all nuclear weapons,</li> <li>- Creating a toxic free future with safer alternatives to hazardous chemicals in today's products and manufacturing,</li> <li>- Campaigning for sustainable agriculture.</li> </ul>	<p>Greenpeace is a global environmental organization, consisting of Greenpeace International (Stichting Greenpeace Council) in Amsterdam, and 28 national and regional offices around the world, providing a presence in over 40 countries. Greenpeace International is the body that coordinates global Greenpeace policy and strategy; it is an organization of about 175 staff. The national/regional offices are independent in carrying out global campaign strategies within the local context they operate in, and in seeking the necessary financial support from donors to fund this work.</p>	<ul style="list-style-type: none"> <li>• The Board of Directors of Greenpeace International approves the annual budget of Greenpeace International and the audited accounts.</li> <li>• The Board is also responsible for monitoring the operations and activities of the wider organization; deciding organizational policy; approving the start of new campaigns and new national offices; ratifying the Greenpeace International Annual General Meeting (AGM) decisions; granting the right to use the Greenpeace trademark; and for determining the voting status of national / regional offices in the AGM.</li> <li>• Development and coordination of global strategies is the task of Greenpeace International (Council). Supported by a consultative international decision making process in which the National /Regional Offices are the main stakeholders, Greenpeace International co-ordinates worldwide campaigns. Regional offices are firmly rooted in the local environmental communities in the countries where Greenpeace operates. They maintain direct contact with the public.</li> <li>• The work of Greenpeace is based on key principles: <ul style="list-style-type: none"> <li>- <b>Bearing witness</b> to environmental destruction in a peaceful, non-violent manner.</li> <li>- <b>Taking</b> non-violent direct action to raise the level and quality of public debate and end environmental problems.</li> <li>- <b>Financial independence</b> from political or commercial interests.</li> <li>- <b>Promoting solutions:</b> The Organization seeks solutions for, and promotes open, informed debate about society's environmental choices. It doesn't work to manage but to eliminate environmental problems.</li> </ul> </li> </ul>

**Table 21** International Bodies / Partnerships (Continued)

Name of the Body/ Partnership	Area of Coverage/ Jurisdiction	Focus of Activity / Objectives	Membership – EU and ESPON Country Involvement	Instruments to achieve agreement upon and/or realize objectives
WWF (World Wildlife Fund), 1961 (since 1986 "World Wide Fund for Nature")	The global natural environment.	<p>WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by:</p> <ul style="list-style-type: none"> <li>- conserving the world's biological diversity;</li> <li>- ensuring that the use of renewable natural resources is sustainable</li> <li>- promoting the reduction of pollution and of wasteful consumption.</li> </ul> <p>WWF focuses its efforts on two broad areas: Biodiversity and Footprint.</p> <p>Given limited resources, WWF is currently focusing its efforts on 13 Global Initiatives. These are large-scale efforts that can have the potential for the broadest positive impacts across the widest spectrum of priority species and eco-regions. Among WWF's global initiatives is changing the minds / actions of key stakeholders for critical issues such as climate change, commodity production and sourcing, and overfishing.</p>	<p>WWF is one of the world's largest conservation organizations.</p> <p>The organization has offices in more than 80 countries around the world.</p> <p>It employs around 2,500 full time staff and values the support of more than 5 million people</p>	<ul style="list-style-type: none"> <li>• WWF is an independent foundation registered under Swiss law governed by a Board of Trustees under an International President.</li> <li>• The central secretariat for the global network - called WWF International - is now located in Switzerland. Its role is to lead and coordinate the WWF Network of offices around the world, through developing policies and priorities, fostering global partnerships, coordinating international campaigns, and providing supportive measures for its global operations.</li> <li>• The various WWF offices around the world come under two categories: 1) those that can raise funds and carry out work autonomously, and 2) those that must work under the direction of one of the independent WWF offices</li> <li>• In all cases, WWF's offices carry out conservation work such as practical field projects, scientific research, advising local and national governments on environmental policy, promoting environmental education, and raising environmental awareness. Offices that can work independently (type 1) also contribute funding to WWF's global conservation programme, while all offices help contribute to an enormous pool of environmental knowledge.</li> <li>• A specialist WWF office in Brussels works to influence the policies and activities of the European Union, while a second WWF Office in Washington DC works to influence global institutions involved in international economic issues (e.g. the World Bank).</li> <li>• Innovative partnerships are the means toward success. They combine on-the-ground conservation, high-level policy and advocacy and work to make industry sustainable. By engaging in innovative and challenging partnerships with the private sector, WWF works with companies to help them change the way they do business, reduce their environmental footprint, and encourage change and innovative solutions.</li> </ul>

**Table 22 Maritime Spatial Planning**

<b>Maritime and marine affairs – Maritime spatial planning (MSP)</b>		
(Document titles in the first column follow the list of references. The documents are listed here in chronological order. Works by individual authors are not included, unless issued by international or national organizations. An exception is made in the case of the Portuguese maritime spatial plan. Relevant documents can also be found in the tables on ICZM and on the environment.)		
<b>European Union and international strategies and policy documents</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<i>Council Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy (water directive).</i>		The Water Directive is included in the table on environment policies.
Commission Green Paper COM (2006) 275 final, volume II, annex, of 7 June 2006, <i>Towards a future maritime policy for the Union: a European vision for the oceans and seas.</i>	Maritime policy.	<p>This is the document which opened the debate on maritime policy and MSP. The paper refers to the role of the oceans for Europe, the economic maritime dimension, its contribution to European economic revitalization and the opportunity to apply sustainable development to the seas. The sectors of maritime transport, industry, coastal management, offshore energy, fisheries and marine environment have been approached separately in the past in a fragmented way. The paper proposes a holistic approach through maritime policy, as good governance demands. The objective is an all-embracing maritime policy aimed at developing a thriving maritime economy, in an environmentally sustainable manner.</p> <p>The increasing competition of sea uses requires a system of spatial planning for maritime activities controlled by Member States. The paper contains a section on maritime governance. The general principles of maritime policy should be (a) integration of scientific and technical advice, (b) involvement of all stakeholders, (c) coordination and coherence across sectors, objectives, geographical regions and external policies, (d) identification of competences, (e) maritime considerations in EU policies, and (f) setting of targets and measurement of performance.</p>

**Table 22** Maritime Spatial Planning (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Commission Communication COM (2007) 575 final of 10 October 2007 on an integrated maritime policy for the European Union.</i></p>	<p>Integrated maritime policy. Blue Book.</p>	<p>IMP is anchored in the Lisbon and Gothenburg agendas (see table on development policies). It has an inter-sectoral emphasis, lays the foundation for a governance framework and cross-sectoral tools and adopts the principles of subsidiarity, competitiveness, stakeholder participation, consultation, coordination and of the ecosystem approach. It introduces the need for maritime spatial planning and requires a maritime cluster policy, a climate change policy for coastal regions and an integrated approach to maritime governance. The need to integrate MSP, ICZM and terrestrial planning is advocated. Concern is expressed for coastal regions, interregional collaboration and territorial cooperation. The communication proposes a plan of actions for IMP, which includes the formation of multi-sectoral clusters, and actions of coordination with international governance.</p>
<p><i>Commission Staff Working Document SEC (2007) 1278 of 10 October 2007 accompanying the Commission Communication COM (2007) 575 final of 10 October 2007 on an integrated maritime policy for the European Union.</i></p>	<p>Integrated maritime policy.</p>	<p>This is a document accompanying the above communication. It is an elaborate action plan, in which links are made in detail with a large number of sectoral policies affecting the sea environment and use. It contains a special governance chapter, outlining EU actions, identifying obstacles (e.g. existing regulations) and emphasizing the importance of collective learning, best practices and stakeholder involvement. The document calls for initiatives integrating MSP, ICZM, spatial planning and the then forthcoming marine directive. The document endorses closer cooperation with international initiatives (e.g. under UNCLOS) and between regional sea initiatives, to achieve effective synergies. The action plan is summarized in a concise table form.</p>
<p><i>Council Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).</i></p>	<p>MSFD. Marine environment.</p>	<p>The MSFD is the environmental component and pillar of EU's maritime policy and is in line with the objectives of the Water Directive. It proposes marine protected areas, in parallel with those foreseen by the Habitats and Birds directives and by international or regional agreements. It adopts fully the ecosystem-based approach and aims at a coherent relationship with the Common Fisheries and Agricultural Policies, as well as with regional sea agreements. Spatial protection measures are advocated, through the establishment of protected areas. Seas and sub-seas are clearly defined and member states are asked to integrate their national marine strategies and measures, which should lead to good environmental status in the marine environment by the year 2020. Marine strategy preparation, implementation and monitoring are extensively discussed.</p>

**Table 22** Maritime Spatial Planning (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Commission Communication COM(2008) 791 final of 25 November 2008: Roadmap for maritime spatial planning: achieving common principles in the EU.</i></p>	<p>Maritime spatial planning. Roadmap.</p>	<p>In this communication the content and character of MSP are further elaborated. It is stressed that MSP, as a coordinating and integrative tool, should balance sectoral interests and remain in line with the EU Sustainable Development Strategy (SDS), while providing a stable planning framework and a legal certainty for potential activities seeking permits. The document includes a brief presentation of national approaches to MSP and of relevant projects. It also lists international and EU instruments, policies and conventions (e.g. UNCLOS, MSFD, Natura 2000, Common Fisheries Policy, ICZM, OSPAR convention and many others) with an impact on MSP. The communication clarifies the key MSP governance principles, which include <i>inter alia</i> transparency, participation, member state and cross-border coordination, legal certainty and coherence between MSP, ICZM and terrestrial planning.</p>
<p>Ehler, C. and Douvère, F., 2009. <i>Marine spatial planning: a step-by-step approach toward ecosystem-based management</i>. Intergovernmental Oceanographic Commission and Man and the Biosphere Programme. IOC Manual and Guides No 53, ICAM Dossier No6. Paris: UNESCO.</p>	<p>Maritime spatial planning. UNESCO.</p>	<p>This is a report issued by a United Nations agency, i.e. UNESCO, and one that uses the term “marine”, instead of “maritime”, spatial planning. It contains one of the many available definitions of MSP, which should be ecosystem-based, integrated, place-based, adaptive, strategic, anticipatory and participatory. The planning process advocated in the report is a variant of the systems approach to planning. The authors present the relationship of MSP with ICZM and various sectoral approaches, its expected outputs and various spatial and non-spatial marine management measures. The stakeholders who should be involved in MSP, the measures needed to empower them, the nature of institutions that will implement MSP and the forms of compliance and enforcement are also identified by the authors.</p>
<p><i>Commission Communication COM(2009) 466 final of 11 September 2009: Towards an integrated maritime policy for better governance in the Mediterranean.</i></p>		<p>This communication is included in the table on regional seas.</p>



**Table 22** Maritime Spatial Planning (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Commission Communication COM(2010) 461 final of 8 September 2010: Marine knowledge 2020 – marine data and observation for smart and sustainable growth.</i></p>	<p>Marine knowledge.</p>	<p>The communication is considered a prerequisite for the implementation of MSFD and the attainment of the “smart growth” objective of the Europe 2020 strategy. The main marine knowledge goals are to reduce operational costs, to increase competition and to reduce uncertainty. Emphasis is given to data collection mechanisms, including, among others, those at regional sea level established under various conventions, e.g. OSPAR, HELCOM, Barcelona or Bucharest conventions.</p>
<p><i>Commission Communication COM(2010) 771 of 17 December 2010: Maritime spatial planning in the EU – achievements and future development.</i></p>	<p>Maritime spatial planning.</p>	<p>A number of conclusions are drawn from MSP workshops regarding the ecosystem approach (“overarching principle for MSP”), adaptation to area specificities, goal setting at national and regional level, transparency, stakeholder participation, member state coordination, cross-border cooperation, necessary monitoring and evaluation, coherence with terrestrial spatial planning and ICZM, strong data and knowledge base and ensuring the legal effect of national MSP, which is favoured by the existence of EEZs. European maritime activities are reviewed in the communication.</p>
<p>European Commission, 2010a. <i>Maritime spatial planning for the EU’s seas and oceans: what’s it all about?</i>. Luxembourg: Publications Office of the European Union.</p>	<p>Maritime spatial planning.</p>	<p>This EU publication presents and argues in favour MSP, which it defines as follows: “Maritime spatial planning is a process for planning and regulating all human uses of the sea, which also sets out to protect the marine ecosystems in which these activities take place and safeguard marine biodiversity. [It] is designed to promote the rational use of the sea and to improve decision-making. It seeks to balance sectoral interests and use space more efficiently ...” It should also provide enhanced legal certainty to potential users. The need for cooperation with terrestrial planning and the possibility of using both legally binding tools and indicative guidelines are being stressed. A section deals with synergies with specific EU policies, international organizations and conventions.</p>

**Table 22** Maritime Spatial Planning (Continued)

Arrangement	Area of Coverage	Content and governance provisions
European Commission, 2010b. <i>ROADMAP – Proposal for a legislative action of the European Parliament and Council setting a framework for maritime spatial planning (2011/MARE/017).</i>	Maritime spatial planning roadmap.	The document refers to the endorsement of MSP principles by stakeholders who took part in a consultation process and to links of the MSP initiative with MSFD and ICZM. It is stressed that the EU will not interfere with national competence on planning. An impact assessment for the initiative is being considered.
European Environment Agency, 2010b. <i>The European environment: state and outlook 2010 – marine and coastal environment.</i> SOER 2010 Assessments. Luxembourg: Publications Office of the European Union.	Marine and coastal environment. EEA.	The focus of this EEA publication is on environmental issues. In it the role of EU policy in regional seas is being reviewed (Baltic Sea strategies and action plans, Horizon 2020 for the Mediterranean, Black Sea synergy and Northern Dimension). The synergies between MSFD, MSP and ICZM are also explored.
European Environment Agency, 2010c. <i>The European environment: state and outlook 2010 – land use.</i> SOER 2010 Assessments. Luxembourg: Publications Office of the European Union.	Environment and land use. EEA.	Spatial planning responses are being reviewed in this EEA document, starting with the European Spatial Development Perspective and including the integrated management of river basins and coastal zones.
Policy Research Corporation, 2010. <i>Study on the economic effects of maritime spatial planning: case studies.</i> Commissioned by DG Maritime Affairs and Fisheries. Antwerp.	Maritime spatial planning.	The study was commissioned by DG Mare. The report contains a case study on maritime spatial planning in Portugal. The process of producing the country's maritime spatial plan involved systematic coordination with various stakeholders. The implementation of the plan is expected to generate economic benefits by speeding up processes, lowering legal and administrative costs and reducing conflicts. It will become effective in 2013.

**Table 22** Maritime Spatial Planning (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>Policy Research Corporation, 2011a. <i>Study on the economic effects of maritime spatial planning: final report</i>. Commissioned by DG Maritime Affairs and Fisheries. Luxembourg: Publications Office of the European Union.</p>	<p>Maritime spatial planning.</p>	<p>The study was commissioned by DG Mare. MSP is expected to achieve coordination efficiency, reduce transaction costs, enhance legal certainty and thereby improve the investment climate. Current maritime activities in European seas are listed in the report. MSP is considered as “a tool for improved decision-making”, based on the ecosystem approach. The principles of MSP are reiterated in the document, including transparency, participation, coordination, legal certainty, coherence with terrestrial planning and ICZM etc.</p>
<p><i>EU Regulation 1255/2011 REGULATION (EU) No 1255/2011 OF THE COUNCIL of 30 November 2011 establishing a Programme to support the further development of an Integrated Maritime Policy.</i></p>	<p>Integrated maritime policy.</p>	<p>This is essentially a funding programme. Its first aim is “to foster the development and implementation of integrated governance of maritime and coastal affairs”, while another aim is to foster the development of MSP and ICZM, “both important tools for the sustainable development of marine areas and coastal regions”. These aims bear witness to the extent to which these policies are increasingly brought together. The programme also aims at supporting sea-basin strategies and at promoting synergies between national, regional and EU levels.</p>
<p>Policy Research Corporation, 2011b. <i>Exploring the potential of maritime spatial planning in the Mediterranean sea</i>. Non-technical report. Framework contract FISH/2007/04. Produced for DG Maritime Affairs and Fisheries. Antwerp.<sup>74</sup></p>	<p>Maritime spatial planning / Mediterranean.</p>	<p>This report was produced for DG Mare. It concerns the Mediterranean Sea and had among its task an analysis of the potential obstacles and difficulties for MSP application. The document reviews the process of the UNEP-administered Mediterranean Action Plan, the Barcelona Convention, cross-border initiatives and relevant EU initiatives. It is concluded in the paper that the sub-seas which have potential for MSP use are the Adriatic Sea, the Alboran Sea, the area around Malta and the Western Mediterranean, which leaves out the Eastern Mediterranean sub-seas. Coastal areas are in most need for MSP application. MSP governance is greatly facilitated by a clear institutional and legal framework, i.e. one with established maritime zones such as EEZs. Weak government structures, lack of horizontal and vertical coordination within countries and insistence on sectoral approaches militate against integrated MSP.</p>

<sup>74</sup> The final report is available at [http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/msp-med\\_final\\_report\\_en.pdf](http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/msp-med_final_report_en.pdf) > [Accessed 23 March 2012].

**Table 22** Maritime Spatial Planning (Continued)

<b>Examples of national strategies and actions towards maritime planning</b> (A small selection of national policies is included here from countries at various stages of development of their spatial maritime policies. The list is not exhaustive.)		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
Dutch Ministry of Transport, Public Works and Water Management et al., 2005. <i>Integrated Management Plan for the North Sea 2015</i> . Interdepartmental Directors' Consultative Committee North Sea.	Netherlands. North Sea Plan.	The document aims at the implementation of a North Sea policy contained in the Dutch Spatial Planning Policy Document. It provides guidance for a broad range of maritime functions, beyond the 1 kilometre boundary from the sea shore which falls under the jurisdiction of the central government, as opposed to that of municipal or provincial governments. Management tasks are defined as implementation, enforcement, knowledge and information management, reporting and evaluation. The plan will act as an umbrella of sectoral and thematic goals, set in other policy documents or international conventions (UN, EU, transnational). Implementation involves regulation of use through a permit system.
Swedish Ministry of the Environment, 2009. A coherent Swedish maritime policy.	Maritime policy. Sweden.	The Swedish maritime policy focuses on the sustainable use of sea and coastal areas. It is to be integrated, cross-sectoral and holistic. It encourages regional cooperation and participation of stakeholders. Municipalities manage coastal marine areas, while territorial sea and EEZ will probably be managed by a special central agency, in a multi-level coordination arrangement.
UK Government, 2009. <i>Marine and Coastal Access Act 2009</i> .	Marine and coastal areas. UK.	This is a highly complex and detailed legal document. The act provides "a framework to regulate marine activities and to ensure sustainable use and protection of marine resources and to safeguard clean, healthy safe productive and biologically diverse oceans and seas". A central Marine Management Organization is being created to which certain central government functions are transferred. The MMO may enter into agreements both with responsible minister and with a number of eligible bodies, in order to delegate functions, provided the latter not non-delegable. The act provides for the designation of UK Marine Areas and the production of Marine Policy Statements. Marine Planning Regions and the respective Marine Plan Authorities are also defined in the act. Marine Plans are produced for Marine Plan Areas. Extensive chapters are devoted to marine licensing and to coastal access. Marine Conservation Areas are designated following extensive consultation and elaborate procedures, as well as other conservation sites, e.g. for inshore fisheries. The act contains extensive legislation regulating fisheries.

**Table 22** Maritime Spatial Planning (Continued)

Arrangement	Area of Coverage	Content and governance provisions
Portuguese Ministry of the Environment and Territorial Ordering, 2010. <i>Fourth national report to the convention on biological diversity</i> . <sup>75</sup>	Portugal. MSP.	A full-scale maritime spatial plan is awaiting final approval. According to the 2010 Portuguese report to the Convention on Biological Diversity, “the first steps towards the adoption of measures for the conservation and management of the marine environment are being taken, especially through the implementation of the National Strategy for the Seas (ENM) and instruments such as the Maritime Areas Spatial Plans (POEM, under progress) that will allow to plan maritime activities, including the delimitation of areas for the conservation of nature and biodiversity and the project Network of Marine Protected Areas (MPAs), which aims to implement a network of MPAs as a means of safeguarding the key areas for conservation and management of living and non-living resources” The plan was prepared by an inter-ministerial team coordinated by the Water Institute (INAG). Consultation took place for a period of 13 months in public sessions with citizens and in workshops with public institutions, private companies and academics, in different regions.
Greek Parliament Acts 4030/2011 and 3893/2011 and Joint Ministerial Decision on spatial plan for aquacultures (Government Gazette No 2505B’ of 4 November 2011).	Greece. MSP.	The production of a national spatial maritime plan is being considered by the Greek Ministry for the Environment, Energy and Climate Change. Provisions for the integrated management of sea space and the future ratification of a statutory spatial maritime plan have been recently enacted. In the recent approval of the national spatial aquaculture plan the decision to produce an overall maritime plan has been reconfirmed. A national strategy for the protection and management of marine environment has received parliament approval.

<sup>75</sup> Available at <[www.cbd.int/doc/world/pt/pt-nr-04-en.doc](http://www.cbd.int/doc/world/pt/pt-nr-04-en.doc)> [Accessed 28 January 2012], and various other sources including  
(a) Instituto da Agua (Portugal). Planeamento – Estudos. Available at <[http://www.inag.pt/index.php?option=com\\_content&view=section&layout=blog&id=3&Itemid=44](http://www.inag.pt/index.php?option=com_content&view=section&layout=blog&id=3&Itemid=44)> [Accessed 7 February 2012],  
(b) Instituto da Agua (Portugal). Plano de Ordenamento do Espaço Marítimo - Discussão Pública. Available at <[http://www.inag.pt/index.php?option=com\\_content&view=article&id=203](http://www.inag.pt/index.php?option=com_content&view=article&id=203)> [Accessed 7 February 2012],  
(c) Gamito, T.M., 2009. *Portuguese maritime spatial plan*. Presentation at European Maritime Day, workshop 11. Available at <[http://ec.europa.eu/maritimeaffairs/maritimeday/pdf/workshop\\_11/ws11\\_gamito.pdf](http://ec.europa.eu/maritimeaffairs/maritimeday/pdf/workshop_11/ws11_gamito.pdf)> [Accessed 28 January 2012],  
(d) Sequeira, M., 2007. *Portuguese maritime policy*. Presentation at a conference on maritime policies and globalization, Azores, 9-10 July. Available at <[http://www.crpm.org/pub/agenda/333\\_the\\_portuguese\\_maritime\\_policy\\_acores\\_9\\_10\\_jul.pdf](http://www.crpm.org/pub/agenda/333_the_portuguese_maritime_policy_acores_9_10_jul.pdf)> [Accessed 20 January 2012], and  
(e) Calado, H. et al., 2010. Marine spatial planning: lessons learned from the Portuguese debate. *Marine Policy*, 34(6), November, pp.1341-1349.

**Table 23** Coasts and ICZM

<b>Coasts and Integrated Coastal Zone Management</b>		
(Document titles in the first column follow the list of references. The documents are listed here in chronological order. Works by individual authors are not included, unless issued by international organizations. With regard to documents concerning the Mediterranean Action Plan and the ICZM Protocol for the Mediterranean see first table 2. Relevant documents can also be found in the table on the environment.)		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
EU Demonstration Programme on Integrated Management in Coastal Zones 1997-1999. <i>Lessons from the European Commission's demonstration programme on integrated coastal zone management (ICZM)</i> . No date.	ICZM. Demonstration Programme.	Involvement at all levels is considered essential, with serious problems arising when there is a vacuum at higher levels where a strategic perspective is required. The report has a lengthy chapter on governance issues. Emphasis is given to collaboration at varying degrees (information, shared work, joint decisions, and empowerment). Issues receiving attention include transparency, local relevance, stakeholder involvement, communication and use of common language, vertical exchange of views, cooperation of authorities across the land-sea boundary, intersectoral cooperation, engagement of the private sector, clarity of legislation affecting the coastal zone, adaptation of sectoral legislation, public – private contractual agreements and efforts to sustain stakeholder interest. With regard to enabling mechanisms and implementation it is necessary to streamline planning legislation, secure the place of consultation as a priority, use voluntary agreements, strengthen the mandate of planning authorities, secure compliance and enforcement procedures, establish links between planning and sectoral authorities and make sure that international conventional obligations are respected.
European Commission, 1999b. <i>Towards a European integrated coastal zone management (ICZM) strategy: general principles and policy options</i> . Luxembourg: Office for Official Publications of the European Communities.	European ICZM strategy.	The functions served by coastal zones include agricultural and energy production, diverse fishery activities, mobility and commerce, cultural heritage services, tourism and leisure, retirement facilities, defense against the sea and ecological services. The following are fundamental ICZM principles: wide-ranging perspective, understanding of specific area conditions, work with natural processes, respect for precautionary principle, participation and consensus and engagement of relevant administrative agencies. It is essential to address a range of potential conflicts between stakeholders. All the above principles must be embodied in the definition of ICZM, which is intimately linked with sustainable development. Awareness, dialogue, cooperation and integration should characterize the process of ICZM.

**Table 23** Coasts and ICZM (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<i>Commission Proposal for a Council Recommendation COM(2000) 545 final - 2000/0227 (COD) of 8 September 2000 concerning the implementation of Integrated Coastal Zone Management in Europe.</i>	Implementation of ICZM.	Member states are invited to develop national strategies and embark on coastal zone management which is holistic, long term, adaptive, locality-specific and participatory and works with natural processes.
<i>Commission Communication COM(2000) 547 final of 27 September 2000 on Integrated Coastal Zone Management: a strategy for Europe.</i>	EU ICZM strategy.	Most of the conclusions and remarks listed in the above documents are repeated in the EU ICZM strategy, which identifies a series of concrete actions. The strategy advocates the promotion of ICZM at country and regional sea level, the coordination with existing international conventions (UNCLOS, HELCOM, Barcelona etc.) and the compatibility with EU sectoral policies (marine pollution, water management etc.). The ICZM principles parallel those of the European Spatial Development Perspective (ESDP).
<i>Committee of the Regions Opinion 2000/C226/11 on "Towards a European Integrated Coastal Zone Management (ICZM) – strategy, general principles and policy options".</i>	Opinion on ICZM strategy.	The Committee of the Regions naturally welcomes the importance attached to the role of local and regional authorities within member state, to the facilitation of cooperation regions and networks between states and, finally, to cross-border cooperation. It asks for a review of EU policies (e.g. ESDP, CAP and fisheries)
<i>Council Recommendation 2002/413/EC of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe.</i>	ICZM implementation in Europe.	Member states should take into account the Community Sustainable Development Strategy and the 6 <sup>th</sup> Environment Action Programme. The recommendation reiterates the ICZM principles. In their national strategies, states should identify the roles of administrative actors, the appropriate instruments, the necessary additional legislation, measures for bottom-up initiatives, durable financing and monitoring and information systems. Country participation in cross-border and regional sea agreements is encouraged.

**Table 23** Coasts and ICZM (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<i>Commission Communication COM(2007) 308 final of 7 June 2007: Report to the European Parliament and the Council – an evaluation of integrated coastal zone management (ICZM) in Europe.</i>	ICZM. Evaluation.	This communication follows the proposal for a marine strategy directive and the launching of a maritime policy and therefore the ICZM policy is placed in a new context. Several of the points found in earlier ICZM documents are repeated. Given the threats of climate change and potential disasters, a plea is made for an integrated, cross-sectoral territorial approach. A spatial planning consideration is already embedded in regional sea conventions. ICZM strategies should be developed in the future in close coordination and cooperation with the new marine directive and the regional sea instruments.
<i>Protocol on integrated coastal zone management in the Mediterranean, 2008.</i>	Protocol on ICZM in Mediterranean.	The protocol, signed in Madrid in 2008, includes definitions of coastal zones and ICZM and ICZM objectives, principles, elements and sustainable use criteria, which broadly mirror EU policy. The signatories of the protocol undertake to ensure institutional coordination to secure comprehensiveness, coordination between land and marine authorities and between national, regional and local levels; also to create the respective competent authorities and enhance the effectiveness of instruments. In order to support participation and efficient governance, they are to secure involvement of the full range of stakeholders, introduce mediation and conciliation procedures, raise awareness and set up educational programmes. Monitoring and observation mechanisms are also to be created. Both national strategies and individual coastal plans and programmes are needed, fully coordinated with land policy instruments. Strategies and plans should satisfy the need for cross-border and international coordination. See further down the action plan for the protocol's implementation in the period 2012-2019.
European Commission, 2009a. <i>Report from the working group follow-up to the EU ICZM recommendation.</i> Version 3 final, DGGENV.D.3 D(09), July.	ICZM follow-up.	Attention is drawn to policy changes, such as the adoption of MSFD and “the emergence of the overarching Maritime Policy with tools such as maritime spatial planning”. The failure is observed to stimulate a sense of “ownership” by a range of sectors and a serious engagement of relevant coastal actors, who usually react only to local or urgent issues. More precise and new instruments are needed with most states refusing to depart from the use of existing instruments. The long and established tradition of land use instruments has the upper hand. In contrast, the spirit of the ICZM Recommendation favours improved governance principles and processes. The overburdening of tools with poor coherence and the lack of coordination between land and sea regulatory regimes present a serious problem. Regional sea and sub-sea strategies create opportunities for synergies.



**Table 23** Coasts and ICZM (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Council Decision 2009/89/EC of 4 December 2008 on the signing, on behalf of the European Community, of the protocol on integrated coastal zone management in the Mediterranean to the convention for the protection of the marine environment and the coastal region of the Mediterranean.</i></p>	<p>ICZM protocol. Mediterranean.</p>	<p>ICZM is characterized in clear terms as “one component of the EU Integrated Maritime Policy” as endorsed in 2007.</p>
<p><i>Council Decision 2010/631/EU of 13 September 2010 concerning the conclusion, on behalf of the European Union, of the protocol on integrated coastal zone management in the Mediterranean to the convention for the protection of the marine environment and the coastal region of the Mediterranean.</i></p>	<p>ICZM protocol. Mediterranean.</p>	<p>The ICZM Protocol must “be implemented by different levels of the administration, having regard to the principles of subsidiarity and proportionality”.</p>
<p>European Commission, 2010c. <i>ROADMAP – Follow up proposal to the EU integrated coastal zone management (ICZM) recommendation.</i></p>	<p>ICZM follow-up.</p>	<p>The implementation of ICZM policy requires further support, especially in the light of the impact of climate change. A new context is now in place in the EU (MSFD, IMP, Water directive). The precedent of the ICZM Protocol for the Mediterranean is now a reality. A longer-term perspective and stable framework is now required for ICZM. The possibilities of a revised recommendation or even of a Framework Directive are being considered.</p>
<p>European Environment Agency, 2010a. <i>10 messages for 2010: coastal ecosystems.</i> Luxembourg: Publications Office of the European Union.</p>	<p>EEA. Coastal ecosystems.</p>	<p>The report includes a list of ecosystem services provided by coastal habitats and an analysis of pressures affecting them. It also contains a review of approaches, conventions, EU policies and directives, regional sea agreements and sectoral instruments, which provide a foundation for sustainable coastal management and development.</p>

**Table 23** Coasts and ICZM (Continued)

Arrangement	Area of Coverage	Content and governance provisions
Indian Ocean Commission, 2010. <i>Feasibility assessment of an ICZM protocol to the Nairobi Convention</i> . UNEP: Nairobi Convention Secretariat.	ICZM protocol. UNEP. Western Indian Ocean Region.	The Nairobi Convention concerns the Western Indian Ocean Region, but this report is of interest because it contains a review of the Barcelona system and of the experience of the Mediterranean ICZM Protocol. The Mediterranean experience is taken as a basis for advocating a similar ICZM protocol for the WIO region. The report views as conditions for the success of such an endeavour a friendly political atmosphere, the existence of political “champions”, financial and technical support, the elaboration of a base document (“zero draft”) and prior national consultations in the countries concerned.
UNEP, 2011a. <i>Action plan for the implementation of the ICZM protocol for the Mediterranean 2012-2019</i> . PAP/NFP/2011/2.	ICZM Protocol for the Mediterranean.	This action plan is a further development of the Mediterranean Action Plan (see table 2) and of the ICZM Protocol signed earlier (see relevant documents above in this table). The protocol entered into force in March 2011. The action plan defines actions for the period 2012-2019. The document contains a section placing the protocol in the context of UN, EU and Mediterranean policies and initiatives, which are being reviewed. ICZM is seen as a key instrument for sectoral and institutional policies, limited however by several constraints (excessive localization, absence of strategic context, narrow focus solely on the environment, policy and administrative fragmentation, limited integration of climate change and disaster mitigation dimensions, and lack of recognition of ICZM as a key tool of the ecosystem approach. The main implementation issues are then outlined in the plan. Implementation will take place through country-based planning and coordination. Actions are grouped around objectives (effective implementation at all levels, capacity of contracting parties to use ICZM policies and tools, promotion of awareness). With regard to governance, a “ICZM Governance Platform” is proposed, as suggested in the PEGASO project (see PEGASO website). In the context of capacity building, the actions include the elaboration of national strategies and coastal implementation plans.

**Table 23** Coasts and ICZM (Continued)

<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<p>UNEP, 2011b. <i>Proposed fifth draft: integrated coastal zone management protocol to the amended Nairobi convention</i>. Document UNEP(DEPI)EAF/LTWG5/3 of 3 August, United Nations Environment Programme, Technical working group for the drafting of an ICZM protocol to the Nairobi convention</p>	<p>ICZM protocol. UNEP. Western Indian Ocean Region.</p>	<p>The proposal concerns again the Western Indian Ocean Region. Although the document contains a lot which is familiar, it does contain useful definitions and lists of ICZM objectives and principles. It also specifies the necessary national and sub-national ICZM frameworks, the role of a national ICZM committee and the required ICZM instruments (strategic environmental assessment, zoning and spatial planning, sensitivity and vulnerability assessment and mapping, coastal setback lines, monitoring and evaluation, ecosystem valuation, environmental impact assessments, environmental auditing, coastal strategies/plans/programmes and marine and coastal protected areas). The report proposes the creation of a regional ICZM platform to enhance dialogue, information exchange, coordination and collaboration.</p>

**Table 24** Economic, Sustainable and Territorial Development

<b>Economic, sustainable and territorial development</b>		
(Document titles in the first column follow the list of references. The documents are listed here in chronological order. Works by individual authors are not included, unless issued by international organizations. Cohesion documents are listed in the next table.)		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
European Commission, 1999a. <i>European Spatial Development Perspective: Towards balanced and sustainable development of the territory of the European Union</i> , Prepared by the Committee on Spatial Development, Luxembourg: Office for Official Publications of the European Communities.	EU: ESDP. European spatial development.	ESDP aims at the balanced and sustainable development of EU territory, which is described as a new dimension in EU policy. The ambition of ESDP is to provide coordination and coherence in sectoral policies, especially those with a spatial impact, without interfering with national spatial policy. Its key goals are economic and social cohesion, conservation of natural resources and cultural heritage, and balanced competitiveness (society – environment – economy). A total of 60 policy options are outlined in the document. Vertical (from EU to local level) and horizontal (including with international bodies and the Council of Europe) cooperation is proposed.
Council of Europe, 2000. <i>Guiding Principles for Sustainable Spatial Development of the European Continent</i> . European Conference of Ministers responsible for Regional Planning (CEMAT). Resolution CEMAT / Conference of 7-8 Sept. 2000 [CEMAT (2000)7]. Hanover.	CoE: European spatial development.	The planning principles endorsed in the report include, among others, the reduction of environmental damage, the protection of natural resources, the development of energy resources, sustainable tourism and disaster mitigation. Spatial development measures refer to landscapes, coastal and island regions, flood plains and water meadows, border regions and several other issues. Horizontal and vertical cooperation and broadly-based participation are advocated.
Lisbon European Council, 2000. <i>Presidency conclusions</i> . 23-24 March. Available at <a href="http://www.europarl.europa.eu/summits/lis1_en.htm">http://www.europarl.europa.eu/summits/lis1_en.htm</a> [Accessed 14 January 2012].	Lisbon Strategy.	With the Lisbon strategy the EU set itself a “new strategic goal”, i.e. “to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion”. A noticeable feature was the introduction of a “new open method of coordination at all levels” (OMC) to replace the so-called Community method. This new approach was analyzed in detail. Innovation was at the heart of the strategy. The Lisbon process which started with the strategy was soon derailed.

**Table 24** Economic, Sustainable and Territorial Development (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Commission Communication COM(2001) 264 final of 15 May 2001: A sustainable Europe for a better world – a European Union strategy for sustainable development.</i> Commission's proposal to the Gothenburg European Council.</p>	<p>EU sustainable development strategy.</p>	<p>The EU Sustainable Development Strategy is defined and described in this communication. The threats to sustainable development are global warming, health hazards, poverty, population ageing, loss of biodiversity, transport congestion and regional imbalances. The necessary action must be taken at all levels of public administration, but involves citizens and business firms. Policies which are expected to make a particular contribution are those for agriculture, fisheries, transport and cohesion. The communication advocates, <i>inter alia</i>, market-based approaches, private sector initiatives, stakeholder consultation and coordination with international agencies (e.g. UNEP, although IMO is not mentioned). The strategy's objectives include limiting climate change, combating threats to public health, control of land use, responsible natural resource management, including that of fisheries and marine ecosystems. Apart from this passing reference, practically nothing is mentioned about maritime space.</p>
<p>Göteborg European Council, 2001. Presidency conclusions. 15-16 June. Available at <a href="http://ec.europa.eu/governance/impact/background/docs/goteborg_concl_en.pdf">http://ec.europa.eu/governance/impact/background/docs/goteborg_concl_en.pdf</a> [Accessed 14 January 2012].</p>	<p>Sustainable development.</p>	<p>In 2001 the European Council "agreed on a strategy for sustainable development and added an environmental dimension to the Lisbon process for employment, economic reform and social cohesion". Thus, the Gothenburg strategy introduced officially a Sustainable Development Strategy (SDS), for which see above, with clear objectives which formed part of EU's contribution to the 2002 World Summit on Sustainable Development.</p>
<p>Kok, W., 2003. <i>Enlarging the European Union: achievements and challenges.</i> Report to the European Commission. San Domenico di Fiesole: European University Institute.</p>	<p>Kok report. Lisbon process.</p>	<p>In the context of this paper the interest of the Kok Report lies in its warning that the Lisbon process was running out of steam, in the absence of the necessary structural reforms. In terms of governance of interest is the advocacy of strengthening the Community method, which the ill-fated Open Method of Coordination was to replace, at least partially.</p>

**Table 24** Economic, Sustainable and Territorial Development (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Commission Communication COM (2005) 330 final of 20 July 2005: Common actions for growth and employment – the Community Lisbon programme.</i></p>	<p>Lisbon process.</p>	<p>The communication essentially acknowledges the failure of the Lisbon Strategy and takes stock of the European Council's decision of March 2005 to re-launch and refocus it, as the Community Lisbon Programme (CLP). In the light of global competition the new approach focuses on knowledge, innovation, investment and job creation. The CLP now emphasizes actions in this direction. Practically, this development signaled the abandonment of the Lisbon and Gothenburg package, in spite of the assertion in the next communication of December 2005 that "sustainable development is the overarching long term goal of the European Union".</p>
<p><i>Commission Communication COM (2005) 658 final of 13 December 2005 on the review of the sustainable development strategy: a platform for action.</i></p>	<p>EU sustainable development strategy.</p>	<p>The SDS review focuses on key issues, i.e. climate change, clean energy, health, social exclusion, natural resources, sustainable transport and poverty. It is only under the heading of natural resources that sea use is briefly mentioned. Maritime transport is omitted. Governance issues are given a separate section, i.e. monitoring and follow-up, improvement of policy making and coherence, effectiveness of instruments, and public and private actor mobilization. In the communication annexes there are short references to the use of OMC in the context of fighting poverty, to marine sites in the context of resource management and to the anticipated marine and marine strategies.</p>
<p><i>Territorial Agenda of the European Union: Towards a more competitive and sustainable Europe of diverse regions, 2007. Agreed on the occasion of the informal ministerial meeting on urban development and territorial cohesion in Leipzig on 24-25 May 2007.</i></p>	<p>Territorial Agenda.</p>	<p>Territorial challenges identified in the agenda include, among others, climate change, energy, ecological resources, biodiversity etc. The agenda is perceived as helping to strengthen global competitiveness and sustainability in EU regions and adopts the main aims of ESDP. Apart from passing references to maritime waterways, ICZM and the debate on the Green Paper on Maritime policies, the agenda does not deal with maritime space. The first action programme for the implementation of the Leipzig territorial agenda was agreed in Portugal in November 2007 and is included in the table on cohesion.</p>

**Table 24** Economic, Sustainable and Territorial Development (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<i>Commission Staff Working Document SEC (2008) 2868 of 14 November 2008: Regions 2020 – an assessment of future challenges for EU regions.</i>	EU regional development.	The document contains an important section on climate change and its threats, including the rise of sea levels. The increased vulnerability of regions in the south and east of Europe is highlighted. The Mediterranean part of Europe is particularly exposed to challenges. There is no discussion in the document about maritime regions or sea basins
<i>Commission Communication COM (2009) 400 final of 24 July 2009: Mainstreaming sustainable development into EU policies – 2009 review of the European Union strategy for sustainable development.</i>	EU sustainable development strategy.	This review took place in the wake of the 2008 economic and financial crisis. The point is made that “it is crucial that measures to support the real economy and reduce the social impact of the current crisis are compatible with long-term sustainability goals”. The known objectives of sustainable development are restated and, this time, a clear reference is made to the Common Fisheries Policy and to IMP: “The Integrated Maritime Policy, launched in October 2007, sets a common framework for all EU maritime policy issues and introduced cross-cutting tools to ensure that use of the marine environment (oceans, seas and coastlines) is genuinely sustainable. There has been significant progress on sectoral policy initiative in the maritime sphere. Sea basin strategies for the Arctic Ocean, the Baltic Sea and the Mediterranean will address the specific challenges of these bodies of water”.
<i>Commission Communication COM (2010) 2020 of 3 March 2010: Europe 2020 – a strategy for smart, sustainable and inclusive growth.</i>	Europe 2020 development strategy.	This is a crucial policy document produced in response to the economic crisis. It puts forward three mutually reinforcing priorities (smart, sustainable and inclusive growth), a set of measurable targets and seven flagship initiatives. One of these initiatives (resource efficient Europe) includes maritime policies. It is admitted that the crisis has wiped out progress made and has exposed Europe’s structural weaknesses. This makes a sustainable growth effort all the more urgent to promote “a more resource efficient, greener and more competitive economy”. In terms of governance the report proposes several actions to tackle bottlenecks in the single market, as well as a new “architecture”, based on thematic orientation, regular reporting, in line with the Stability and Growth Pact, integrated guidelines, binding recommendations, country surveillance and role distribution among actors.

**Table 24** Economic, Sustainable and Territorial Development (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>European Policy Centre, 2010. Europe 2020: delivering well-being for future Europeans. <i>Challenge Europe</i>, 20, March.</p>	<p>Europe 2020 development strategy.</p>	<p>The authors of three articles contained in this report address important governance issues. M.J.Rodrigues warns against discarding some of the positive aspects of the Lisbon Strategy, widely considered to be a failure, and lists its relative achievements and failures. She blames the international financial system for rendering unsustainable the current development model and proposes the directions of a new strategy, which should include an improved governance system based on participation, coordination and accountability. S.Goulard and H.Bailey discuss the reasons of the failure of the Open Method of Coordination, due to inadequate legal instruments, lack of specific focus and weak political will. G.Stahl and G.Spinaci call for a multi-level governance model to implement the Europe 2020 strategy, in the light of the Lisbon Strategy's failure to involve key actors and to appreciate the variety of instruments of governance available in Member States. The authors praise the experiments of macro-region strategies, e.g. in the Baltic Sea and the Danube region.</p>
<p>Reflection Group on the Future of the EU 2030, 2010. <i>Project Europe 2030: Challenges and opportunities</i>. European Council.</p>	<p>Europe 2030. Future challenges.</p>	<p>This is an emotional and ideologically driven report ("Europe is currently at a turning point in its history"), which aims at acting as a rallying cry to urge Europeans to take initiatives worthy of a "Union of values" which is much more than a Common Market. As the authors put it, "the EU project should become a citizens' project". To this end the report calls for strengthened economic governance and for reforms of financial institutions. It also advocates "more effective enforcement mechanisms than the Open Method of Coordination can provide".</p>
<p>European Commission, 2011b. <i>Annual growth survey – annex 1: progress report on Europe 2020</i>. COM (2011) 11 final of 12 January 2011.</p>	<p>Europe 2020 development strategy.</p>	<p>The document is exclusively about macro-economic adjustment, fiscal consolidation and economic policy reforms. It reviews the initial steps in the direction of Europe 2020 Strategy's targets. It concludes that more has been done for fiscal consolidation and the financial system than for reforms to address imbalances and re-start growth and job creation. No reference is made to the objective of creating a greener economy put forward in the Europe 2020 Strategy.</p>



**Table 24** Economic, Sustainable and Territorial Development (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Territorial Agenda of the European Union 2020: towards an inclusive, smart and sustainable Europe of diverse regions</i>, 2011. Agreed at the informal ministerial meeting of ministers responsible for spatial planning and territorial development on 19 May 2011, Gödöllő, Hungary.</p> <p>Available at  <a href="http://www.eu2011.hu/files/bveu/documents/TA2020.pdf">http://www.eu2011.hu/files/bveu/documents/TA2020.pdf</a>                      [Accessed 14 January 2012].</p>	<p>Territorial Agenda 2020.</p>	<p>According to the new territorial agenda, “territorial cohesion is a set of principles for harmonious, balanced, efficient, sustainable territorial development”. The TA2020 is an action-oriented policy framework to support territorial cohesion. The territorial dimension is necessary for the attainment of the goals of the Europe 2020 Strategy. “Inclusive, sustainable and efficient use of Europe’s territory and resources is a key element of cohesion”. In the chapter on challenges and potentials for territorial development the point is made that “increased and uncoordinated exploitation of maritime space and marine resources may have consequences for sustainable territorial development”. In the chapter on territorial priorities there are points regarding the place-based approach, which is welcomed, cross-border cooperation and the importance of territorial assets. Special emphasis is given among others to governance and implementation mechanisms, to the positive experience of territorial cooperation initiatives (Baltic Sea, Danube river) and to maritime activities. The policies embedded in the MSFD and IMP must be integrated into existing planning systems.</p>

**Table 25** Economic, Social and Territorial Cohesion

<b>Economic, social and territorial cohesion</b>		
(Document titles in the first column follow the list of references. The documents are listed here in chronological order. Works by individual authors are not included, unless issued by international organizations.)		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
European Commission, 2004. <i>Interim territorial cohesion report: preliminary results of ESPON and EU Commission studies</i> . Luxembourg: Publications Office of the European Union.	Territorial cohesion.	As stated in the report, “territorial cohesion, meaning the balanced distribution of human activities across the Union, is complementary to economic and social cohesion”, “within the aim of sustainable development”. Its aim “presupposes the establishment of cooperation in both horizontal terms (between policies) and vertical terms (between operators and authorities at different geographical levels)”. Maritime space is ignored in the report, with the exception of islands as regions with geographic handicaps. Discontinuities in cross-border areas and seaports are also briefly discussed.
Territorial State and Perspectives of the European Union, 2005. <i>Towards a stronger European territorial cohesion in the light of the Lisbon and Gothenburg ambitions</i> . Background document for the territorial agenda of the European Union, based on the scoping document discussed by ministers at their informal ministerial meeting in Luxembourg in May 2005.  Available at <a href="http://www.eu-territorial-agenda.eu/Reference%20Documents/The-Territorial-State-and-Perspectives-of-the-European-Union.pdf">http://www.eu-territorial-agenda.eu/Reference%20Documents/The-Territorial-State-and-Perspectives-of-the-European-Union.pdf</a> [Accessed 20 January 2012].	EU territorial state.	The report builds on the notion of “territorial capital”, first introduced in a OECD report of 2001, and sees the “territorial dimension” of the Lisbon and Gothenburg strategies (see table on development) as entailing integration of sectoral policies, the involvement of actors at subnational levels and the strengthening of territorial capital of cities and regions. The document outlines a territorial “governance philosophy” with regard to EU policies and their territorial impact, territorial cohesion, the national strategic reference frameworks, allocation of responsibilities and subsidiarity, instruments and transnational and cross-border cooperation areas. A section is dedicated to growth and innovation, including clusters. There is a brief reference to coastal areas, fisheries and wind energy. Among policy considerations the point is made that “maritime- and coastal-related activities and services play a crucial role for the integrated development of the respective regions”. In the report’s transport section short references are made to inland waterways and river basins, sea ports, maritime transport and the motorways of the sea. In the environment section a brief remark is made regarding the threats for seaside areas mainly because of urban development, while in the conclusions the risks threatening maritime basins are also mentioned. The report contains a section on the impact of EU policies on territorial development, with examples given, among others, about the Baltic Sea and maritime safety. The EU policies mentioned include fisheries, with only a passing reference to maritime policy. Although the conclusions contain a reference to ICZM and “spatial planning on sea” (with the BaltCoast and PlanCoast projects as examples), it is clear that maritime space and planning was not an important issue in the report.

**Table 25** Economic, Social and Territorial Cohesion (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Commission Communication COM(2005) 0299 of 5 July 2005: Cohesion policy in support of growth and jobs – Community strategic guidelines, 2007-2013.</i></p>	<p>Cohesion policy.</p>	<p>The communication is placed in the context of the so-called “renewed Lisbon agenda”, approved by the European Council in 2005, and the aims of sustainable development policy. Governance of cohesion policy has three dimensions: The performance and success of public policies, which calls for efficient, accountable and transparent public administration, the capacity of member states to manage and implement cohesion policy, and the building of partnerships between all stakeholders. With respect to transport, attention is needed to the motorways of the sea and short-sea shipping. Innovation for growth, clusters of activity, cross-border cooperation, job creation and capacity building are issues which are given emphasis. A chapter is devoted to the territorial dimension of cohesion policy. Maritime space is once again neglected. In a paragraph on transnational cooperation there is only a passing reference to “integrated maritime cooperation”.</p>
<p>European Commission, 2007. <i>Fourth report on economic and social cohesion</i>. COM(2007) 273 final, 30 May.</p>	<p>Cohesion. 4<sup>th</sup> report.</p>	<p>In the light of the above remarks and although a section on territorial cohesion is included in the report, it does not come as a surprise that maritime space is still being ignored. The European Commission calls for a more strategic approach, better regulation, simplification of procedures, increased proportionality, restructuring, modernization, competitive orientation, climate change adaptation and renewable energies.</p>
<p>Hübner, D., 2007. <i>Territorial cohesion: towards a clear and common understanding of the concept</i>. Speech at the informal ministerial meeting on territorial cohesion and regional policy. Ponta Delgada, Azores, 23 November. Available at <a href="http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/743&amp;format=HTML&amp;aged=1&amp;language=EN&amp;guiLanguage=en">http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/743&amp;format=HTML&amp;aged=1&amp;language=EN&amp;guiLanguage=en</a> [Accessed 14 January 2012].</p>	<p>Territorial cohesion.</p>	<p>Professor Hübner, Commissioner for Regional Policy, referred to the 2007 Lisbon Treaty and the inclusion of territorial cohesion among Union objectives, along with social and economic cohesion. This means that cohesion policy must reduce disparities between regions at Community level. Cohesion policy requires the mobilization of a wide range of actors at different levels and the recognition that other sectoral policies have an impact on the Union’s territories. Differences between territorial cohesion policy, territorial development policy and spatial planning (including land-use) policy require clarification. A transition from a policy of redistribution in favour of lagging regions towards a wider sustainable development policy is necessary. The development of territorial diversity and territorial potentials and respect for territorial specificities are among the building blocks of territorial cohesion. Prof. Hübner emphasized the need for a new multi-level governance system.</p>

**Table 25** Economic, Social and Territorial Cohesion (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>Portuguese Presidency, 2007. <i>First action programme for the implementation of the territorial agenda of the European Union.</i> Agreed on 23 November 2007 at Ponta Delgada, Azores.</p>	<p>Territorial agenda.</p>	<p>In line with the above priorities, the first action programme for a territorial agenda is based on the principles of solidarity between territories, multi-level governance, policy integration, territorial cooperation and subsidiarity. The context of this action programme is provided by the territorial agenda agreed in Leipzig in May 2007, which is included in the table on development policies, the EU Sustainable Development Strategy (SDS), the Blue Book on an Integrated Maritime Policy, the 7<sup>th</sup> Environment Action Programme (see tables on maritime affairs and the environment) and other policies.</p>
<p><i>Commission Communication COM(2008) 616 final of 6 October 2008: Green Paper on territorial cohesion – turning territorial diversity into strength.</i></p>	<p>Territorial cohesion.</p>	<p>Territorial cohesion is about harmonious and balanced territorial development, making the best and sustainable use of all territorial assets. Islands are included in the Green Paper as regions with specific geographical features. For the first time in cohesion policy documents there is a specific and strong reference to maritime space: “Maritime basins are confronted with competing demands for sea use. Separate regimes for fisheries, aquaculture, marine mammal conservation, shipping, oil and gas, and mining are designed to resolve conflicts within sectors, but not across sectors. An integrated maritime policy is developing at EU level to address these coordination problems to ensure the sustainable development of marine areas”. The Commission Staff Working Document accompanying the Green Paper has a section on governance emphasizing the role of regions and municipalities.</p>
<p>Barca, F., 2009. <i>An agenda for a reformed cohesion policy: a place-based approach to meeting European Union challenges and expectations.</i> Independent report commissioned by the EU Commissioner for Regional Policy.</p>	<p>Cohesion policy.</p>	<p>The main interest in this report is its emphasis on place-based development strategy. Its author advocates a distinction between efficiency objectives and social inclusion objectives and a reform of governance based on 10 pillars, with key words such as innovative concentration, strategic orientation, contractual relationships, core priorities, mobilization of local actors, experimentation etc. In the new paradigm of a place-based policy three features are stressed, “the place-specificity of natural and institutional resources and of individual preferences and knowledge; the role played by the (material and immaterial) linkages between places; and the resulting need for interventions to be tailored to places”.</p>

**Table 25** Economic, Social and Territorial Cohesion (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>European Commission, 2009b. <i>Territorial cohesion: unleashing the territorial potential</i>. Background document to the conference on “Cohesion policy and territorial development: make use of the territorial potential!”, 10-11 December, Kiruna, Sweden.</p>	<p>Territorial cohesion and potential.</p>	<p>Emphasis is given to cross-border, transnational and interregional cooperation, cooperation across EU’s external borders and the new EU legal instrument “European Grouping of Territorial Cooperation” (EGTC). The paper calls for better coordination of policies, better knowledge of territorial impacts and macro-regional strategies, such as the Baltic Sea strategy. Otherwise, there is nothing on maritime planning.</p>
<p>European Commission, 2010d. <i>Investing in Europe’s future: Fifth report on economic, social and territorial cohesion</i>, Luxembourg: Publications Office of the European Union. Available at <a href="http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/intem5/com_2008_371_en.pdf">http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/intem5/com_2008_371_en.pdf</a> [Accessed 24 January 2012].</p>	<p>Cohesion. 5<sup>th</sup> report.</p>	<p>This is a key policy document, along with the Europe 2020 strategy, and the first cohesion report to appear since territorial cohesion found its place in the Union Treaty. The place-based approach is also given pride of place. Competitiveness, innovation, strong institutions, inclusion, adaptation to climate change, renewable energy, endogenous development, good governance, additionality, smart specialization, networking and clustering, cross-border cooperation, participation, environmental protection, administrative capacity, monitoring and evaluation, are only some of the concepts which are being stressed. In the future strategic programming will be carried out on the basis of common strategic framework, following the Europe 2020 strategy (see table on development), partnership contracts, fixed resource concentration priorities, binding conditions and measurable indicators.</p> <p>The new Integrated Maritime Policy is discussed in a short separate section. IMP aims at promoting coherence across sectors, boosting maritime economy and protecting and restoring the marine environment. Projects related to IMP are already funded under cohesion policy. A chapter is devoted to efficient and effective governance, considered as a precondition for the success of cohesion policy. A balance is required between centralized sectoral policies and integrated and decentralized ones at local level. Emphasis is given to institutional capacity building and partnerships. It is pointed out that the involvement of partners tends to be stronger in the development of strategies and programme design than in implementation.</p>

**Table 25** Economic, Social and Territorial Cohesion (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>Polish Ministry of Regional Development, 2011. <i>Key messages of the Polish Presidency conferences in the field of cohesion policy</i>. Available through <a href="http://www.observatorio.pt">www.observatorio.pt</a> [Accessed 30 January 2012].</p>	<p>Cohesion policy.</p>	<p>This is a collection of papers resulting from separate conferences rather than a single report. Of interest are remarks and paragraphs about the simultaneous objectives of solidarity and competitiveness in cohesion policy, the emergence of the new place-based paradigm, the goals of good governance, the instruments supporting territorial development and the Territorial Agenda 2020 which has been included in the table on economic, sustainable and territorial development.</p>
<p>European Commission, 2011c. Cohesion policy 2014-2020: investing in Europe's regions. <i>Panorama Inforegio</i>, 40, European Union publications office. Brussels: Winter 2011/2012.</p>	<p>Cohesion policy.</p>	<p>A new approach is put forward, i.e. to consolidate cohesion policy as the main investment strategy for the Europe 2020 Strategy (see table on development). The two main goals are "investment in growth and jobs" and "European territorial cooperation". Territorial cohesion and the EGTC regulation (see above) are being reinforced. Smart investment is further encouraged. New performance rules and conditionalities are introduced and delivery is streamlined.</p>

**Table 26** EU Environmental Policies

<b>Environment – EU environmental policies with maritime relevance</b>		
(Document titles in the first column follow the list of references. The documents are listed here in chronological order. Works by individual authors are not included, unless issued by international organizations. This table contains policies other than those specifically addressing marine and maritime issues or coastal issues and ICZM, which are to be found in earlier separate tables. However, there are inevitable overlaps.)		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<i>Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora</i> (the habitats directive: consolidated version with amendments).	EU Habitats Directive and Natura 2000 network.	This is the directive which introduced the Natura 2000 ecological network of special areas of conservation. It deals with natural habitats, terrestrial and aquatic. Annex I of the directive contains a list of natural habitat types of Community interest whose conservation requires the designation of special areas of conservation. These include coastal and halophytic habitats (open sea and tidal areas, sea cliffs etc), coastal sand dunes and inland dunes, and freshwater habitats. It is clear, that special areas of conservation are an important element of spatial planning, terrestrial and maritime.
European Community, 1993. <i>Towards sustainability: A European Community programme of policy and action in relation to the environment and sustainable development</i> . Official Journal of the European Communities. No C 138/5/17 May 1993.	EU 5 <sup>th</sup> environment action programme.	Although this action programme is now of historical interest, it is important as a follow-up of the UN 1987 Brundtland Report and as a forerunner of the EU Sustainable Development Strategy (see table on development). Its target sectors were industry, energy, transport, agriculture and tourism, the latter being a fundamental example of the link between economic development and environment, particularly that of coastal zones. One of the concerns expressed in the programme was aquatic pollution, particularly in the Mediterranean, North and Baltic seas. Emphasis is placed in the report on the role of various actors. A section is devoted to the management of water resources, including marine water, and of coastal zones, because of their environmental fragility. Sustainable development of coastal zones should be undertaken in accordance with the carrying capacity of coastal ecosystems.
Council of Europe, 2000. European landscape convention. Available at < <a href="http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm">http://conventions.coe.int/Treaty/en/Treaties/Html/176.htm</a> > [Accessed 20 March 2012].	Landscape convention.	According to the convention the landscape means an area “as perceived by people” and is a basic component of the European natural and cultural heritage. It includes, <i>inter alia</i> , inland water and marine areas. Among specific measures required the first is awareness raising among civil society. All European states can accede to the convention.

**Table 26** EU Environmental Policies (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Council Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy (water framework directive).</i></p>	<p>EU water framework directive.</p>	<p>Emphasis is placed on governance principles, such as transparency, effectiveness, coherence, policy integration, participation and subsidiarity, as well as on the precautionary principle. The directive is to assist the EU and member states to meet obligations arising out of international agreements regarding regional seas. Water quality objectives are to be pursued for each river basin and river basin district, including coastal waters. River basin plans and river basin district programmes are required. Member states are to designate competent authorities and monitoring mechanisms. The directive purposes include flood and drought mitigation and the protection of territorial and marine waters. The water directive has not only environmental but also economic and territorial consequences.</p>
<p><i>Council Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (strategic environmental assessment directive).</i></p>	<p>EU: Strategic environmental assessment (SEA) directive.</p>	<p>This directive was published in the year when the EU Sustainable Development Strategy was launched (see table on development). The SEA directive aims at promoting sustainable development. A SEA should be carried out, among others, for plans stipulated in the Habitats Directive, including for purposes of water management. The directive has special provisions for consultation, including transboundary consultations.</p>
<p><i>Council Decision 1600/2002/EC of 22 July 2002 laying down the 6<sup>th</sup> Community environment action programme.</i></p>	<p>EU 6<sup>th</sup> environment action programme.</p>	<p>The decision addresses key environmental objectives and priorities (climate change, nature and biodiversity, environment, health, quality of life, natural resources, waste) and foreshadows policies and strategies regarding various sectors, including maritime policy. The programme advocates integration of environmental protection into sectoral policies and collaboration with citizen groups and NGOs. It seeks to promote sustainable use and management of land, coasts and seas, to halt biodiversity decline and the conservation of marine environments, sea beds, coasts, wetlands and estuarine areas. Proposals include the production of a thematic strategy for the protection and conservation of the marine environment (see next item). In the context of policy making the development is needed “of improved mechanisms and of general rules and principles of good governance within which stakeholders are widely and extensively consulted at all stages”.</p>



**Table 26** EU Environmental Policies (Continued)

<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<i>Council Directive 2007/60/EC of 23 October 2007 on the assessment and management of flood risks (floods directive).</i>	Floods directive.	The directive concerns various types of floods including floods from the sea in coastal areas. Plans under this directive and under the water directive (see above) are considered as elements of integrated river basin management. Appropriate management units are to be created by member states, with considerable flexibility left to local and regional levels. Flood risks assessments, hazard maps and management plans are to be made available to the public and the active involvement of interested parties must be encouraged.
<i>Council Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).</i>		See table with EU maritime policies.
<i>Commission White Paper COM (2009) 147 final of 1 April 2009: Adapting to climate change – towards a European framework for action.</i>	Climate change adaptation.	Climate change will impact on coasts, marine ecosystems, fisheries, aquaculture and tourism. Adaptation strategies are needed to increase resilience to climate change. The paper calls for mainstreaming adaptation into EU policies and for adaptation strategies to be developed by member states. A special section is devoted to the resilience of coastal and marine areas. Climate change must be integrated in the implementation of MSFD (see above). An integrated approach to MSP and ICZM and an appropriate adjustment of fisheries policy are advocated. Action in close partnership with member states is promised.
<i>Council Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (renewables directive).</i>	EU renewables directive.	The relevance of this directive for maritime policy and MSP lies in its emphasis on the use of renewable sources of energy, including wind and ocean energy, and in the targets set for 2020.

**Table 26** EU Environmental Policies (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p><i>Council Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds</i> (the birds directive: codified version).</p>	<p>EU birds directive.</p>	<p>The directive “relates to the conservation of all species of naturally occurring birds in the wild state ... It shall apply to birds, their eggs, nests and habitats”. National measures are required “to preserve, maintain or re-establish a sufficient diversity and area of habitats” and to classify “the most suitable territories in number and size as special protection areas for the conservation of these species in the geographical sea and land area where this Directive applies”.</p>
<p><i>Commission Communication COM (2011) 112 final of 8 March 2011: A roadmap for moving to a competitive low carbon economy in 2050.</i></p>	<p>Low carbon economy.</p>	<p>The roadmap is indicative of EU’s long term ambition of combating climate change. In spite of its limited direct relation to MSP, the policy is nevertheless related to it because of sea-related development of alternative sources of energy.</p>
<p><i>Commission Communication COM (2011) 244 final of 3 May 2011: Our life insurance, our natural capital – an EU biodiversity strategy to 2020.</i></p>	<p>EU biodiversity strategy.</p>	<p>The strategy is an integral part of the Europe 2020 Strategy (see table on development) and seeks to reverse the loss of biodiversity The target set for 2020 is to halt this loss and the degradation of ecosystem services. The strategy should be linked to a range of EU policies (CAP, fisheries etc.), is supported by various directives (water management, marine environment protection, birds, habitats), and has synergies with biodiversity-related international conventions (CITES, Ramsar etc.). The biodiversity strategy proposes the full implementation of the habitats, birds and marine directives, the increase of stakeholder awareness and involvement, the development of a green infrastructure strategy and the improved management of fish stocks.</p>
<p><i>Roadmap to the 7<sup>th</sup> Environment Action Programme.</i> October 2011.</p>	<p>EU 7<sup>th</sup> environment action programme.</p>	<p>This roadmap to resource efficient Europe is in fact one of the flagship actions of the Europe 2020 Strategy (see table on development). The proposal draws on the conclusion of an EEA report on the European environment (see table on marine and maritime affairs). It is intended to develop the new action programme as an “overarching policy framework”, with a “longer term vision” than its predecessor, in response to ever-rising demand for natural resources. The sectors addressed will include the marine sector. The 7<sup>th</sup> AP will build on other, new or existing, policies such as the MSFD.</p>

**Table 27** Governance in Regional Seas

<b>Regional seas and Danube region</b>		
(This table supplements the governance sections of the ESaTDOR regional sea profiles, which should be read first. Consequently, this table focuses especially on governance. Document titles in the first column follow the list of references. The documents are listed here by sea and then in chronological order. Works by individual authors are not included. The Danube region is included because of the prestige of the Danube strategy and its links with maritime regions. With regard to the Mediterranean see also table on ICZM above.)		
<b>Arctic Ocean</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
Northern Dimension Policy, 2006. <i>Northern Dimension policy framework document</i> . November. Available at <a href="http://eeas.europa.eu/north_dim/docs/frame_pol_1106_en.pdf">http://eeas.europa.eu/north_dim/docs/frame_pol_1106_en.pdf</a> [Accessed 4 February 2012].	Extensive area in northern Europe.	The policy's partners are the EU, Norway, Iceland and the Russian Federation. For its focus of activity see the Arctic Ocean's sea profile. In the ND policy's context partnerships have been formed on environment, public health and social wellbeing, culture, transport and logistics. Various participants cooperate with the partners, i.e. the Nordic Council of Ministers, regional cooperation councils, regional and sub-regional authorities, banks and financial institutions, NGOs and civil society organizations. ND's attention focuses increasingly on North West Russia. Complementarity is sought among partners and participants. There is emphasis on good governance principles, e.g. transparency, participation, sustainability etc. The policy's goals and priorities are a strong urban network, protection of the environment and natural resources (including the marine environment) and many others. The policy operates through ministerial and officials' meetings, where all partners, observers and participants are invited. Ministerial meetings provide guidance. A steering group secures continuity of action. It is to be noted that the regional sea programme for the Arctic Ocean is an independent programme, which however participates in the global meetings of the UNEP regional seas programme.
<i>Commission Communication COM (2008) 763 final of 20 November 2008: The European Union and the Arctic region.</i>	Arctic Ocean.	The communication specifies priorities which focus on the preservation of the Arctic (incl. environment and climate change), on the sustainable use of resources (incl. hydrocarbon resources, fisheries, transport and tourism) and on strong multilateral governance. An extensive international legal framework is already in place, based on UNCLOS. The EU aims at assisting a broad dialogue and negotiated solutions, the assessment of the effectiveness of multilateral agreements and the study of establishing new frameworks for integrated ecosystem management. The involvement of Northern Dimension in the project is also suggested.

**Table 27** Governance in Regional Seas (Continued)

<b>Atlantic Ocean</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
OSPAR Convention 1992. <i>Convention for the protection of the marine environment of the north east Atlantic</i> . Amended and updated in 1998, 2002, 2005, 2006 and 2007.	North-east Atlantic.	The convention, in which 15 national governments participate, operates through a number of committees and working groups which ensure coordination and synergy with other international bodies. OSPAR works collaboratively and by consensus, within the legal framework set by UNCLOS. It employs the ecosystem approach as its main tool and its works focuses, <i>inter alia</i> , on the promotion of understanding and acceptance by stakeholders. The OSPAR Commission is made up of representatives of the contracting parties. Decisions and recommendations are adopted by unanimous vote. It is to be noted that the regional sea programme for the North East Atlantic is an independent programme, which however participates in the global meetings of the UNEP regional seas programme.
<i>Council Decision 98/249/EC of 7 October 1997 on the conclusion of the Convention for the protection of the marine environment of the north-east Atlantic.</i>	North-east Atlantic.	With this decision the EU Council approved the above convention on behalf of the Community.
CPMR, 2005. <i>Atlantic spatial development perspective</i> . Conference of Peripheral Maritime Regions of Europe. Available at <a href="http://atlanticarea.ccdrn.pt/documentation/other-useful-documents/asdp-atlantic-spatial-development-perspective">http://atlanticarea.ccdrn.pt/documentation/other-useful-documents/asdp-atlantic-spatial-development-perspective</a> [Accessed 5 February 2012].	Atlantic Arc. Several regions.	See regional sea profile on the Atlantic Ocean. There is a strong interest among Atlantic regions to participate in joint projects. Projects are developed along 4 priorities, including, <i>inter alia</i> , the promotion of the environment and of the sustainable management of economic activities and natural resources (e.g. projects on coastal management and marine resources). Project cooperation may lead to long-lasting partnerships. It is stressed that there is ample room for better definition of cooperation in strategic monitoring and networking terms.
Atlantic Arc Commission. <i>Proposed guidelines for an integrated strategy for the Atlantic Arc</i> . 2011. Available at <a href="http://arcatlantique.org/pdf/doc_travail/327_en.pdf">http://arcatlantique.org/pdf/doc_travail/327_en.pdf</a> [Accessed 14 January 2012].	Atlantic Arc. Several regions.	In this guidelines' document the point is made that because the issues concerning the Atlantic Arc transcend national borders "political responses need to be sought at European level. Contrary to the approach adopted for the Baltic Sea Strategy, the integrated strategy for the Atlantic Arc should therefore focus on a limited number of issues with a genuinely transnational dimension". Hence the topics selected should be marine energies, environment and climate change, transport and accessibility, research, innovation and training, and, finally, fisheries. In the 2011 Atlantic Arc Commission's response to the EU 5 <sup>th</sup> report on cohesion, governance is emphasized as a key question because success depends on the mobilization of the whole range of actors concerned (public, private, social).

**Table 27** Governance in Regional Seas (Continued)

<b>Baltic Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<p>Helsinki Commission, 2008. <i>Convention on the protection of the marine environment of the Baltic sea area, 1992 (Helsinki convention)</i>. With amendments. Helsinki. Available at <a href="http://www.helcom.fi/Convention/en_GB/convention/">http://www.helcom.fi/Convention/en_GB/convention/</a> [Accessed 4 February 2012].</p>	<p>Baltic Sea. HELCOM.</p>	<p>The role of the Helsinki Commission (HELCOM) is briefly explained in the regional sea profile for the Baltic Sea. HELCOM is the governing body of the Helsinki Convention. It is to be noted that the regional sea programme for the Baltic Sea is an independent programme, which however participates in the global meetings of the UNEP regional seas programme. The convention goes back to 1974 but the 1992 convention entered into force in January 2000. In addition to Baltic states, the EU is one of the contracting parties. The fight against pollution and the ecological restoration of the Baltic Sea area are fundamental objectives. The dissemination of information to the public is also among the convention's aims. The convention established the Baltic Marine Environment Protection Commission to oversee its running and implementation. Each contracting party has one vote. Disputes are solved by negotiation or, failing that by an arbitration tribunal or, in the last resort, by the International Court of Justice.</p>
<p><i>Commission Communication COM (2009) 248 final of 10 June 2009 concerning the European Union strategy for the Baltic sea region.</i></p>	<p>Baltic Sea.</p>	<p>According to the communication, the challenges facing the Baltic Sea region are sustainable development, regional prosperity, accessibility and attractiveness, and, finally, safety and security. The communication advocates an integrated approach, better coordination and strategic use of EU programmes, effective coordination of existing financial instruments and specific actions by the full range of stakeholders, including NGOs. It supports a territorial cohesion approach as adopted in the 2007 Territorial Agenda. With regard to sustainable development, the emphasis is on joint action with HELCOM, on the protection of marine resources, fishing and the establishment of an ecosystem approach. In terms of governance what is <i>not</i> needed is the creation of new institutions or mere strategy formulation. What is needed is actions and their implementation, EU involvement, coordination, monitoring, reporting, facilitation of implementation and follow-up.</p>

**Table 27** Governance in Regional Seas (Continued)

<b>Baltic Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<i>Commission Staff Working Document SEC(2009) 712/2 (December 2010 version) accompanying the Commission Communication COM(2009) 248 final of 10 June 2009 concerning the European Union strategy for the Baltic sea region (Action Plan).</i>	Baltic Sea.	This extremely detailed action plan comprises 15 priority areas, grouped into four thematic “pillars” and one horizontal section. Actions for the implementation of the priority areas are being recommended. Different countries or, in some cases, regions coordinate the various priority areas. The horizontal actions include the encouragement of maritime spatial planning in the Baltic countries and the development of a complete land-based spatial planning, as well as the strengthening of multi-level governance, of place-based planning, of sustainable development and of territorial cohesion. Coordination is envisaged with HELCOM and the VASAB cooperation.
VASAB Secretariat, 2009. <i>Vision and strategies 2010 around the Baltic: Background synthesis document - VASAB long-term perspective for the territorial development of the Baltic sea region.</i> Riga.	Baltic Sea.	The role of the VASAB cooperation is briefly explained in the regional sea profile for the Baltic Sea. “VASAB – Vision and Strategies around the Baltic Sea 2010” is a cooperation among ministers responsible for spatial planning and development of Baltic countries or (in the case of Germany and Russia) of regions. The document contains an extensive analysis of the area leading to a presentation of potentials, driving forces and threats and a review of issues (marine resources and landscapes, biotopes, fisheries, offshore wind farms, oil and gas, mining etc.). A strong case is made in favour of maritime spatial planning but the variations among countries are also stressed. The preconditions for successful MSP are stated (clear national initiative, competences and rules, joint transnational targets, planning for the entire sea space, and equal quality of MSP in all countries).
VASAB Secretariat, 2010. <i>Vision and strategies 2010 around the Baltic: VASAB long-term perspective for the territorial development of the Baltic sea region.</i> Riga.	Baltic Sea.	This is “a transnational strategic spatial planning document on territorial integration which leads to territorial cohesion in the Baltic Sea Region”, an instrument for the implementation of EU IMP, with an emphasis on MSP as a policy orientation. The document contains extensive policy guidelines, which include the enhancement of MSP and maritime management. This is made necessary by the contradictory stakeholder interests and the imperative of a pan-Baltic approach. MSP should be harmonized with terrestrial planning. The Baltic region can become an area of maritime excellence. An annex is devoted to a list of relevant organizations and projects.

**Table 27** Governance in Regional Seas (Continued)

<b>Baltic Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<p>STRING III, 2010. <i>STRING action plan 2010</i>. Southwestern Baltic Sea transregional area: implementing new geography. Available at <a href="http://www.balticstring.net/data/main.php">http://www.balticstring.net/data/main.php</a> [Accessed 5 February 2012).</p>	<p>Regions of Denmark, Germany and Sweden.</p>	<p>STRING is a partnership with a focus on research and science, biotechnology, regional policy, maritime economy, climate protection and renewable energies. The partnership started its operation in 1999. The STRING cooperation acts as facilitator, coordinator and bridge builder at various levels (including EU) and fields of action. It proposed new actions to be included in INTERREG B programmes for 2014-20. Partners may include full or associated members, observers and temporary groups. A new aim is the creation of a green transport corridor. The network's ambition is to take the STRING region "to the top of Europe with respect to climate protection and sustainable growth".</p>

**Table 27** Governance in Regional Seas (Continued)

<b>Black Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<i>Commission Communication COM(2007) 160 final of 11 April 2007: Black sea synergy- a new regional cooperation initiative.</i>	Black Sea.	The Black Sea Synergy, although not an independent strategy, is a transparent, inclusive and flexible initiative which benefits from the European Neighbourhood Policy (ENP) and other policies. It will coordinate environmental programmes, especially those related to water quality, and will assist the dialogue on maritime policy and the use of fishery resources. Among the envisaged cooperation areas are energy, transport, environment, maritime policy, fisheries and regional development. Cross-border cooperation and the role of civil society, the local level and regional organizations of the Black Sea are of paramount importance.
Commission on the Protection of the Black Sea against Pollution, 2009. <i>Strategic action plan for the environmental protection and rehabilitation of the Black Sea.</i> Available at < <a href="http://www.blacksea-commission.org/_bssap2009.asp">http://www.blacksea-commission.org/_bssap2009.asp</a> > [Accessed 13 January 2012].	Black Sea. Bucharest Convention.	The Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention) is discussed in the regional sea profile for the Black Sea and in a separate case study report. The regional sea programme for the Black Sea is one of the non-UNEP administered programmes, however its activities form part of the global UNEP regional seas programme. The Strategic Action Plan is the outcome of an agreement of six coastal states and aims at the recovery of the Black Sea. It is based on a set of principles, which include sustainability, the precautionary principle, participation, transparency and others. Pollution, deterioration of the marine environment and loss of biodiversity are some of the challenges. There have been problems of enforcement of environmental legislation. The plan adopts three approaches, viz. ICZM, the ecosystems approach and the integrated river basin management (IRBM), and sets a long list of management targets. Public involvement is considered a prerequisite The Black Sea Commission will be assisted by advisory groups and activity centres. Participating countries are also parties to a number of other organizations, agreements and <i>fora</i> created in the Black Sea region, including the convention for the protection of the Danube river (see below).



**Table 27** Governance in Regional Seas (Continued)

<b>Mediterranean Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
Mediterranean Action Plan		This regional sea programme for the Mediterranean Sea is a UNEP administered programme. See the ESaTDOR regional sea profile for the Mediterranean Sea. See also table with international legal framework and conventions in this briefing paper, where the relevant documents are being discussed. <sup>76</sup> EU documents on the ICZM Protocol for the Mediterranean, which is the object of a case study, are also discussed in the table on coasts and coastal management.
<i>Commission Communication COM (2006) 475 final of 5 September 2006 establishing an environment strategy for the Mediterranean.</i>	Mediterranean countries (non-EU members).	The focus of the strategy is to assist partner countries, non-EU members, under the European Neighbourhood Policy, to protect the Mediterranean environment. The communication endorses the “Horizon 2020” de-pollution initiative (known as H2020). The EU will provide expert advice and funding (through ENPI). The dialogue with partner countries and NGO involvement are encouraged. H2020 will build on existing institutions (see below).
Blue Plan – Regional Activity Centre, 2006. <i>The Blue Plan: “cradle of Mediterranean futures” – strategic orientations</i> . Draft. Sophia Antipolis.	Mediterranean Sea.	Blue Plan ( <i>Plan Bleu</i> ) is a UNEP Regional Activity Centre (RAC), based in Sophia Antipolis, and one of the stakeholders involved in UNEP’s Mediterranean Action Plan. It is responsible for the production of information and knowledge for decision makers. Among its goals are to promote international and regional cooperation, to spread information and knowledge and to assist sustainable development. As emphasized in this report, among its subject are coastal zones, the marine environment and water. Three action principles are advocated, viz. openness, i.e. opening up to actors at all levels, quality in organization and communication, and results with a high standard of excellence. Sharing, respect and solidarity are important values.

<sup>76</sup> E.g. (a) Mediterranean Action Plan, 1975. Phase I. Available at <[http://195.97.36.231/dbases/webdocs/BCP/MAPPhaseI\\_eng.pdf](http://195.97.36.231/dbases/webdocs/BCP/MAPPhaseI_eng.pdf)> [Accessed 27 January 2012], (b) Mediterranean Action Plan. *Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean (MAP Phase II)*, 1995. Available at <<http://eelink.net/~asilwildlife/mapphr2.html>> and <[http://195.97.36.231/dbases/webdocs/BCP/MAPPhaseII\\_eng.pdf](http://195.97.36.231/dbases/webdocs/BCP/MAPPhaseII_eng.pdf)> [Accessed 12 January 2012], (c) *Barcelona declaration and Euro-Mediterranean partnership*, 1995. Available at <[http://europa.eu/legislation\\_summaries/external\\_relations/relations\\_with\\_third\\_countries/mediterranean\\_partner\\_countries/r15001\\_en.htm](http://europa.eu/legislation_summaries/external_relations/relations_with_third_countries/mediterranean_partner_countries/r15001_en.htm)> [Accessed 12 January 2012], and (d) UNEP, 2011a. *Action plan for the implementation of the ICZM protocol for the Mediterranean 2012-2019*. PAP/NFP/2011/2. Available at <<http://www.pap-thecoastcentre.org/razno/Action%20Plan%20clear%20version%2013%20Sept%2011%20BS-2.pdf>> [Accessed 24 March 2012].

**Table 27 Governance in Regional Seas (Continued)**

<b>Mediterranean Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
Blue Plan – Regional Activity Centre, 2007. <i>The Blue Plan: “cradle of Mediterranean futures” – intervention framework 2007-2015</i> . Working document. Sophia Antipolis.	Mediterranean Sea.	The role of Blue Plan is delineated in this report as in the previous document. The framework of actions which is defined in this report contains a number of interventions described in great detail, always from the perspective of sustainable development. These include a review of the state of the environment and sustainable development in the Mediterranean, refinement of methods and tools for territorial development, water management, energy, tourism, forests, coastal areas, rural and urban areas, and waste. A chapter is devoted to partnerships with UNEP-linked institutions, other UN agencies, European institutions (European Commission, European Environment Agency), ministries of coastal states, regional or local authorities, transnational agreement institutions, civil society and private stakeholders.
European Commission, 2008. <i>Mediterranean sea basin programme 2007-2013</i> . Cross-border cooperation within the European Neighbourhood and Partnership Instrument (ENPI).	Mediterranean Sea.	See the governance chapter of the regional sea profile for the Mediterranean. The programme provides a context of cross-border and cooperation activities within the provisions of ENPI CBC (cross-border cooperation). It operates through a participatory approach and continuous consultations. It brings together strategies and programmes relevant for the Mediterranean basin to ensure consistency and synergies. The key elements of the programme are identification of characteristics and trends of the area, activation of synergies, involvement of local, regional and national actors, and, finally, avoidance of fragmentation and dispersion of actions. Environmental sustainability is among the programme’s priorities. The programme’s joint structures deal with monitoring, management, project selection and technical support. The programme is funded by the EU. Eligible regions belong to both EU and non-EU countries.
Union for the Mediterranean, 2008. <i>Joint declaration of the Paris Summit for the Mediterranean</i> . Paris: 13 July. Available at <a href="http://www.ufmsecretariat.org/en/wp-content/uploads/2010/11/ufm_paris_declaration_1.pdf">http://www.ufmsecretariat.org/en/wp-content/uploads/2010/11/ufm_paris_declaration_1.pdf</a> [Accessed 4 February 2012].  Union for the Mediterranean, 2011. <i>Project guidelines</i> . April. Available at <a href="http://www.ufmsecretariat.org/en/wp-content/uploads/2011/06/Project-guidelines-UfM-Secretariat-adopted.pdf">http://www.ufmsecretariat.org/en/wp-content/uploads/2011/06/Project-guidelines-UfM-Secretariat-adopted.pdf</a> [Accessed 4 February 2012].	EU member countries and 16 other Mediterranean countries.	See the governance chapter of the regional sea profile for the Mediterranean. The UfM includes all EU member states and 16 coastal states of the Mediterranean. It was launched, after a French initiative, in 2008. It builds on the Barcelona Process and the Mediterranean Action Plan, but is a new political and institutional framework. It has a joint secretariat and is chaired by two co-presidents, from the EU side and from partner non-EU countries. It has six priorities (de-pollution, maritime and land highways, civil protection, alternative energies, higher education and research, and business initiatives). According to the declaration of 2008, the challenge is “to enhance multilateral relations, increase co-ownership of the process, set governance on the basis of equal footing and translate it into concrete projects, more visible to citizens”. It has other broader political and diplomatic objectives. This is apparent in the “project guidelines” issued in 2011, which, however, also include environmental impacts, pollution prevention and mitigation of threats to biodiversity.

**Table 27** Governance in Regional Seas (Continued)

<b>Mediterranean Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<p><i>Commission Communication COM (2009) 466 final of 11 September 2009: Towards an integrated maritime policy for better governance in the Mediterranean.</i></p>	<p>Mediterranean Sea. IMP.</p>	<p>The Mediterranean Sea is a good example of a sea basin where the application of maritime policy can bring higher economic returns with lesser impact on the ecosystem. In terms of climate change it is considered as a “hot spot”. The communication identifies two major governance weaknesses: (a) that sectoral policies are the competence of different administrations and international agreements do not have the same rules, and that (b) a large part of sea space is made up of high seas, which makes regulation and organization more difficult. This is due to the deficient implementation of the possibilities offered by UNCLOS for boundary delimitation, because of political and sensitive disputes. Improved stakeholder involvement and tools such as MSP, marine strategies and ICZM could prove helpful. Research on the lines advocated by the EU strategy for marine and maritime research could support knowledge-based action.</p>
<p>European Commission, 2010e. <i>Horizon 2020: cleaning up the Mediterranean</i>. European Union Publications Office. Available at <a href="http://ec.europa.eu/environment/enlarg/mtd/pdf/2010_Horizon2020_en.pdf">http://ec.europa.eu/environment/enlarg/mtd/pdf/2010_Horizon2020_en.pdf</a> [Accessed 6 February 2012].</p>	<p>Mediterranean countries (non-EU members).</p>	<p>The members of the initiative H2020 are North African, Middle Eastern and Balkan countries, which are not EU members. UNEP’s Mediterranean Action Plan is also a partner. Three working groups operate in the initiative’s context (pollution reduction, capacity building, and review – monitoring – research). The launching of the Union for the Mediterranean (see above) has given great impetus. EU grants are provided through ENPI.</p>

**Table 27** Governance in Regional Seas (Continued)

<b>North Sea</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
OSPAR Convention		See regional sea profile for the North Sea, which is covered by the activity of the OSPAR Commission. See also above under “Atlantic Ocean”.
Forum Skagerrak II. 2003 – 2007. Available at <a href="http://databases.eucc-d.de/files/000064_FOLDER_ForumSkagerrakII.pdf">http://databases.eucc-d.de/files/000064_FOLDER_ForumSkagerrakII.pdf</a> [Accessed 6 February 2012].	Regions of Denmark, Norway and Sweden.	This was a project, involving regions bordering the Skagerrak. The project’s work involved governmental and regional organizations and other agencies and dealt with marine pollution, protection of marine waters, fishing, coastal management etc. The intention was to create a permanent forum.
Arc Manche, 2006. <i>Arc Manche Assembly position statement on the strategic vision for the Channel area 2007 – 2013</i> . 15 September.  Available at <a href="http://www.arcmanche.com/media/declaration_vision_strat_espace_manche_150906gb_035204200_1148_11072011.pdf">http://www.arcmanche.com/media/declaration_vision_strat_espace_manche_150906gb_035204200_1148_11072011.pdf</a> [Accessed 6 February 2012].	English Channel ( <i>Manche</i> ).	See governance chapter of the regional sea profile for the North Sea. This initiative brings together regions and local authorities from Britain and France. It is a forum for reflection, exchange of views and debate. According to the Arc Manche Assembly position, its objectives are to represent the interests of the region and to strengthen partnerships in the area, by facilitating joint projects, with various stakeholders. Among the issues addressed are sustainable maritime traffic and preservation of marine ecosystems. The initiative’s strategic orientations include, among others, sustainable development and ICZM. Full members participate in the executive committee of the Arc Manche Assembly. Decisions are usually arrived at by consensus.

**Table 27** Governance in Regional Seas (Continued)

<b>Danube Region</b>		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<p><i>Commission Communication COM (2010) 715 final of 8 December 2010: European Union strategy for Danube region.</i></p>	<p>Danube Basin.</p>	<p>The region covers parts of 8 EU countries and 6 non-EU countries. It faces environmental, shipping, energy and other problems, as well as natural risks. The European Union identified 11 priority areas, which require improvements in transport, energy connections, environmental protection, socio-economic development and security. More specifically, the environment priority area comprises goals related to water quality, environmental risks, biodiversity, landscapes and the quality of air and soils. Funding is available from various EU sources. Policy coordination is the responsibility of the European Commission, with the assistance of a high level group of all states involved and priority area coordinators. The strategy is linked with the Europe 2020 Strategy (see table on development).</p>
<p>International Commission for the Protection of the Danube River, 1994. <i>Convention on cooperation for the protection and sustainable use of the Danube river (Danube river protection convention).</i>  <a href="http://danubeforum.com/files/DanRiverProtectionConvention.pdf">http://danubeforum.com/files/DanRiverProtectionConvention.pdf</a>                      [Accessed 13 January 2012].</p>	<p>Danube Basin.</p>	<p>The convention is the legal instrument for cooperation on trans-boundary water management in the Danube river basin. The main objective of the convention is the sustainable and equitable management of surface waters and groundwater. Water management should aim at avoiding environmental damage and at protecting ecosystems and access to natural resources. Cooperation involves consultations, joint activities, bi- and multi-lateral agreements, legal regulations, regular reporting, monitoring, exchange of information and dissemination of information to the public. An international commission has been entrusted with the implementation of decisions. Disputes are settled by negotiations or, failing that, by arbitration and, in the last resort, the International Court of Justice.</p>

**Table 28** Local Partnerships and Projects

<b>Local partnerships and projects for marine environment, coastal zones and island tourism</b>		
(The table contains a small sample of examples of a local nature. With the exception of the three British partnerships, information on the remaining four cases listed here was derived from the OurCoast ICZM database.)		
<b>Arrangement</b>	<b>Area of Coverage</b>	<b>Content and governance provisions</b>
<p>Canary Island Urban Consortium, Spain. <i>An urban consortium for the restoration of the tourist areas on Gran Canaria.</i> Available at <a href="http://ec.europa.eu/ourcoast/print.cfm?articleID=230">http://ec.europa.eu/ourcoast/print.cfm?articleID=230</a> [Accessed 2 February 2012].</p>	<p>Part of the island of Gran Canaria (San Agustín, Playa del Inglés and Maspalomas).</p>	<p>Intensive tourist development has resulted in an unsustainable coastal development, with huge resorts occupying beaches and dunes. A consortium, conceived as a planning and management tool, was created to promote sustainable tourist development, based on cooperation. The agreement between the authorities involved includes infrastructure provision, land-use, and urban and natural resources zoning and planning. The consortium comprises the national Tourist Institute, the regional government of the Canarias, the provincial government of Gran Canaria and a local authority. Various actors are taking part in the working groups of the consortium. A restoration plan was produced by the consortium.</p>
<p>Moray Firth Partnership. <i>Business Plan – 2011/12.</i> Available at <a href="http://morayfirth-partnership.org/assets/files/zNew%20Site/MFP%20Business%20Plan%202011-12%20-%20July%2011.pdf">http://morayfirth-partnership.org/assets/files/zNew%20Site/MFP%20Business%20Plan%202011-12%20-%20July%2011.pdf</a> [Accessed 7 February 2012].</p>	<p>Moray Firth, a bay in North Scotland.</p>	<p>The partnership is a non-profit organization concerned with marine and coastal zone management, to protect the environment of the largest of Scotland's firths. Several public bodies, private organizations and interest groups are involved in the partnership's management. The partnership "has been involved in developing and delivering Integrated Coastal Zone Management and promoting improved marine and coastal stewardship of the Firth since 1993". It brings together diverse groups and develops joint actions. It established and continues to support a special area of conservation and has promoted a large number of projects. Funding is provided by Scottish Natural Heritage, but also by local authorities and a range of organizations. The partnership has 640 members.</p>

**Table 28** Local Partnerships and Projects (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>Morecambe Bay Partnership. <i>Progress and update January 2012.</i> Available at <a href="http://www.morecambebay.org.uk/PDF/Annual%20Report/2012'01%20MBP%20Progress%20Report%20July%20to%20Dec%202011%20-%20issued%20Jan%202012.pdf">http://www.morecambebay.org.uk/PDF/Annual%20Report/2012'01%20MBP%20Progress%20Report%20July%20to%20Dec%202011%20-%20issued%20Jan%202012.pdf</a> [Accessed 7 February 2012].</p>	<p>Morecambe Bay, Northwest England.</p>	<p>The partnership takes action to improve the environment, mobilizes volunteers, runs seminars and conferences, tries to settle disputes between recreational users, and supports a management group looking after wildlife and habitats. Regular beach cleans are organized by the partnership. The first Morecambe Bay strategy was produced in 1993. In 2011 the partnership received a large award to fund its Landscape Partnership Scheme, which may ultimately amount to 2 million pounds. The scheme will start in 2013 and will last for 5 years. One of the aims of the projects planned is to “support local people to restore and reconnect wildlife habitats, protect the tidal islands and study birds and seals”. The partnership is funded by a number of local authorities of the region, central government sources and private companies, which are among its partners.</p>
<p>Pays de Brest Planning Agency (ADEUPA), France. <i>Testing the ICZM concept in the Pays de Brest.</i> Available at <a href="http://ec.europa.eu/ourcoast/print.cfm?articleID=263">http://ec.europa.eu/ourcoast/print.cfm?articleID=263</a> [Accessed 2 February 2012].</p>	<p>Area of the city of Brest in Western Brittany.</p>	<p>The initiative was led by the <i>Pays de Brest</i> Planning Agency, following the directions of a statutory plan for the region which made possible the use of the ICZM tool. The elected authority of the Brest urban area (<i>Brest Métropole Océane</i>) wished to pursue a collective approach, with a special focus on the marine dimension. A 10-year charter was drawn up. Rural communities were also involved in the association which was formed. The initiative ran into problems, because of poor support from some communities, lack of experience of the town planning agency in the marine field, reluctance of officials to share their power and declining interest. This led to dialogue limitations and limited implementation.</p>
<p>Severn Estuary Partnership, 2001. <i>Strategy for the Severn Estuary: summary.</i> Available at <a href="http://library.coastweb.info/647/1/strategy_english.pdf">http://library.coastweb.info/647/1/strategy_english.pdf</a> [Accessed 7 February 2012].</p>	<p>Severn Estuary on the boundary of Wales and England.</p>	<p>Government departments, NGOs, local authorities and coastal groups are members of the partnership, which was set up in 1995 by local authorities, the Environment Agency and countryside agencies. The partnership operates through a Joint Advisory Committee and a Management Group and maintains relations with several bodies in the area, including voluntary organizations. The 2001 strategy outlined the partnership’s activities, i.e sustainable land use, coastal protection, tourism and recreation, ports and navigation, pollution, minerals, water resources, fisheries, landscape and seascape etc. Core services of the partnership include encouragement of networking, facilitation of engagement, communication and awareness-raising, informing planning, policy and legislation, providing a contact point, and supporting collaborative work. DeltaNet is one of the activities, with international participation, to improve policy and environmental risk management. A “State of the Severn Estuary Report” was published in 2010.</p>

**Table 28** Local Partnerships and Projects (Continued)

Arrangement	Area of Coverage	Content and governance provisions
<p>Tuscany Region, Italy. <i>Conflict reduction among stakeholders</i>. Available at <a href="http://ec.europa.eu/ourcoast/print.cfm?articleID=338">http://ec.europa.eu/ourcoast/print.cfm?articleID=338</a> [Accessed 2 February 2012].</p>	<p>Marina di Massa beach in Tuscany.</p>	<p>The coastal zone selected for intervention has serious erosion problems, caused by indiscriminate hard infrastructure construction (seawall barriers, breakwaters etc) without a coastal management plan. A new strategy aims at “soft” solutions. The <i>Regione Toscana</i> collaborated with local administrations and university institutes and elaborated a regional plan for ICZM cooperation. Local stakeholders were involved and a sustained effort of communication, information and use of local knowledge was undertaken. Later, an agreement was signed between the Tuscany Region and <i>Regione Liguria</i> for concerted action and a number of projects were executed.</p>
<p>Wadden Sea Net Forum, Germany. <i>Sustainable Wadden Sea tourism</i>. Available at <a href="http://ec.europa.eu/ourcoast/print.cfm?articleID=183">http://ec.europa.eu/ourcoast/print.cfm?articleID=183</a> [Accessed 2 February 2012].</p>	<p>German coast bordering the Wadden Sea (Schleswig-Holstein <i>Land</i>).</p>	<p>This is a German local project within the trilateral cooperation for the Wadden Sea (Denmark, Germany and the Netherlands), which is the object of an ESaTDOR case study. This particular initiative led to the creation of a forum, the member of which were a Schleswig-Holstein ministry, local authorities, the Wadden Sea national park and NGOs. Cooperation with local stakeholders was intensive and an action plan was produced. Sustainability, tourism and recreation, disaster prevention, safety etc. were among the sectors dealt with. However, the initiative faced serious problems, e.g. knowledge shortcomings, communication obstacles, resistance to environmental interventions and sectoral interests.</p>



## 9. Governance Case Studies: Synthesis

Concern for the marine environment and marine resources has a long history. However, specific action and the creation of institutional instruments and governance arrangements has been gaining speed particularly since the 1970s. Their focus was environmental protection and management, resource use and, of course, political sovereignty, if one includes the challenges of maritime delimitation. Even though the sea water element should, *ipso facto*, act as a unifying factor imposing thematic, sectoral and territorial comprehensiveness, cooperation and coordination, the observer cannot but be surprised at the extent of fragmentation prevailing until fairly recently and, regrettably, even today. The overall picture is disappointing if we take a step beyond single environmental and resource issues towards an integrated maritime approach, let alone one involving a spatial planning dimension. The work carried out in ESaTDOR is however an encouraging sign and so is a recent EEA report (European Environment Agency, 2012) calling for a European spatial approach which among others would strengthen the implementation of the Marine Strategy Framework Directive.

A comprehensive programme of action is no doubt the Regional Seas Programme of the United Nations Environment Programme which supports 18 regional seas conventions (14 out of 18), action plans and programmes around the world. The element of integrated maritime policy is however almost absent in most cases and maritime spatial planning (MSP) is usually represented only by the inclusion of integrated coastal zone management. European governance arrangements appearing on the UNEP list are the Arctic Council, the Baltic Sea Helsinki Commission, the Black Sea arrangements under the Bucharest Convention, the Mediterranean Action Plan under the Barcelona Convention and the OSPAR Commission for the North East Atlantic. National maritime strategies are already in existence and they appear on the Marine Spatial Planning Initiative website of UNESCO's Intergovernmental Oceanographic Commission, which includes only three interstate maritime governance arrangements, viz. HELCOM, OSPAR and the Trilateral Wadden Sea Cooperation, which are all being reviewed in this chapter and in the previous Coastal and Maritime Governance chapter (Chapter 8).

As pointed out in the previous chapter, maritime spatial planning (MSP) is increasingly receiving attention in the literature and in various reports of international and national agencies, not only for reasons of environmental protection and sustainable development of marine space but also because of the rising importance of sea space resources in a context of economic crisis, which makes necessary a joint socio-economic and environmental approach. MSP is intimately linked with the zoning of sea space and hence the delimitation of maritime boundaries, regulated by the United Nations Law of the Sea and various international treaties. The absence of such boundaries creates additional barriers to MSP, as in the Mediterranean Sea. MSP may take various forms depending on its binding or non-binding nature and its coordination with terrestrial planning and coastal management, of which there are already numerous examples in several countries. All the essential ingredients of

effective planning will have to be present in MSP activity, from the formulation of an integrated vision and the putting together of a transparent, participatory and efficient management system to the engagement of stakeholders, data collection, database construction, information gathering, and use of scientific knowledge. It is not surprising that in the case studies we reviewed such activities are present in one way or another, even when there is no fully-fledged MSP system in place.

The inevitable multi-level character of maritime governance arrangements from international to local, which comes out very strongly from the case study examples, complicates the interweaving of terrestrial, coastal and marine planning, particularly when one contemplates the range of stakeholders involved, all the way from international or trans-national commissions and multinational corporations down to local authorities or local professional unions and regional NGOs. This is what often paralyzes the operation of ambitious endeavours, especially when a key partner “does not play ball”. Is the answer to this complexity to be found in the use of an ecosystem-based approach, as several authors and prevailing wisdom suggest? Can such approach overcome the omnipresent problems of stakeholder coordination and consensus? The answers in practice are certainly not encouraging with some notable and much-publicised exceptions. Should top-down mandatory arrangements be preferred, at least when the international legal regime permits it, e.g. in the EU case? Here too objections can be raised in the name of the subsidiarity principle or of the purity of participation ideals.

From the moment the EU showed its interest in maritime policy, the emphasis on governance arrangements and on horizontal links with other sectoral policies (sustainable development, environment, territory, ICZM) was strong, as the 2006 IMP Green Paper and the 2007 Commission Communication clearly indicate. The need for MSP was immediately introduced, as well as the integration of MSP, ICZM and terrestrial planning in a holistic ecosystem perspective, a process often made difficult by each country’s style of planning. IMP and marine environmental protection, as stated in the Marine Strategy Framework Directive of 2008, were closely linked from the start. The 2010 Europe 2020 Strategy came soon after, inevitably placing maritime development in the context of a new economic growth policy, in which the seas had a great part to play. It is no accident that at the same time the first MSP achievements were coming up for evaluation, in which coherence with spatial planning, ICZM and environmental policy was stressed. A number of reports by various agencies drew attention to potential MSP economic benefits, to regional sea initiatives and to the need for maritime boundary delimitation, as a prerequisite of effective MSP.

The coming of age of the concept of territorial cohesion and its elevation to the level of EU treaties (2007), as equal to economic and social cohesion, has played a role in the acceptance of maritime policy and planning. It is now accepted that we cannot speak of territorial cohesion if maritime space is not covered together with land, as the EEA now concedes (European Environment Agency, 2012). Territorial integration and cohesion policy as an instrument towards structural change and sustainable development must naturally embrace sea space. Territorial cohesion is not just about balanced development but also about developing the potential of all territories,

terrestrial and maritime. EU policies addressing economic, sustainable and territorial development are now overlapping. The 2009 review of Sustainable Development Strategy, the Europe 2020 Strategy and the new Territorial Agenda 2020 now recognize the importance of maritime policy. Cohesion policy started paying attention to maritime space in the Green Paper on Territorial Cohesion of 2008, a sign that an interaction was now established between territorial cohesion and maritime policies. While a shift to a place-based approach was taking place, maritime policy was given a separate place in the 5<sup>th</sup> Cohesion Report of 2010, a crucial development in the context of the 2014-2020 Cohesion Policy. The important point to make is that trans-boundary cooperation, which is a *sine qua non* precondition when it comes to sea space, is gaining ground under territorial cohesion policy. “Trans-nationality” was a mandatory criterion for the choice of ESaTDOR case studies. As a result, the 19 case studies presented in this synthesis chapter contain precious material for the entire spectrum of future EU sustainable growth, cohesion, environment and maritime policies.

## **9.1 Reflections on Case Studies**

The case studies selected are presented in Table 29. There are 10 regional seas and 9 sub-regional seas case studies. The tables that follow (30 – 35) contain brief descriptions of all case studies, classified by regional sea. It must be pointed out that some case studies classified as sub-regional, are in fact covering specific aspects of entire regional seas.

The full case study reports for each regional sea can be found in Annexes 8-13 to the Scientific Report.

**Table 29** Summary of case studies

	<b>Arctic Ocean</b>	<b>Atlantic Ocean</b>	<b>Mediterranean Sea</b>	<b>North Sea</b>		<b>Baltic Sea</b>	<b>Black Sea</b>
<b>Regional Sea Case Study</b>	Northern Dimension and Arctic Council	Atlantic Arc Commission	Protocol on Integrated Coastal Zone Management in the Mediterranean	The OSPAR Commission	<b>Regional Sea Case Study 1</b>	VASAB (Vision and Strategies for the Baltic Sea Region)	The Black Sea Regional Energy Centre (and Black Sea Synergy)
<b>Sub-Seas Case Study 1</b>	Maritime delimitation treaty between Norway and Denmark	British Irish Council	Adriatic – Ionian Initiative (AII) and Adriatic Sea Partnership (ASP)	The Trilateral Wadden Sea Cooperation	<b>Regional Sea Case Study 2</b>	HELCOM – Helsinki Convention	The Commission for the Protection of the Black Sea against Pollution (Black Sea Commission)
<b>Sub-Seas Case Study 2</b>	Maritime delimitation treaty between Norway and Russia (Barents Treaty)	Solway Firth Partnership	The MedGovernance Partnership and Project	Flemish-Dutch cooperation on the Scheldt estuary (Westerschelde Estuary)	<b>Regional Sea Case Study 3</b>	MSP (Maritime Spatial Planning) Working Group / HELCOM-VASAB	Black Sea Global Ocean Observing System
					<b>Sub-Seas Case Study 1</b>	Pomeranian Bight Initiative	

**Table 30** Arctic Ocean: Case study list and description

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study</b>	<b>Nothern Dimension and Arctic Council</b>	The Northern Dimension, drawn up in 1999, is a common policy shared by four equal partners: the European Union, Norway, Iceland and the Russian Federation. The policy covers a broad geographic area, from the European Arctic and Sub-Arctic to the southern shores of the Baltic Sea, countries in the vicinity and from north-west Russia in the east, to Iceland and Greenland in the west. The policy's main objectives are to provide a common framework for the promotion of dialogue and concrete cooperation, to strengthen stability and well-being, intensify economic cooperation, and promote economic integration, competitiveness and sustainable development in Northern Europe. A renewed Northern Dimension policy was launched in 2006. The Arctic Council is a high level intergovernmental forum comprising the Arctic States and Permanent Participants representing several non-Arctic states, inter-governmental and inter-parliamentary organizations, and Arctic organizations of indigenous populations. Non-governmental organizations have observer status in the Council.
<b>Sub-seas Case Study 1</b>	<b>Maritime delimitation treaty between Norway and Denmark</b>	In February 2006, the Government of the Kingdom of Denmark together with the Home Rule Government of Greenland and the Government of the Kingdom of Norway concluded an agreement on a maritime boundary between Greenland and Svalbard. The Agreement delimits the continental shelf, the Exclusive Economic Zone of Greenland and the fishery protection zone around Svalbard. The Agreement makes provisions for cooperation on the exploitation of mineral deposits found to extend across the limits of each nation's continental shelf, specifying the manner in which any deposit is to be most effectively exploited and how the proceeds are to be apportioned.
<b>Sub-seas Case Study 2</b>	<b>Maritime delimitation treaty between Norway and Russia (Barents Sea Treaty)</b>	The <i>Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean</i> (Barents Sea Treaty) was signed in 2010 and marks the end of a long process of negotiation between the two countries over ownership of the seabed, subsoil and overlapping Exclusive Economic Zones. The Treaty establishes a single delimitation line for their EEZs and continental shelf in areas within 200 miles of their coasts and a delimitation line between the Norwegian and Russian continental shelf where it extends beyond 200 miles. In addition, the Treaty formalises cooperation between Norway and Russia on fisheries and the conservation of fish stocks, and sets out provisions for cooperation on the exploitation of any petroleum deposits that extend across the delimitation line.

**Table 31** Atlantic Ocean: Case study list and description

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study</b>	<b>The Atlantic Arc Commission</b>	The Atlantic Arc Commission is one of the six Geographical Commissions in the Conference of Peripheral Maritime Regions of Europe and seeks to integrate cooperation projects of varying scale, covering all the areas of sustainable regional development, into a coherent strategy. With post-2006 European policies in mind, the Regions have prepared an Atlantic Spatial Development Perspective (ASDP), which identifies actors, actions and policies to implement at different levels in order to support the sustainable growth of the Atlantic Arc. Priority Action Themes include transport - improving internal and external accessibility, inter-modality, developing maritime links; sustainable development, particularly ICZM; fisheries (within the constraints of the CFP) and research, innovation and improving competitiveness.
<b>Sub-seas Case Study 1</b>	<b>The British Irish Council</b>	The British-Irish Council was established in 1998 as part of the Multi-Party Negotiations (also known as the Belfast or Good Friday Agreement) between the British and Irish Governments and the political parties of Northern Ireland, with the objectives to promote positive, practical relationships among the people of the islands and to provide a forum for consultation and cooperation. The administrations of Scotland, Northern Ireland, the Republic of Ireland, Isle of Man, Wales, the UK, Jersey and Guernsey make up the BIC. The BIC operates through ministerial meetings and meetings of officials (civil servants) from each administration, and current work streams include spatial planning, energy (including offshore energy and grids), the environment and other issues of mutual national interest.
<b>Sub-seas Case Study 2</b>	<b>Solway Firth Partnership</b>	Solway Firth Partnership is a voluntary coastal management partnership which was launched in 1994 in response to formal support for integrated coastal zone management (ICZM) from UK Government and agencies. The need for ICZM around the Solway Firth is particularly pressing because the Solway crosses a national boundary between England and Scotland; this results in a necessary increase in the number of agencies and organisations working together under different legal, cultural and social systems. The importance of ICZM is further emphasised by the complexity and diversity of the Solway Firth as it contributes to the regional economy has a dramatic landscape which provides a haven for wildlife and is also of social importance. The Partnership works with stakeholders to increase sustainable use and management of the Solway Firth and also contributes towards regional, national and international policy development by providing vital input from the grass roots level.

**Table 32** Baltic Sea: Case study list and description

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study 1</b>	<b>VASAB (Vision and Strategies for the Baltic Sea Region)</b>	VASAB (Vision and Strategies for the Baltic Sea Region), for co-operation on spatial planning and spatial development in the Baltic Sea Region was founded in August 1992. VASAB is an intergovernmental co-operation of eleven countries (Belarus, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia and Sweden) of the Baltic Sea Region. VASAB has been focused on land based territorial development for a long time, but in 2006 began advocating the use of Maritime Spatial Planning (MSP) as a tool to harmonize different maritime activities. In 2010 VASAB and HELCOM launched a joint working group on MSP which will enable coordination and integration of MSP related actions and projects implemented within the framework of the EU Strategy for the Baltic Sea Region and its Action Plan and VASAB's Long-Term Perspective for the Baltic Sea Region.
<b>Regional Sea Case Study 2</b>	<b>HELCOM - Helsinki Convention</b>	The Helsinki Commission, or HELCOM, works to protect the marine environment of the Baltic Sea from all sources of pollution and restore and safeguard its ecological balance through intergovernmental co-operation. HELCOM's diplomatic role in bringing eight EU member states, one country outside of the EU (Russia) and the European Community together to join forces enables HELCOM to be an environmental policy maker for the Baltic Sea area by developing and enforcing common environmental objectives and actions and making recommendations of its own and supplementary to measures imposed by other international organisations. In addition, HELCOM acts as a focal point for providing information about the state of/trends in the marine environment and a coordinating body, ascertaining multilateral response in case of major maritime incidents.
<b>Regional Sea Case Study 3</b>	<b>MSP (Maritime Spatial Planning) Working Group / HELCOM-VASAB</b>	The Joint HELCOM – VASAB Working Group on Maritime Spatial Planning was launched in 2010 to enable coordination with the EU Strategy for the Baltic Sea Region and its Action Plan, but also as a forum on ICZM and MSP to provide input to VASAB's Long-Term Perspective and HELCOM's Baltic Sea Action Plan (see respective case studies for more context). MSP evolved out of BaltCoast, an Interreg III B project. VASAB's role is crucial in promoting MSP, while HELCOM has issued a recommendation on the Development of Broad Scale Marine Spatial Planning Principles. MSP is seen as an all-important tool of horizontal coordination and provides a great opportunity for coordinating the VASAB and HELCOM processes.

**Table 32** Baltic Sea: Case study list and description (continued)

	<b>Case study title</b>	<b>Description</b>
<b>Sub-seas Case Study 1</b>	<b>BaltSeaPlan Project - Trans-boundary Maritime Spatial Planning in the Baltic Sea / The case of the Pomeranian Bight</b>	The Marine Spatial Planning Pilot Project Pomeranian Bight/Arkona Basin comprises shares of territorial sea as well as of the EEZ of four countries: Denmark, Sweden, Poland and Germany. This area contains a wide range of topics, problems and conflicts which have been addressed with the BaltSeaPlan project (Planning the future of the Baltic Sea) co-financed by the Baltic Sea Region Programme of the European Union. Within the on-going BaltSeaPlan project responsible planning authorities together with NGOs and research institutes have developed a common cross-border vision outside official planning procedures. Even though the outcome of this process will be non-binding it is the first well-grounded example of what a transboundary maritime spatial plan in the Baltic Sea Region covering the area of Pomeranian Bight may look like.

**Table 33** Black Sea: Case study list and description

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study 1</b>	<b>The Black Sea Regional Energy Centre (and Black Sea Synergy)</b>	The case study dwells mainly on the Energy Centre, as its title suggests, and partly on the EU Black Sea Synergy communication of 2007. The Black Sea Regional Energy Centre (BSREC) was inaugurated in 1995. The establishment of the Centre was a joint initiative of the European Commission, under its SYNERGY Programme, and the countries of the Black Sea region. Black Sea Synergy was initiated in 2008 to encourage cooperation between the countries in the wider Black Sea Region and with the European Union. The Synergy offers a forum for tackling common problems, recognising that some issues require coordination at the regional level while encouraging political and economic reform. The BSREC acts as a focal point for energy related activities, aimed at developing co-operation between the Black Sea region countries and the EU in the energy field by promoting development and implementation of market oriented energy policy, encouraging energy efficiency and renewable energy projects, assisting investment and funding, and facilitating the collection and dissemination of energy sector related information at a regional level. In addition, Black Sea Synergy will stimulate dialogue on Black Sea maritime policies and offers a framework to improve coordination between relevant EU and regional policies and wide-ranging programmes such as Motorways of the Sea.



**Table 33** Black Sea: Case study list and description (continued)

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study 2</b>	<b>The Commission for the Protection of the Black Sea against Pollution (Black Sea Commission)</b>	The Commission of the Protection of the Black Sea Against Pollution implements the provisions of the Black Sea (Bucharest) Convention and the Black Sea Strategic Action Plan, which aims to help resolve the transboundary environmental problems of the Black Sea and is a joint effort between the six Black Sea countries supported by a permanent secretariat and a number of working groups on issues such as Integrated Coastal Zone Management (ICZM), pollution monitoring, biodiversity and fisheries and other living marine resources. The main challenges dealt with by the Black Sea Commission include combating pollution from land-based sources and maritime transport, achieving sustainable management of living marine resources, and pursuing sustainable human development.
<b>Regional Sea Case Study 3</b>	<b>Global Ocean Observing System (GOOS) in the Black Sea Area</b>	The Black Sea Global Ocean Observing System is an association formed by the Black Sea riparian countries in order to foster Operational Oceanography in the region and set up links with other regional and global organizations with similar objectives. Of its many objectives, the Black Sea GOOS will provide high quality data and time series, for a better understanding of the Black Sea ecosystem, contribute to international planning and implementation of the GOOS, identify regional priorities for the use of operational oceanography and co-operate with the Black Sea Environmental Programme (BSEP), the Permanent Secretariat of the Black Sea Commission (Secretariat for the Bucharest Convention) and other relevant bodies, to harmonise oceanographic activities in the region. The work of the Black Sea GOOS is guided by a Memorandum of Understanding (adopted 2001), an ad hoc Steering Committee and Executive Committee.

**Table 34** Mediterranean Sea: Case study list and description

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study</b>	<b>Protocol on Integrated Coastal Zone Management in the Mediterranean</b>	In September 2010 the European Council adopted the decision to ratify the ICZM Protocol to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention). Having been ratified by six contracting parties, the Protocol entered into force the 24th of March 2011. The Protocol establishes a common framework for the integrated management of the Mediterranean coastal zone and calls upon Parties to work together to strengthen the coherence and effectiveness of the coastal strategies, plans and programmes established (either bilaterally or multilaterally) and to promote regional and international cooperation for the implementation of common programmes on the protection of marine habitats.
<b>Sub-seas Case Study 1</b>	<b>Adriatic – Ionian Initiative (All) and Adriatic Sea Partnership (ASP)</b>	The Adriatic Sea is a highly sensitive marine area facing serious environmental challenges, yet it is also one of Europe’s most highly developed industrial areas - economically significant for tourism and recreation, and as a major transport hub for energy resources. The Adriatic Sea Partnership (ASP) was established in 2006 and brings together existing institutional arrangements (such as the Trilateral Commission of Croatia, Italy, Slovenia for the Protection of the Adriatic and the Mediterranean Action Plan) and provides a joint platform for new initiatives such as the development of an Adriatic Management Plan. The Partnership also provides a mechanism to ensure coordination of activities stemming from EU initiatives such as the Marine Strategy Framework Directive and the Barcelona Convention. The Adriatic – Ionian Initiative, started in 2000, has 8 member countries and aims at improving cooperation in various fields of action.
<b>Sub-seas Case Study 2</b>	<b>The MedGovernance Partnership and Project</b>	The MEDGovernance programme is comprised of partners such as provincial and regional authorities, cultural and research institutes from the countries of the Western Mediterranean and is funded by the Med Programme. The activities of the MEDGovernance initiative include an analysis of regional policies for environment, transport and energy, migration, mobility and other topics, which will feed into the perspectives adopted by the Conference of Peripheral Maritime Regions (CPMR) on territorial cohesion. MEDGovernance also facilitates the coordination of regional plans towards a single Mediterranean framework, and builds capacity for collaboration on Mediterranean issues by offering training to public administrators, and through a social and economic forum (meeting) to compare and disseminate the actions of governance and to elaborate common policies at EuroMediterranean and global level.

**Table 35** North Sea: Case study list and description

	<b>Case study title</b>	<b>Description</b>
<b>Regional Sea Case Study</b>	<b>The OSPAR Commission</b>	The OSPAR Commission is the forum through which the Contracting Parties to the OSPAR Convention for the protection of the marine environment in the North East Atlantic cooperate, and the North Sea forms Region II (Greater North Sea) of the OSPAR Commission's maritime area. The OSPAR Convention deals with prevention and elimination of pollution from land-based sources, offshore sources, pollution by dumping or incineration and assessment of the quality of the marine environment and works through Contracting Parties agreeing to abide by the decision and recommendations of the Commission. The OSPAR Permanent Secretariat manages the reporting of Contracting Parties on the implementation of OSPAR measures and the reporting of data under OSPAR monitoring programmes. OSPAR work areas include monitoring and assessment, biodiversity and ecosystems, radioactive substances, climate change, and most significantly for the North Sea, eutrophication, hazardous substances and the offshore oil and gas industry.
<b>Sub-seas Case Study 1</b>	<b>The Trilateral Wadden Sea Cooperation</b>	The Wadden Sea lies in the south-eastern part of the North Sea and is bounded by the Netherlands, Germany and Denmark and a chain of offshore islands. Since 1978, these nations have cooperated on protection and conservation of the Wadden Sea focusing on management, monitoring and research, as well as political matters. A Joint Declaration on the Protection of the Wadden Sea was agreed in 1982, and a refreshed declaration was adopted in 2010 together with the Trilateral Wadden Sea Plan 2010 which sets out a framework for the integrated management of the Wadden Sea Area as an ecological entity, as well as its landscape and cultural heritage, within the cultural entities. It sets out a series of targets, as well as policies, measures, projects and actions to achieve these targets, to be implemented by the Wadden Sea countries.
<b>Sub-seas Case Study 2</b>	<b>Flemish-Dutch cooperation on the Scheldt estuary (Westerschelde Estuary)</b>	The Westerschelde Estuary begins at the port of Antwerp in Belgium and crosses the border between Belgium and the Netherlands and is significant as the only maritime route linking Antwerp to the North Sea. The need to maintain navigable waterways has led to changes in the morphology of the estuary and has had important consequences for the ecology and hydrology of the area, which provides access to ports, flood plains, recreation and fisheries grounds. The need to accommodate these interests has been addressed through several memoranda of understanding, a bilateral Long Term Vision for the Westerschelde (1999) and Development Plan (2004) which focuses on nature restoration and environmental monitoring as a means to compensate for the impacts of dredging. With no one body having overall responsibility for developing the Westerschelde, there remains great potential for conflict between competing environmental and socioeconomic demands.

The following tables (36 - 40), derived from the ESaTDOR regional sea profiles, summarize the key points of all case studies, with regard to the drivers of partnerships, their challenges, their legal status and authority, their effectiveness and inclusiveness.

**Table 36** Case Study Summary: Arctic Ocean

	<b>Arctic Ocean (Northern Dimension – Arctic Council)</b>	<b>Barents Treaty (Norway-Russia delimitation treaty)</b>	<b>Greenland/Svalbard (Norway-Denmark delimitation treaty)</b>
<b>Drivers</b>	Climate change, natural resources	Climate change, natural resources	Climate change, natural resources
<b>Challenges</b>	Overharvesting of natural resources, pollution	Overharvesting of natural resources, pollution	Overharvesting of natural resources, pollution
<b>Legal Status</b>	Not legally binding	Partly legally binding	Partly legally binding
<b>Effectiveness</b>	Low/medium	Medium/high	Medium/high
<b>Stakeholder involvement</b>	Medium/high	Low	Low

**Table 37** Case Study Summary: Atlantic Ocean

	<b>Atlantic Arc Commission</b>	<b>British-Irish Council</b>	<b>Solway Firth Partnership</b>
<b>Drivers</b>	Economic development, accessibility, spatial planning	Offshore energy, ICZM, spatial planning, networking	Nature conservation, fisheries, cultural heritage
<b>Challenges</b>	Territorial cohesion, sustainable economic growth	Transnational cooperation	Cross-border cooperation
<b>Legal Status</b>	Not legally binding	Legally binding	Not legally binding
<b>Effectiveness</b>	High	Medium	Medium
<b>Inclusiveness/ Stakeholder Involvement</b>	Medium	Low	High

**Table 38** Case Study Summary: Baltic Sea

	<b>HELCOM</b>	<b>VASAB</b>	<b>HELCOM-VASAB MSP Working Group</b>	<b>BaltSeaPlan case study / Pomeranian Bight</b>
<b>Drivers</b>	Nature conservation, pollution	Upheaval of the Baltic Sea Region after 1989.	Need for integrated marine management	Need for trans-boundary maritime spatial planning
<b>Governance challenges</b>	Novel approach that will maintain its relevance given EU marine and maritime initiatives and the integration of non-EU countries	Novel approach that will maintain its relevance given EU macro-regional policies and the integration of non-EU countries	A common vision for the Baltic Sea including aspects of conservation and regional development, a variety of planning traditions, legal and administrative situations	A common vision for the Baltic Sea including aspects of conservation and regional development, a variety of planning traditions, legal and administrative situations
<b>Substantive challenges</b>	Eutrophication, pollution, maritime transport, fisheries and others more	Transnational regional development, integration, accessibility	Realisation of transnational MSP in the Baltic	Maritime transport, offshore wind-farms, fisheries, nature protection, tourism, mineral extraction
<b>Legal status</b>	Non-binding recommendations	Political agreement, not legally binding	Political agreement, not legally binding	Voluntary, temporary, not legally binding
<b>Effectiveness</b>	Medium	High/medium	(pending)	Medium/low
<b>Inclusiveness/ Stakeholder involvement</b>	High	High/medium	Medium	Medium

**Table 39** Case Study Summary: Black Sea

	<b>GOOS in Black Sea area</b>	<b>The Black Sea Regional Energy Centre</b>	<b>The Commission of the Protection of Black Sea against Pollution</b>
<b>Drivers</b>	weather and climate, marine and coastal ecosystems and resources, natural hazards and pollution	Energy field	Pollution, fisheries, green tourism
<b>Challenges</b>	full economic potential of oceans and seas; monitor, understand and predict weather and climate; protect life on coast and at sea	Energy demand, EU Synergy policy, energy applications, global change in the energy field	Combating pollution, management of marine living resources, sustainable human development
<b>Legal Status</b>			Legally binding
<b>Effectiveness</b>	Medium	Medium	High
<b>Inclusiveness/ Stakeholder involvement</b>	Medium	Medium	Medium (BSC cooperation with other intergovernmental organizations)

**Table 40** Case Study Summary: Mediterranean

	<b>ICZM Protocol</b>	<b>Adriatic Sea</b>	<b>MEDGovernance</b>
<b>Drivers</b>	Global sea-borne trade, maritime traffic, fishing activities, environmental conditions and cultural heritage.	International trade, growth of ports, aquaculture development, fishing overexploitation, motorways of the sea	Cultural heritage, Natura 2000 areas and protection against forest fires, technology transfer and information society, migratory flows, motorways of the sea
<b>Challenges</b>	Climate change, infrastructure, tourism and leisure facilities, high pressures on coastal resources	Energy demand, maritime safety, climate change, random urbanization, socioeconomic disparity	Social division, rural poverty, environmental degradation, underemployment, climate change, pollution from shipping, preservation of biodiversity and conservation of wildlife
<b>Legal Status</b>	Legally binding	Not legally binding	Not legally binding
<b>Effectiveness</b>	Low presently, but potentially high	Medium	Low
<b>Stakeholder involvement</b>	High (21 countries and EU)	High (8 at a level of ministries)	Medium (3 countries and their institutions)

**Table 41** Case Study Summary: North Sea

	<b>OSPAR</b>	<b>Trilateral Wadden Sea Cooperation</b>	<b>Flemish-Dutch cooperation on the Scheldt</b>
<b>Drivers</b>	Nature conservation, pollution	Nature conservation, fisheries, energy exploitation, tourism, shipping	Flood risk protection, nature development, port access
<b>Governance challenges</b>	Novel approach that will maintain its relevance given the MSFD and initiatives at EU level	Harmonised implementation of EU legislation and reaping benefits of UNESCO World Heritage Status	Restoring trust and full implementation of the OS2010
<b>Substantive challenges</b>	Fisheries, shipping, energy generation	Climate change, biodiversity, tourism	Realisation of next stages of Long Term Vision Scheldt 2030
<b>Legal status</b>	Legal agreement, elaborated via binding decisions and non-binding recommendations	Political agreement, not legally binding	Legally binding based on Scheldt Treaty of 2005
<b>Effectiveness</b>	Medium	High/medium	Low
<b>Inclusiveness</b>	High	Medium	Was medium; is now low

Later in this chapter we supply analytical reflections and comments on each of the 19 ESaTDOR case studies. On the basis of these reflections and comments, as well as the preceding tables, we have constructed tables 42 and 43. In them we attempt to classify the governance arrangements described in the case studies in terms first of their main goals and then their membership and formal or informal character. Undoubtedly, this classification, as any of this kind, involves value judgments and is open to error. It could be argued that e.g. cooperation is by definition a goal of any such governance arrangement or that many more goals should be recorded. Objections can be raised in connection with our estimation of the formal or informal nature and the “hard” or “soft” character of an arrangement. We argue that this character is not strictly a matter of legal status but also of the mode of operation pursued in a governance arrangement. Regardless of the accuracy of our judgment, we tried to give a concise picture to enable the reader to form an impression at a glance. He/she can always consult all the preceding tables and read the more extensive reflections / comments, or, if necessary, refer to the complete case studies contained in the Annexes to the Scientific Report.



**Table 42** Summary of case studies based on main goal of governance arrangement

Case studies	Main goals of governance arrangement - Dominant focus								
	Cooperation Participation	Environment / Coastal protection	Pollution control and reduction	Economic development	Resource exploitation	Territorial cohesion- Regional dev.	Maritime Spatial Planning	Maritime boundary delimitation	Specific Econ. sectors - Monitoring Observation
<b>Regional Sea Case Studies</b>									
Arctic/North. Dim.-Arctic Council	+	+			+	+		+	
Atl/Atlantic Arc	+			+		+	+		
Baltic /VASAB	+					+	+		
Baltic/HELCOM	+	+	+				+		
Baltic/MSP Working Group	+						+		
Black Sea /Energy Centre			+	+					+
Black Sea/ Commission-Pollution	+	+	+						
Black Sea /GOOS		+		+					+
Med /ICZM Protocol	+	+	+	+	+	+			
North Sea/OSPAR	+	+	+						+
<b>Sub-regional Sea Case Studies</b>									
Arctic/Nor-Den Treaty					+			+	
Arctic/Nor-Rus Treaty					+			+	
Atl/Brit-Irish Council	+			+					
Atl/Solway Firth	+	+							
Baltic/Pomeranian Bight		+					+		
Med/Adriatic		+	+						
Med/MEDGovernance				+		+			
North Sea /Wadden Sea		+							
North Sea /Scheldt Estuary		+		+					

**Table 43** Summary of case studies based on membership and formal character of governance arrangement

Case studies	Members				Formal character		
	States	Regions and /or local authorities	Various partners	States and regions	“Hard” formal arrangement / convention. Binding decisions.	“Soft” formal arrangement. Non-binding decisions.	Various forms of partnership. Non-binding decisions.
<b>Regional Sea Case Studies</b>							
Arctic/N. Dim.-Arctic Council	+					+	
Atl/Atlantic Arc				+		+	
Baltic /VASAB	+					+	
Baltic/HELCOM	+		+			+	
Baltic/MSP Working Group	+		+			+	
Black Sea /Energy Centre			+			+	
Black Sea/ Commission Pollution	+					+	
Black Sea /GOOS	+						+
Med /ICZM Protocol	+				+		
North Sea/OSPAR	+				+		
<b>Sub-regional Sea Case Studies</b>							
Arctic/Nor-Den Treaty	+				+		
Arctic/Nor-Rus Treaty	+				+		
Atl/Brit-Irish Council				+		+	
Atl/Solway Firth			+				+
Baltic/Pomeranian Bight			+				+
Med/Adriatic			+				+
Med/MEDGovernance		+					+
North Sea /Wadden Sea	+					+	
North Sea /Scheldt Estuary	+				+		

## 9.2 Regional Sea Case Studies: Reflections and comments

Regional sea case studies are presented in separate paragraphs on drivers / challenges, significance of EU, stakeholder engagement, outputs and, finally, resilience of governance arrangement. The reader is advised to consult first tables 29 to 43.

### **The Arctic Ocean (The Northern Dimension and the Arctic Council)**

There exist several global and seas level governance arrangements for the Arctic Ocean, the most important governance bodies at sea level being the Northern Dimension (ND) and the Arctic Council (AC).

Drivers / challenges: The Arctic Ocean is a vulnerable ecosystem, with large resource potential, facing both opportunities and threats affecting 8 states, and a sensitive political geography. It includes high seas under international law and disputed areas of high economic interest for oil industry. Conflicts exist between sea activities like petroleum, shipping and fisheries. Threats like climate change, overharvesting (effects of fisheries policies) and risk of major accidents (e.g. large scale oil spills) are key drivers. Arctic communities depend on marine ecosystems. Among governance challenges, the main one is cooperation and coordination between Arctic States and between EU and non-EU countries (especially Russia). Achievements can be found at all levels (governments, indigenous populations' organizations, LAs, academic and business communities). Tasks of crucial importance are resolution of maritime boundary disputes, application of equality principle among participants, securing funding, decision implementation and balancing flexibility with formal, powerful institutions. With regard to substantive challenges, ND concentrates on the economy, business and infrastructure, environment and nuclear safety, health, human resources, education, culture, regional development and scientific research. AC's focus is on environmental issues, policy-relevant environmental knowledge and climate change. The multi-faceted well-being of local populations is one more challenge. Overharvesting of natural resources and pollution are important challenges.

Significance of EU: EU is a partner in ND, an initiative on cross-border and external policies, based on co-financing, from EU instruments as well as the EBRD and the EIB.

Stakeholder engagement: ND's emphasis is on subsidiarity, inclusiveness, active stakeholder participation, including regional organizations, LAs, NGOs and civil society, academic and business communities, via sectoral partnerships. AC is a knowledge-intensive organization and a high level intergovernmental forum, with observers from non-Arctic states, inter-governmental and inter-parliamentary organizations and non-governmental organizations.

Outputs: ND, initially relying on EU project funding for non-member countries, lacked effectiveness until 2007, when it became less EU-centric, more flexible and concrete policy-oriented, helped by specialized partnerships and project financing (environment, health, transport and culture). Success can also be credited to flexible coordination and learning-by-doing. AC is primarily a forum for soft law and not a regulatory authority, i.e. a project-

driven, non-operational body. Lack of structural funding brings uncertainty, while limited participation weakens it internationally and vis-a-vis important, non-Arctic states.

Resilience of governance arrangement: Reliance on consensus, partnerships and partly informal structures promote resilience and flexibility, but weaken robustness and enforcement power. Viability and future partnership depend on commitment to partnership missions, as AC seems to be doing with respect to scientific work, and on political and social acceptance at all governance levels. Placing unresolved issues in the hands of partnerships helps them to consolidate (e.g. Norwegian – Russian Joint Fisheries Commission).

### **The Atlantic Ocean (The Atlantic Arc Commission)**

A predominant role at the regional sea level is played by the Atlantic Arc Commission (AAC), an association of local and regional Authorities (24 member regions) from 5 countries.

Drivers / challenges: Key drivers are accessibility (sea and land) of East Atlantic coastal regions, high seas transportation (position as gateway to maritime transport), sea energy potential, regional economic development and terrestrial and maritime spatial planning. With regard to governance challenges, it is pointed out that AAC acts as a lobbying organization (e.g. with regard to TEN-T networks), through a well-defined and articulated structure, but only regional and not national membership. Hence, a challenge is coordination with other interconnected bodies and influence beyond member organizations, integration of associate members and financial membership obligations (a membership counter-incentive). Substantive challenges include inequalities, since the member regions are below the respective development national averages, potential of coastal resources (renewable ocean energy, fish stocks etc). territorial cohesion and sustainable economic growth.

Significance of EU: AAC have prepared an Atlantic Spatial Development Perspective (ASDP), activated and directed by post-2006 EU policies. In 2011 DG Mare published a communication on a proposed Atlantic Strategy, to which AAC responded in 2012. Various events have been shaped by funding initiatives, e.g. under ERDF or Interreg (for broader Atlantic Area).

Stakeholder engagement: The process of ASDP building, followed by AAC, has become a model of participatory, bottom-up approach; its recommendations however, are not binding.

Outputs: AAC has been successful as a lobbying organization and a project partner. The production of ASDP is an achievement, in spite of its non-mandatory character, with an important spatial vision. Together with the Atlantic Area European Territorial Cohesion Operational Programme, ASDP had a strong influence on Interreg projects. AAC was successful in securing funds for Atlantis I programme. The business Plan for Atlantis II did not materialize but its ideas were incorporated in Interreg IIC.

Resilience of governance arrangement: AAC is a model of transnational governance with emphasis on maritime space and objectives directed to territorial cohesion. Interconnectedness with EU strategies and policies (e.g. Europe 2020 and Territorial Agenda) secures the sustainability of AAC, but its state of dependence undermines autonomy and self-determination. AAC is shadowed by EU's more legally-based and

powerful position. AAC's great strength is its holistic / inclusive approach to address territorial dimension of maritime activity. It enjoys high perception and high political and social acceptance and its approach raises its visibility among the regional and local communities involved.

### **Baltic Sea: Vision and Strategies around the Baltic Sea (VASAB)**

At the regional sea level the "Vision and Strategies around the Baltic Sea (VASAB) – The Baltic Sea Region cooperation of Ministers for Spatial Planning and Development" is an important governance arrangement. Its role has to be seen in connection with that of the Helsinki Commission.

Drivers / challenges: The main drivers are the Baltic's nature as a semi-enclosed sea vulnerable to pollution, the need for spatial integration and spatial development policies to correct differences and inequalities, particularly after the historic political changes of 1989, and at a later stage (1996) the recognition of the need for Maritime Spatial Planning and a holistic marine management approach. Governance challenges include regular high-level intergovernmental cooperation, operation of supporting services, integration in larger political structures (e.g. the Council of Baltic Sea States), harmonization of different national spatial planning systems, creation of linkages with global and EU governance arrangements and procedures, transnational cooperation in sea and land space planning and management (with a long horizon up to 2030) and effective operation of a Joint Working Group VASAB-HELCOM for MSP. Substantive challenges include the reduction of territorial disparities in the region, sustainable development of coastal zones and islands, contribution of the Baltic Sea to regional development (maritime transport, industries, tourism, recreation, fisheries, ports), transnational spatial planning and MSP, and integration of transnational development initiatives. Above all the challenge is the reduction of pollution and pressures on Baltic marine ecosystem and inland waters, caused by factors such as marine pollution, eutrophication, sea transport, fishing etc.

Significance of EU: The Baltic Sea Region as understood by VASAB includes eleven countries, of which eight are EU member-states. Economic integration between old and new member states of the EU as well as between EU and non-EU countries is on-going. VASAB provided support of, and input to, Interreg projects. However, the fragmentation of the long-term perspective for territorial development into separate sectors is similar to that of EU's Baltic Sea Region Strategy.

Stakeholder engagement: Engagement finds expression in the operation of the Committee on Spatial Planning and Development of the Baltic Sea Region (CSPD/BSR) and the range of participants in it. Integration and cooperation with other pan-Baltic and European processes is a pillar of VASAB's success. There is need for stronger cross-sectoral cooperation and enhanced VASAB role in this direction, along with a stronger focus on transnational territorial and sea space planning.

Outputs: Activities gradually evolved and broadened, from learning processes and broad visions to regional networks, urban centre relationships, transport networks, research, cooperation, and economic integration. We need to stress the success in influencing EU

policy and Interreg projects, pioneering work in MSP resulting in the first MS Plan in Europe and the transfer of the concept to other regional seas.

Resilience of governance arrangement: Activation of country cooperation is a great asset. Problems of visibility and perception from the lay public's side are encountered, which demands better profile promotion. Problems are also the shortage of economic resources and the sectoral fragmentation of VASAB's visions and activities.

### **Baltic Sea: HELCOM (Helsinki Commission) – Helsinki Convention**

Drivers / challenges: The key drivers for the 1974 and 1992 Helsinki Conventions were the unique ecological value of the semi-enclosed Baltic Sea, its sensitive ecosystem and biodiversity and the existence of intense maritime and land based activities (shipping, renewable energy, fishing, oil and gas, infrastructure installations, sediment extraction). This is a typical regional seas convention with a holistic marine management approach, signed by 9 states and the EU. Interest in pollution expanded to further issues (policies, laws, regulations, human resources, and public awareness). HELCOM was charged with the task to protect the marine environment.

Significance of EU: The EU is one of the signatories of the 1992 convention. Placing HELCOM's activities under the EU legal umbrella enhances the chances of their implementation. The HELCOM Baltic Sea Action Plan (2007) is placed within the "environmental pillar" of the EU strategy for the Baltic Sea, while HELCOM coordinates regional implementation of MSFD. Funding is contributed by contracting parties and to a small extent by EU. EU activities are not always beneficial for HELCOM work. As stated in the case study, the Union's "Europe-wide standardised approaches in the EC's marine and environmental policy have partly been of no avail".

Stakeholder engagement: HELCOM objectives and actions are unanimously agreed. The commission has no enforcement powers but thanks to the participation of high level actors has become an important player in foreign affairs. Enforcement can only be secured through national governments. Agencies with observer status have an increasing role. Openness to the public is a distinguishing feature.

Outputs: HELCOM acts on the basis of a sound understanding of the ecosystem and issues manuals, guidelines and recommendations concerning coastal and marine habitats. HELCOM operates through subsidiary groups working with expert assistance on environmental assessment, pollution, habitats and biodiversity, marine protected areas, maritime issues and navigation etc. A joint working group with VASAB works on MSP (see separate case study) and the Baltic Sea Action Plan was adopted in 2007. HELCOM enjoys recognition for its scientific work, transparent procedures, impartial coordination and provision of valuable input to other *fora*.

Resilience of governance arrangement: HELCOM numerous recommendations are adopted by unanimity which adds to their status. Broad dissemination of information, publication of technical and popularized reports, accessibility to databases and meeting documents, all contribute to widespread acceptance. Negative prospects are due to the "soft law" character of the convention, the lack of powers of enforcement on national states, the failure of

contracting parties to implement several recommendations, and the disappointing improvement of the state of the marine environment in the last 30 years, in spite of achievements, which however may be due to EU directives and worldwide conventions. The limited integration of a key contracting party, Russia, is a further weakness. Nonetheless, HELCOM has been able so far to contribute to a better integration of Russia into pan-Baltic decision making. Enforcement and implementation are left to national states or to EU legislation. In fact, a negative trend is the tendency of EU (and HELCOM) members to effectively delegate their powers to the EU. On the other hand, HELCOM is successful as activator of networks and alliances.

### **Baltic Sea: MSP (Maritime Spatial Planning) Working Group / HELCOM-VASAB**

Drivers / challenges: As explained in the table on the Baltic Sea case studies, the Joint MSP working group was launched to help both HELCOM and VASAB work and assist coordination with the EU Strategy for the Baltic Sea Region and its Action Plan.

Significance of EU: MSP in the Baltic Sea Region grew out of an Interreg III B project. DG Mare of the European Commission is a participant in the working group.

Stakeholder engagement: The members of the working group are representatives of relevant ministries and government agencies, as well as DG Mare. They represent a balance of “environment” and “human activities” interests. Observers and guests are also present. Communication problems existed because of the different backgrounds of participants, whose understanding of MSP diverges, reflecting their “ecosystem” and “spatial planning” approaches and the absence of a common language. Secretariat support is provided from VASAB and HELCOM, sometimes with the integration of projects such as “Plan Bothnia”, a DG MARE project to implement MSP in the Bothnian Sea.

Outputs: Soon after the working group’s creation its “Broad-scale Maritime Spatial Planning Principles” were adopted by both HELCOM and VASAB. The group’s work plan is based on a 3-year mandate, in the context of which it compiles and disseminates information and has organized a forum for country presentations on national MSP approaches. The tasks of the group include support for MSP in the region, investigation of legislative basis, use of ecosystem approach in MSP, contribution to MSFD and Baltic Sea Action Plan, links with ICZM, development of a Spatial Vision for the Baltic Sea, a common approach with EU, organization of public communication events etc. The Spatial Vision is under preparation and is expected in 2013. It is likely to be accepted, but would require further elaboration and supervision

Resilience of governance arrangement: The group’s vision is MSP for every Baltic country, a goal which requires cross-border cooperation. Although this is already reflected in the group’s structure a number of challenges remain, concerning levels of implementation, different country and region situations, limited mandate, extremely tight schedule, finance and costs. The group is expected to make a valuable contribution to the justification of VASAB’s and HELCOM’s work and to ensure cooperation between two formerly competing organizations. The contribution to information exchange on MSP, to the “growing together” of actors and to the stabilisation of cross-border governance structures must be strongly emphasized.

## **Black Sea: The Black Sea Regional Energy Centre (and Black Sea Synergy)**

Drivers / challenges: The focus of the case study is the Black Sea Regional Energy Centre (BSREC), created under the EU Black Sea Synergy communication of 2007. BSREC acts as a focal point for energy related activities, as explained in the table on Black Sea case studies. BSREC also acts as a Bulgarian energy society. The main governance challenges are the relation of the EU Synergy policy with other established EU policies, especially those regarding non-EU member states, and the harmonization of BSREC's activities with those of Black Sea countries and with EU energy policies. The key substantive challenge is innovation in energy applications, in line with EU electricity and gas policy, market practices, and global change in the energy field.

Significance of EU: The EU 2007 Black Sea Synergy synthesizes the point of view of the European Union on the cooperation with the countries around the Black Sea. In reality, it is not an independent strategy, but rather a complementary regional initiative, because of the pre-existence of ENPI and policies regarding Turkey and Russia. Among the Energy Centre's objectives is the promotion of energy policy application and market reform, with reference to EU Directives on electricity and gas, the European Energy Charter and the world-wide accepted restructuring process. The Centre, together with EU and local consultants, has developed projects to further its objectives and those of EU political and legislative documents and is taking initiatives for the harmonization of energy legislation of Black Sea countries with that of the EU, to improve the investment climate and to encourage foreign investments..

Stakeholder engagement: The BSREC objective is to promote the role of regional authorities in a Black Sea multi-level governance framework through the cooperation of regional authorities, national and European institutions and various stakeholders.

Outputs: Experience has proven the validity of the principles contained in the 2007 Black Sea Synergy Communication. The initiative's main goal remains to invigorate action at regional level promoting stability and prosperity in the Black Sea area. It is a flexible, inclusive and transparent framework, based on the common interests of the EU and of all Black Sea states.

Resilience of governance arrangement: There is no specific information regarding the resilience of the Energy Centre's governance arrangement.

## **Black Sea**

### **Sub-seas case study: The Commission for the Protection of the Black Sea against Pollution (Black Sea Commission)**

Drivers / challenges: The Black Sea is a semi-enclosed sea with large rivers flowing into it. The Black Sea receives river waters from over 20 countries. It is "the largest, low tide, brackish-water intercontinental sea" and vulnerable to human pressures. There are signs of pollution reduction and of ecological recovery, but environmental degradation continues. The case study contains extensive geomorphological and biochemical information. The 1992 Bucharest Convention created the Black Sea Commission, in which 6 coastal states are



represented, including 2 EU countries. Policy measures cover pollution reduction from rivers and shipping, regulatory and legal tools, conservation of biodiversity, protected territories, ICZM etc.

Significance of EU: The Black Sea Commission cooperates with other regional bodies, NGO Forum, international organizations and the EU. A constant need is to find funding sources. It is to be noted that in the context of the 2007 EU Regional Cooperation Initiative, known as the EU Black Sea Synergy, funding is being made available through ENPI and ERDF (see however remarks in case study on the Black Sea Energy Centre and the EU Synergy).

Stakeholder engagement: The Black Sea Commission is managed by representatives of the contracting parties. The Commission functions include implementation of the convention, recommendations, proposals for amendments, criteria for prevention / control of pollution, cooperation with other international organizations, adoption of measures etc

Outputs: Following the creation of the Commission in 1992 the Black Sea Strategic Action Plan (SAP) was produced in 1996 (amended in 2002). A Transboundary Diagnostic Analysis was appended. The protocols of the convention dealt with the protection of marine environment from land sources, oil, harmful substances, dumping, biodiversity and landscape conservation. The main principles embedded in SAP were concept of sustainable development, precautionary principle, anticipatory actions, clean technologies, use of economic instruments, environmental and health considerations in all policies, cooperation among all coastal states and with Danube basin states, stakeholder involvement, transparency and public participation. A Ballast Water Management Convention was signed in 2004. The Second Strategic Action Plan appeared in 2009. The principles remained the same with the addition of the “polluter pays” principle, sustainable agriculture and accessibility to information. An analysis carried out in 2007 reconfirmed problems of eutrophication, changes in marine living resources, chemical pollution, biodiversity / habitat changes and alien species invasion. Simulation exercises on search & rescue and oil pollution alarm and training courses have been carried out.

Resilience of governance arrangement: There is little information on governance resilience as such, but there is no doubt but it must be under strain given the persistence of environmental degradation problems,

## **Black Sea**

### **Sub-seas case study: Global Ocean Observing System (GOOS) in the Black Sea Area**

Drivers / challenges: GOOS is a permanent global system (signed by 6 countries) for observation, modelling and analysis of marine and ocean variables to support operational ocean services worldwide. The Cooperative Marine Science Programme had started in 1991 with 5 Black Sea countries and USA, and support from IOC (Intergovernmental Oceanographic Commission/ UNESCO). IOC launched in 1994 a Regional Committee and a Regional Programme. The IOC Black Sea Regional Committee (BSRC) was established in 1995 and a year later BSRC started two pilot projects, one of which was GOOS, which is concerned with descriptions and forecasts. The role of GOOS for the sustainable use of the Black Sea is an important contribution to marine activities. Benefits are expected for all the involved countries, even those like Turkey and Russia with access to other seas.

Significance of EU: The EU funds individual projects. It funded the project ARENA in 2003 (regional capacity building and networking to upgrade monitoring and forecasting), which was succeeded by the ASCABOS project. The objectives of ASCABOS were coordination of infrastructure, building of scientific capacity, updating of historical databases and metadata bases, application of modern technologies etc.

Stakeholder engagement: GOOS is comprised of several bodies sanctioned by international organizations. These bodies deal with strategic direction, scientific advisory services, regional alliances and technical matters. The collaboration of Black Sea states will have an impact on marine related industries and services.

Outputs: GOOS started in 1996 and its goals were defined in 1999. Its Memorandum of Understanding was agreed by Black Sea riparian countries in 2001. The Ocean Data and Information Network for the Black Sea was established in 2007. The major topics of Black Sea GOOS are coastal observations, sea level measurements, remote sensing, buoy measurements of basin circulation, regional weather forecasting and improved ecosystem modelling. Its aims are operational oceanography, cooperation with international bodies, capacity development, use of technology and computer systems, data exchange, understanding and improving of Black Sea ecosystem and assessment of economic and social benefits. An additional aim is collaboration with Euro-GOOS and Med-GOOS.

Resilience of governance arrangement: There is no specific information on governance resilience as such, but it is obvious that effective coastal state collaboration and funding are crucial issues, given the nature of GOOS activities which rely on collaborative efforts, systematic observation, data development and exchange, use of advanced technology etc.

### **Mediterranean Sea: Protocol on Integrated Coastal Zone Management in the Mediterranean**

The most important governance arrangement at the regional sea level is the Protocol on Integrated Coastal Zone Management (ICZM), the 7<sup>th</sup> Protocol of the Barcelona Convention, signed by 15 countries and the EU, and an important achievement of UNEP's Mediterranean Action Plan (MAP).

Drivers / challenges: The protocol was inspired by the Mediterranean Sustainable Development Strategy (MSDS) and its origin is clearly environmental. Drivers include the human and physical geography of a semi-enclosed and diverse sea, conflicts between economic activities in coastal areas (shipping, fisheries, real estate development, tourism etc), the volume of third-country sea-borne trade, overfishing, fragility of, and threats to, ecosystems and pressures on natural resources. Governance challenges include the facilitation of dialogue and compromise, arrangements like participation, mutual understanding, transparency and cross-sectoral organization, as well as use of appropriate analytical, planning, funding and consultation instruments. Limited tradition for cooperation and joint work is a handicap. These challenges determined the envisaged outcomes from ICZM implementation, in spite of inadequate multi-level coordination, country variations and poor information quality. On the information problem a study has been produced by DG Environment. The protocol aims at integrated management of coastal zone and a common

ICZM regional framework, embracing a broad range of coastal economic activities. Important substantive challenges are complementarity of land and marine areas, transboundary cooperation, infrastructure provision, links with terrestrial planning, spatial planning in coastal areas, incorporation of ecosystem approach, climate change and pressures on coastal zones.

Significance of EU: ICZM policies for the Mediterranean emanate from MAP and EU policies. MAP's ICZM activity involves a complex network of actors. The EU strongly supports ICZM and has funded several initiatives and projects. Its non-binding recommendation on ICZM, a top-down process, handled by DG Mare for IMP and DG Environment for MSFD, invited member states to produce relevant national strategies. The protocol is a legally binding instrument, above the EU directives, but an eventual EU ICZM directive might be more effective.

Stakeholder engagement: The protocol's contracting parties aim at integrated management of coastal zones but limited tradition to organize a common Mediterranean space and little capacity to reach agreements are a serious handicap. Little progress of ICZM implementation exists even in countries developing national strategies. Some progress has been registered in terms of coordination between governance levels and of public involvement, but more has to be done.

Outputs: After the ICZM Protocol, a project linked to MAP III (2012-2019) was launched for 2008-13 called "GEF Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (LME)" with participation of 12 countries and also MAP, World Bank and other organizations. A range of relevant sectoral instruments are being used currently in the context of the protocol, concerning river basin management, spatial development, sustainable development, biodiversity and climate change. Weaknesses to be addressed include land and sea space planning, implementation by member states, cooperation in regional seas, synergies, information, reporting and evaluation. Barriers include absence of a Mediterranean spatial vision, delays in national legal frameworks, role of ICZM in reconciling land and sea issues, short-lived projects, relentless coastal development, public perception of ICZM as a narrow environmental concern, inconsistent and patchy frameworks and poor visibility of ICZM. Narrow emphasis is put on projects and sectors, due to limited experience. A recent encouraging turn towards strategic issues is in evidence.

Resilience of governance arrangement: The protocol remains fragile in terms of its consistency and achievements, because of maritime boundary conflicts, narrow outlook of administrations, extent of high seas which causes planning difficulties, isolated maritime arrangements, problematic enforcement, difficulties in maritime zone delimitation, application of protocol only in territorial seas, overlapping zones, failure of certain countries to ratify UNCLOS and narrow insistence on technical – scientific aspects, at the expense of political ones. Still, the protocol could help conflict resolution, if top-down and bottom-up approaches are combined. ICZM has received a relatively significant attention by states, but MSP is so far being ignored, because of the absence of transboundary cooperation. The effect of EU law is discernible, which can be positive, but subsidiarity must be respected.

## **North Sea: The OSPAR Commission**

The 1992 OSPAR Convention has been the result of merging and modernizing of two former conventions, the Oslo Convention on dumping and the Paris Convention on land based sources of pollution. The OSPAR Commission, created by the convention, is a typical example of regional sea commission aiming at interstate cooperation (among 15 states and the EU).

Drivers / challenges: Drivers are evident in the Convention's 5 annexes of which three deal with pollution (from land based sources, dumping or incineration, offshore sources), one with quality of marine environment and one with protection and conservation of ecosystems and biological diversity of the maritime area. Both convention and commission are clearly environment-oriented. Governance challenges are evident in the structure and membership of the Commission. 15 countries (plus the European Commission) participate but not all of them are coastal, as some are included because of rivers crossing their territory and flowing into the North Sea. The structure supporting the OSPAR Convention is well-organized (commission, 5 supporting thematic committees, working groups). This structure is capacitated for both binding and non-binding decisions as there is a network of investigators and prosecutors to help enforcement of the latter. OSPAR adopts a series of principles to achieve environmental objectives: The precautionary, the polluter pays, best available practices and techniques. A serious challenge is interaction with other regional conventions. This is possibly accommodated by the observer status offered by OSPAR to various organizations. Governance innovations are in the making to allow adaptation to EU marine and maritime policies. OSPAR's 5 thematic strategies make clear the substantive challenges it faces. These strategies concentrate on biodiversity / ecosystems, eutrophication, hazardous substances, offshore industry / energy and radio-active substances. MSP is seen by OSPAR as a tool to ecosystem approach and as a restricted field to deal with the objects of MSFD. Important economic activities (e.g. fisheries and shipping) are beyond the control of OSPAR, which has to turn to other organizations for a response to their impact.

Significance of EU: The EU is one of the contracting parties. OSPAR constitutes an inspiration for EU but EU (through MSFD) encourages OSPAR to reposition itself. Interactions exist with other regional conventions, UNEP and EU, especially with regard to MSFD implementation.

Stakeholder engagement: The case study uses effectiveness and inclusiveness as governance evaluation criteria (see Wadden Sea case study). The non-binding status of most OSPAR decisions and its tendency to make simple recommendations led to criticism that "OSPAR is less relevant when it comes to taking concrete policy measures". Weaknesses include the dominance of national interests and the reluctance of participating (and heterogeneous) countries to cooperate.

Outputs: These are primarily represented in OSPAR's strategies, decisions (binding or not), principles, scientific work. The convention provides for the use of self-assessment criteria, but there is criticism of doubtful progress with respect to biodiversity and MSP and lack of authority regarding fisheries and oil industry. The major virtue of the partnership is that it follows the principles of good governance.

Resilience of governance arrangement: Resilience weaknesses are dealt with above in the paragraph on drivers / challenges and stakeholder engagement. OSPAR could take MSP on board and thus broaden its remit and become a sustainable partnership. MSP and MSFD are OSPAR's future challenges.

### **9.3 Sub-regional Sea Case Studies: Reflections and comments**

Sub-regional sea case studies are presented in separate paragraphs on drivers / challenges, significance of EU, stakeholder engagement, outputs and, finally, resilience of governance arrangement. The reader is advised to consult first tables 9.1 to 9.15.

#### **Arctic Ocean**

##### **Sub-seas case study: Maritime Delimitation Treaty between Norway and Denmark/Greenland**

Drivers / challenges: The key issue is the delimitation of maritime zones in the Arctic Ocean, where, as elsewhere, the primary legal instrument is UNCLOS. In 2006 an agreement was signed between Denmark (together with Greenland) and Norway on the maritime boundary between Greenland and the Norwegian island of Svalbard. However, controversy still lingers with regard to its interpretation, because of disputes regarding Norway's rights and those of contracting parties of the 1925 Spitsbergen (or Svalbard) Treaty, which according to one interpretation gave commercial rights to third countries which are still in force. Sea waters in the area are home to key maritime ecosystems and nursery grounds for fish stocks, subject to Norwegian protection measures and sensitive to climate change. Overharvesting of natural resources and pollution are important challenges. Svalbard has mining and mining company towns, but no oil activity or native population, although it is a tourist destination. The 2006 treaty regulates how the parties should deal with mineral deposits in or on the continental shelf. There is uncertainty over whether the dispute will be taken to an international court and over consequences. The Norwegian position is that Svalbard has no continental shelf of its own. Ultimately what is at stake is the right of non-Norwegian fishing vessels to fish in 200-mile zone of Svalbard and of foreign oil companies to drill on the continental shelf.

Significance of EU: The EU is not directly involved in the issue, but it has been argued that it is an independent actor in the Svalbard offshore controversy.

Stakeholder engagement: In addition to UNCLOS and delimitation treaty, the most important governance bodies at the sub-regional sea level are the Arctic Council (AC) and the Nordic Council of Ministers. Norway and Denmark currently hold opposing views, with Greenland, the Faroe Islands and the EU being independent actors.

Outputs: Given the legal uncertainty, it is perhaps too early to speak of outputs. The role of AC could potentially be important. But AC is a forum for soft law, which deals with low

politics issues, with the result that there are several governance and regulatory gaps. Restricted participation gives the AC limited international role. Lack of structural funding is also a weakness. Project funding is uncertain and difficult.

Resilience of governance arrangement: The arrangement emanating from the treaty as such is still unclear because of the legal controversy. As to the role of the AC, it has by necessity to rely on consensus-based policy recommendations (see Arctic Ocean regional sea case study). The Nordic Council of Ministers can make decisions, but the dispute over maritime zones involves many additional countries.

## **Arctic Ocean**

### **Sub-seas case study: Maritime delimitation treaty between Norway and Russia (Barents Treaty)**

Drivers / challenges: In 2010 Norway and the Russian Federation signed the treaty on maritime delimitation and cooperation in the Barents Sea and the Arctic Ocean. The treaty marked an end to an almost 40- year long border dispute; it applies to Norway's and Russia's respective EEZs and the continental shelf within and beyond 200 nautical miles. Negotiation had started unofficially in 1967 and formally in 1974. The two countries had disagreed on the method of demarcation and the interpretation of UNCLOS, but an agreement was eventually reached. The treaty will ensure continuation of the Norwegian-Russian fisheries cooperation and will govern cooperation on the exploitation of any petroleum deposits that extend across the delimitation line. The Barents Sea is an area of high economic interest due to valuable natural resources, particularly fish, oil and gas. It is expected to hold vast hydrocarbon resources (crude oil, natural gas, natural gas liquids). Climate change, overharvesting of natural resources and pollution are important challenges.

Significance of EU: The EU had no involvement in the treaty. Certain clauses are indirectly related to EU policy, e.g. that on fisheries which accepts "the principle of allocation of fishing opportunities based on predictable shares".

Stakeholder engagement: The 1982 UNCLOS is the primary international legal instrument governing maritime jurisdiction and boundary delimitation. It is the legal basis for the Barents Sea Treaty. The most important governance bodies at the sub-regional sea level are the Arctic Council (AC), the Council of the Baltic Sea States (CBSS), the Barents Euro-Arctic Council (BEAC), the Nordic Council of Ministers and the Norwegian-Russian Joint Fisheries Commission. The AC is a high level intergovernmental forum to provide a means for promoting cooperation (see the Arctic Ocean regional sea case study). It is the most important governance body at the level of the Barents Sea, the main focus of which is on environmental issues and on the involvement of indigenous people.

Outputs: The case study focuses on the extent to which governance arrangements have been sufficiently robust and powerful to deal with the complex cooperative efforts in the Barents Sea. The AC's main contributions are scientific knowledge and assessments (regarding its limitations see the other Arctic Ocean case studies). Obviously, the key drivers to the Barents Sea treaty were legal as well as economic and political. Norway and Russia shared a common interest of establishing a boundary which could ensure predictable and legal use of resources. The treaty has added to the orderly governance of the Arctic region.

It regulates how vast sea areas containing very large biological and mineral resources should be divided. The negotiations comprised delimitations for both continental shelf and other maritime zones. The treaty ensures predictability and legal certainty for enforcing environmental rules and fishery regulations.

Resilience of governance arrangement: The AC and other regional councils have no regulatory authority and rely on consensus. Social capital is critical in partnership cooperation, but fragmented coordination and absence of “hard politics” in the cooperation (of AC) is no doubt a weakness. However, AC may grow into a more important governance arrangement as more states are represented in it. The Norwegian – Russian Joint Fisheries Commission, although more specialized, is an important regional cooperation in the Arctic Ocean.

## **Atlantic Ocean**

### **Sub-seas case study: The British – Irish Council**

Drivers / challenges: The original formal driver was the agreement of British and Irish governments (1998) for harmonious and mutually beneficial development, covering 5 seas. The challenge was to undertake work on issues of mutual interest, related to MSP, renewable energy and climate change. Priority areas are agriculture, regional issues, tourism, energy and EU issues. Current work includes environment, transport, collaborative spatial planning and energy. Of particular relevance for ESaTDOR are transnational cooperation and aspects of coastal and marine resource management. Both MSP and ICZP could be strong drivers in the future.

Significance of EU: The relevant legal provisions and policies for the work of BIC result from three levels, i.e. international, EU or member administrations. The full range of UK terrestrial and marine planning legislation is of relevance. EU directives are not binding for partners such as the Crown Dependencies. When EU (and BIC) members are bound by EU policy there is no scope for discussion in BIC. BIC has no specific funds but aims at Interreg funding for projects. A positive factor is ministerial support for BIC’s work, which helps lobbying at EU level.

Stakeholder engagement: BIC members include UK and Irish governments, UK devolved administrations and Crown Dependencies. Meetings take place at various levels (summit or sectoral), with balance in favour of high level discussions. Other officials and few stakeholders are occasionally present. Neighbouring countries, e.g. France, are excluded. Operation is secured by consensus and through consultation. Discussions are reported in Council communiqués and through BIC’s secretariat. BIC does not make binding decisions. By necessity a soft approach is adopted.

Outputs: Within BIC an Environment Group began work in 2000, a Collaborative Spatial Planning group in 2009 and an Energy group in 2009, with 2 subgroups. The CSP group explores strategic and cross border issues. Aspects of ICZM, marine management and meeting OSPAR objectives have appeared in environment group discussions. Outputs include information sharing, research and feasibility studies and political lobbying. Collaborative spatial planning group made a bid for a ESPON project, with lead from

Scotland. Environment group has been active in a marine litter project and in climate change remodelling. The Energy group produced a position paper on ocean energy sector and new renewable energy technologies.

Resilience of governance arrangement: The fact that devolved UK administrations pursue their own agendas with regard to MSP and ICZM is a governance problem. Finding topics of relevance to all partners is a challenge. However, BIC maintains the ability to mediate. It is not a vehicle for conflict resolution but rather for finding areas of possible agreement. BIC, in spite of its strengths (adaptability and flexibility) can be considered a “missed opportunity”, but in the circumstances more fundamental changes are unfeasible. There is a possibility of creating a MSP group in the future. BIC provides a unique opportunity for transnational cooperation in marine and coastal issues. At present there are abundant opportunities of networking. A soft governance approach has been followed, with few examples of success, which may be a weakness, but things may change.

## **Atlantic Ocean**

### **Sub-seas case study: The Solway Firth Partnership**

Drivers / challenges: Coastal management, environmental sustainability allowing the economy of the area to prosper and effective stakeholder involvement were from the start, in its 1998 strategy, key drivers for the activities of the partnership, with issues such as fisheries conflicts, aquaculture and wind farming playing an increasing role. However, cross-border cooperation became all important following statutory marine planning developments in England and Scotland, around 2010.

Significance of EU: The partnership was a response to EU ICZM policy to resolve uncoordinated management of the firths. The non-binding nature of the EU ICZM recommendation could be at the root of the lack of powers at the disposal of the partnership. In addition, EU funds tend to be attracted to sectors unrelated to the partnership’s field of action, while English and Scottish interest in EU MSP and ICZM policies remained low. The key management issues are situated in national and (maybe mainly) local drivers, rather than European.

Stakeholder engagement: The Solway Firth area includes various administrative areas and planning authorities and has no clear inland boundary. A variety of key public agencies are involved in the partnership. Stakeholders and consultation helped to raise the profile of local issues and of joint marine planning. The partnership has maintained an open character, with corporate and ordinary members, and acts as a forum for discussion and as a neutral facilitator for resolving disputes. It has been successful in maintaining an area-wide approach. The partnership is a company of charitable status funded by public sector agencies.

Outputs: The strength of the partnership lies in its effective stakeholder engagement and participation. The critical issue is the ongoing work at national level (English and Scottish) on marine planning and its consequences for the partnership. There is a need for high level agreement on cross border planning, because arbitrary boundary delimitation of marine areas, resulting from the dynamic character of the marine environment, must be addressed through joint planning. As it is, boundaries prevent a holistic approach, create a barrier of



differences in legislation and lead to an uneven implementation progress. A better understanding of human uses and their impact on coastal and marine ecosystems will help the process.

Resilience of governance arrangement: The partnership is a valuable resource for bringing together stakeholders. It may lack decision making powers, but is sustained because of its perceived neutrality and can boast achievements in communication, awareness raising, networking, conflict resolution, and maintenance of a cross border perspective. The danger of losing its role under the new marine planning policy and legislation and the problem of uncertain funding are still present

## **Baltic Sea**

### **Sub-seas case study: BaltSeaPlan Project - Trans-boundary Maritime Spatial Planning in the Baltic Sea / The case of the Pomeranian Bight**

Drivers / challenges: The main challenge of the 4-country Pomeranian Bight/Arkona Basin project is simply its nature as the first truly trans-boundary maritime spatial planning process in the Baltic Sea. The area is an environmentally sensitive and already heavily used part of the Baltic Sea, with great economic and ecological value. It is basically a rural area, but possesses a range of activities (shipping and ports, wind energy, cables and pipelines, tourism and sea leisure, fishing, sand and gravel dredging, marine research). The project is a non-binding process and includes several tasks (legal / organizational framework, principles, data, stakeholders, conflict resolution, use of computer based decision-making tool, maritime spatial plan).

Significance of EU: The project is one of seven pilot studies of one of the EU initiatives (BaltSeaPlan) of the Baltic Sea Region Programme. The planning process involves a 9-step approach (as in BaltSeaPlan).

Stakeholder engagement: Given the legal framework of the participating partners, MSP has to be carried out at different governance levels and administration structures. Two groups of actors are involved, i.e. partners and stakeholders. There is a variety of partners (from 4 countries) with differences in competences and unequal powers. This results in asymmetries, functional gaps, tensions and problems of equality in collaboration. The key aim is the production of a maritime spatial plan, which creates challenges for management and stakeholder involvement. The process results are non-binding and this inevitably creates a certain amount of confusion. Further obstacles are the difficulties of organizing meetings, the inevitable postponement of stakeholder events till a later stage and the holding only of national events.

Outputs: Achievements include the Maritime Spatial Plan, for the first time ever, data collection and harmonization, legal framework assessment, assessment of organizational options, experience generation and impact on national policies. The MSP is not just a tool for environmental protection or industrial development, but also a tool for smart use of the sea. The MSP has costs but generates societal gains, including enhanced investment climate. It depends on good transboundary communication and workflow and on hard skills. Legally binding and formal procedures are important, but, equally, the informal approach is of great value. The informal process may lead to formal planning.

Resilience of governance arrangement: A uniform solution for the allocation of sea space is not feasible, because of different national approaches and frameworks, coordination challenges, the problem of legal status of the planning process and of the maritime spatial plan, fragmented responsibilities and the ensuing conflicts. However, the process has both shortcomings and advantages, e.g. frank and constructive cooperation. The present imbalance of actors could be remedied. Inputs from stakeholders are hampered by the impracticality of organizing events, time limitations, lack of funds and data shortage. Data accessibility, digitalization and databases are all-important. Certain misconceptions among the business community caused an opposition to MSP.

## **Mediterranean Sea**

### **Sub-seas case study: Adriatic – Ionian Initiative (All) and Adriatic Sea Partnership (ASP)**

Drivers / challenges: The Adriatic Sea is an endangered, sensitive region, with diverse activities (above all tourism, recreation, transport of energy resources), a vulnerable marine ecosystem, world heritage areas and sharp differences between the western and eastern coasts. It is a semi-enclosed sub-sea, with 7 bordering nations, EU and non-EU members. The Italian coasts are under pressure and eastern coasts face increasing threats. The economy undergoes a transition stage in the eastern countries and shows signs of stagnation in some Italian regions. High exchange (people, capital, goods, knowledge, technologies) takes place between the two sides of the Adriatic. There is a need to balance economic development and environmental protection, to raise awareness and take necessary measures. A new approach to environmental protection and sustainable development gradually evolved to meet the requirements of the Mediterranean Strategy for Sustainable Development (MSSD). Among the initiatives launched in this context were the Adriatic – Ionian Initiative (All / 2000) and the Adriatic Sea Partnership (ASP / 2006). The case study attempts to bring together various existing mechanisms and cooperation in the Adriatic Sea.

Significance of EU: The EU has no formal role in All, but remains close to it. All strives to promote EU membership for its member countries. ASP hopes to obtain EU funds and tries to adapt its actions to EU policies and directives. Since 2010 All works towards the creation of a Macro-Region of the Adriatic – Ionian Sea Basin to open the road for a EU Strategy for the region.

Stakeholder engagement: The major goal of ASP, which has 12 partners (ministries, agencies etc), is to establish an international body as common platform and as magnet of funding and to maintain a link with the Mediterranean Action Plan (MAP), EU and other initiatives and partnerships. An impediment is the unequal institutional systems of Adriatic countries. All has 8 member countries and aims at improving cooperation in various fields of action (including maritime cooperation). All works currently on awareness raising and approval of 3 protocols (SMEs, rural areas, tourism). ASP was launched in the context of MAP with the aim of promoting environmental protection and sustainable development and of supporting joint action.

Outputs: ASP is the beginning of a process to facilitate project preparation and implementation, through joint action. The partnership offers a range of services and encourages openness and coordination with other initiatives. ASP has made recommendations, on the basis of All proposals, for (a) contingency plan for the Adriatic with regard to pollution from shipping, (b) ballast waters management plans, and (c) ICZM and a marine observing system. In 2003, All adopted the document “Adriatic Action Plan”. In 2010 it adopted protocols for SMEs, rural areas and tourism (including marine issues). Transport and maritime cooperation, to prevent pollution, is a priority field.

Resilience of governance arrangement: Developments so far confirm that the elements are in place for a governance system in Adriatic, which is doubtful for the Mediterranean as a whole. All becomes established as a point of reference, keeps the dialogue open and accords priority to maritime affairs and pollution. Cooperation works well with the exception of fisheries.

## **Mediterranean Sea**

### **Sub-seas case study: The MedGovernance Partnership and Project**

Drivers / challenges: The MED Governance (MEDGov) Partnership was launched in 2009 in the context of the Interregional Cooperation MED Programme, an EU transnational cooperation programme. The transnational nature of MEDGov programme facilitates management of territorial challenges beyond national boundaries, such as environmental risk management, international business and transport corridors. The MEDGov project develops a network of research institutes, regions, key institutional and non institutional agents, which are able to support the development of Mediterranean Governance with regard to key issues of sustainable development. The project dealt with case studies/pioneer examples affected by international developments. The objective of MED Governance has been to promote the role of regional authorities in a Euro-Mediterranean framework.

Significance of EU: MEDGov is an EU transnational cooperation programme placed under the “Territorial Cooperation objective” of the EU Cohesion Policy. The MEDGov project is one of the 104 projects that have been running under the MED Programme co-funded by the European Regional Development Fund (ERDF). MEDGov made possible the adoption of an integrated point of view on “Mediterranean policies” in relation to a range of EU policies and instruments. The project outlines three different scenarios possibly leading to the emergence of an integrated Mediterranean Strategy. The first and second scenarios assume EU initiatives toward integration; in the third scenario integration is led by bottom-up processes.

Stakeholder engagement: MEDGov project and partnership is a grouping of six Mediterranean regions (Andalusia, Catalonia, Provence-Alpes-Côte d'Azur, Piedmont, Lazio, Tuscany) together with certain of their provincial/local authorities, associations and research, cultural and training institutions. The partners are working together to strengthen the competitiveness, employment and sustainable development of the area. Horizontal cooperation and networking among the research institutions of the involved regions have developed.

Outputs: As stated already MED Governance was launched in 2009. The following event was the MED Declaration for a Euro-Mediterranean Space. In 2010 the Integrated Mediterranean Strategy Action Plan was released and in 2011 the MED Governance final policy paper was published. The ultimate aim of MEDGov is the coordination of regional plans towards a single Mediterranean framework; also building the capacity for collaboration on Mediterranean issues and elaborating common policies at the Euro-Mediterranean level. The project aims at strengthening “regional influence capacity” and addresses marine planning through the transport field, focusing particularly on the development of Motorways of the Sea (MOS).

Resilience of governance arrangement: The regions and all the partners in MEDGov are committed to taking forward and stepping up their actions toward a new, more inclusive partnership-based Mediterranean governance system that contributes above all to a sustainable and cohesive development of the Mediterranean Sea area as a whole. However, a deep gap remains between internal and external Mediterranean policies and instruments which delays the emergence of a Mediterranean governance framework. The development of MOS is among the partnership’s interests that face a significant governance gap.

## **North Sea**

### **Sub-seas case study: The Trilateral Wadden Sea Cooperation**

Drivers / challenges: The Trilateral Wadden Sea Cooperation (TWSC) was created in 1982 and renewed in 2010 as “a pioneering model for the protection and management of a transboundary ecological system”. What prompted it were the ecological value of the area, economic activities (shipping, ports, natural gas, wind farms, dredging of sand, fisheries, tourism), conflicts between uses and human impacts on the ecosystem. The main drivers are neatly expressed in the goals of the first Wadden Sea Plan of 1997: healthy environment, biodiversity, sustainable use, maintenance of values, management of human activities, community involvement. The key aim is nature conservation, with emphasis on seals and waterfowl protection.

Significance of EU: According to the 1982 declaration the cooperation aimed to provide a consultation forum to coordinate activities and measures to implement international and EU legal instruments. Focus of the 2007 evaluation of the cooperation were the relevance of the cooperation, its legal status and governance, its secretariat, its relations to international and EU legislation, its stakeholder relations, and its finances. Furthermore, as explained in the case study, the Wadden Sea Plan of 2010 aims to ensure a coordinated and consistent implementation of the European legislation in a transparent way, although acknowledging diverging interpretations of the EU Habitat Directive. It is significant that the cooperation does not have a separate task group for EU policy. The fact that the EU legislation is focused on national implementation by member states and does not recognize the concept of regional / transboundary implementation may be considered as a hindering factor.

Stakeholder engagement: The TWSC is a formal, but not legally binding, cooperation, a forum for mutual consultation. The cooperation aims at various protection levels from international to national and, hence, employs a variety of protection instruments, depending

on each country. Cooperation with stakeholders is a necessity. New governance structures were introduced in 2010, including thematic task groups and a stakeholder forum.

Outputs: The greatest achievement was to have the area declared as a UNESCO World Heritage Site (2009). A Wadden Sea Plan (WSP) was produced in 1997 and a new one in 2010. The 2010 WSP is a framework for integrated management. It contains targets, policies etc and ensures implementation of EU legislation. The cooperation evolved gradually from nature conservation to sustainable development and an integrated approach. In the 2007 external evaluation the TWSC is described as “the most advanced and effective international cooperation in the world for a trans-boundary wetland of international importance”, but there is still room for improvements. The recommendations of the evaluation were adopted in 2010.

Resilience of governance arrangement: The criteria used in the case study to examine governance arrangements were effectiveness and inclusiveness, in spite of the difficulty to measure the former. As to inclusiveness, a distinction is made between involvement and participation. The cooperation has been successful, but disagreements exist over the degree of its effectiveness, because of lack of mandate and non-binding status, political change of mind in the Netherlands over particular issues, country differences in terms of implementation, EU reliance on member – countries for conservation policies, unwillingness of the fisheries industry to participate and unequal achievement of sectors and areas. The balance of TWSC’s work is positive and the cooperation proved capable to adapt, although individual countries still pursue their own approaches. The option to replace cooperation with a convention has been rejected.

## **North Sea**

### **Sub-seas case study: Flemish-Dutch cooperation on the Scheldt estuary**

Drivers / challenges: The Scheldt estuary, in fact the “Western Scheldt” (Westerschelde) estuary, is a process of Flemish – Dutch cooperation, currently based on the Scheldt treaties of 2005, which resulted from the 2001 Long Term Vision for 2030 and the Scheldt Estuary Development Outline for 2010. The estuary is a valuable ecosystem and tidal area, one of the few remaining natural estuaries in North West Europe, with important economic functions, such as navigation, ports (including Antwerp), recreation and fisheries. It has an important function as a spawning area for birds. The cooperation aims at pursuing a sustainable and balanced policy of environmental and flood risk protection. The case study is an examination from the stakeholders’ perspective. The authors used the criteria of effectiveness and inclusiveness (see the Wadden Sea case study).

Significance of EU: The relevant levels of governance are international, European, bilateral, national / international conventions and EU directives. Relevant from the perspective of nature conservation are especially the Ramsar Convention and the EU Birds and Habitats directives. The issue of water quality, including the implementation of the EU Water Framework Directive is covered by a separate Scheldt Treaty. In view of Dutch objections regarding the implementation of parts of the Scheldt treaties, the European Commission put recently pressure on the government of the Netherlands to comply with the Habitats directive.

Stakeholder engagement: The Flemish – Dutch Scheldt Commission (VNSC) has the charge to realize the cooperation's objectives. Stakeholders contribute through an advisory organ. The cooperation aims at promoting politically and socially supported decisions. Individual projects (in 4 thematic programmes) were the responsibility of public administrations, with stakeholder input provided for each project separately. Management has so far proved successful.

Outputs: The 2010 Development Outline 2010 is a new way of looking at cooperation and illustrates the evolution from conflict to cooperation, then common policy and management. The older plan for flood risk safety has been incorporated into it. The challenge was to combine the goals and functions of port access, nature development and water protection in one approach, as well as to build trust and to escape the trap of nature – economy polarization. A number of measures are included in the Development Outline. Compensatory measures were to be taken in the Netherlands (nature development projects).

Resilience of governance arrangement: Progress was halted on the Dutch side because of national political change and the growth of local opposition in the Netherlands, with the result that the EU and Birds International threatened to take action against the Dutch government, as Dutch non-compliance jeopardised the credibility of EU Natura policy. All this resulted in tensions regarding participation and communication. Renewed tension, conflict, and failure at political level reappeared in 2012. The effect of budget cuts was also noticeable. However, good cooperation at the level of daily management continues and stakeholder involvement was adequate. There has been improvement in nature protection, though not fully satisfactory. The main danger is that of political failure in spite of existence of formal treaties, which prove not to be waterproof.

## **9.4 Lessons learned <sup>77</sup>**

Decision making: A key issue in setting up governance arrangements is the choice between a regulatory framework making binding decisions, as in the cases of OSPAR, the Scheldt treaty and the Med ICZM Protocol (albeit with mixed results), and a soft law, non-binding arrangement, e.g. in HELCOM, the Atlantic Arc, the Arctic Council, the British – Irish Council and the Pomeranian Bight initiative. When a soft law model is preferred or imposed, this is accompanied by reliance for implementation on EU law, national states and international conventions (e.g. UNCLOS), which provide the legal context and are frequently the trigger of partnerships and treaties. In practice of course developments are not so smooth and reversion to soft processes may turn out to be necessary. Regardless of the choice, a balance has to be maintained between enforcement and mandatory recommendations on one hand and subsidiarity and consensus on the other. This remains an imperative, even when hard law regulations are available, a framework which can be vulnerable to procrastination and reluctance of national and/or regional authorities to implement

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<sup>77</sup> The examples mentioned are purely indicative.

recommendations, regardless of their binding character, as the examples of the Med ICZM Protocol, the Westerschelde estuary and the Pomeranian Bight indicate.

Governance arrangements: A multiplicity of governance arrangements can be observed in regional seas, e.g. in the Baltic or in the Mediterranean (treaties, councils, *fora*, commissions, partnerships, initiatives etc), which adopted varying membership models (official and unofficial, formal and informal, closed or open). Some are interstate partnerships, like OSPAR, others are inter-regional, like MEDGov. Problems of cooperation exist even in the most tightly structured arrangements. The proliferation of agencies in the same sea often leads to overlapping functions, particularly if one includes international arrangements under the UN umbrella, e.g. in the Atlantic. Situations of competing arrangements can be observed, even in the same sub-regional sea, e.g. in the Adriatic and elsewhere in the Mediterranean, although competition is not openly acknowledged. Sometimes this is explained by the fact that particular countries take the initiative to gain political influence and prestige, for instance in the case of the Union for the Mediterranean.

Holistic v. thematic approach: Apart from the hard / soft law issue, an equally important dilemma is the option of an integrated, holistic and comprehensive approach, as e.g. in HELCOM and the Atlantic Arc, covering all aspects of maritime affairs, as opposed to the option of a thematic, issue-specific approach, the Black Sea Energy Centre being an example. The first option seems to be gaining ground, certainly in the literature, and in practice in certain regional seas, even those with boundary delimitation problems, such as the Mediterranean Sea, but arrangements of the second type can probably show more tangible achievements, for instance in the case of a local partnership, like Solway Firth. Besides, multi-level governance situations with a corresponding proliferation of actors and stakeholders have to tackle management problems of a greater scale, thus illustrating the opposition between the desirable and the possible, e.g. in the Mediterranean. Still, what is not disputed is the crucial role of transboundary cooperation, particularly in sea space planning, as in the transboundary wetland of Wadden Sea.

Partner differences and political expediencies: Difficulties also arise in situations of partnerships with both EU and non-EU members, as in the Arctic, where symptoms appear of unequal readiness to take action (see the cases of the Adriatic Sea Partnership or the British – Irish Council) and of poor traditions of cooperation, e.g. in the Mediterranean. Intra-partnership regional inequalities in several cases, either more (Atlantic) or less developed (Mediterranean), are a source of friction. There is also a problem of communication between partners, due to different institutional systems and allegiances, professional backgrounds and financial shortages. In particular geographical regions there is a long history of political disputes and controversies (Eastern Mediterranean). In others, the aim of interstate political cooperation is a distinctive driver for regional and sub-regional maritime cooperation. In such cases the lobbying role and influence of partnerships, e.g. the Atlantic Arc, benefits from high-level support provided by powerful national or regional administrations (case of British – Irish Council). A reverse phenomenon is probably the pursuit of ambitious goals by partnerships which hope to evolve into geographically broader arrangements at the risk of limiting their practical effectiveness, which may be the case of Mediterranean examples. Here the political, perhaps disguised, ambitions of particular partners could have a negative impact.

Governance principles: Good governance principles are always accepted as a solid foundation of effective maritime arrangements, including horizontal and vertical cooperation with international bodies, national, regional and local administrations, NGOs, business and research communities and other stakeholders. Equally positive is the contribution of transparency, neutrality, fairness, stakeholder participation, openness, genuine mutual exchange and maintenance of a stable climate of cooperation, of which the Solway Firth partnership is a good example. The factors of local support and commitment, public perception and agency visibility are also critical, as stressed by the authors of the VASAB case study.

Drivers and interests: The range of key substantive drivers is broad. Marine environmental protection is the most frequent, as in the cases of OSPAR, Med ICZM Protocol, Wadden Sea, Black Sea Commission etc. Resource use (minerals, oil, wind energy etc), as in the Arctic, national and regional economic development (e.g. MEDGov) and territorial cohesion (e.g. Atlantic Arc) also dominate the scene of governance arrangements. Threats from pollution, floods, resource depletion (e.g. through overharvesting of stocks, as in the Arctic), are also important drivers. So is maritime boundary delimitation, not only for resource exploitation but also for securing stability (see cases of Norway – Denmark and Norway – Russia treaties). In particular regions the goal of promoting sustainability of coastal indigenous communities ought to be mentioned (Arctic). Conflicts between driving forces do naturally exist. The opposition of environmental concerns and economic business interests (oil, offshore windfarms, shipping, ports, fisheries) results in difficulties to take action, as made evident in the OSPAR and Sheldt treaty case studies..

Maritime spatial planning: There is a spreading realization of the importance of MSP (see mainly the VASAB, Pomeranian Bight, MSP Working Group, but also Atlantic Arc studies), albeit applied in limited cases, as an instrument for maritime policy and for the attainment of all marine space-related goals, including those of MSFD and ICZM. MSP is however being embraced more in national strategies than in regional sea cooperations, because of the availability of a uniform regulatory framework, an observation which takes us back to the issue of hard or soft law. The non-existent or problematic delimitation of maritime boundaries hinders joint marine policy and maritime planning, as in the Mediterranean. It is obvious that delimitation brings legal certainty and overcomes obstacles to resource exploitation, but is delayed by political disputes (see Arctic case studies).

EU policy and influence: EU policy (maritime, marine environment, cohesion, sustainable development) and law has been a frequent inspiration and lever for the creation of sea governance arrangements, in which the EU is often a partner, as in the Northern Dimension and HELCOM examples. Conventions and organizations of the United Nations are also a constant influence and driver, e.g. in the cases of the Arctic and of the Med ICZM Protocol. The mode of operation of the EU is sometimes criticized, in that it favours cooperation with, and support to, member-states and places less emphasis on regional sea cooperation arrangements, in spite of the move it has made in that direction. It is significant that a tendency has been observed among national administrations, which are partners in a partnership but also EU members to turn to the EU for implementation and action, a development which weakens the partnership. In some sea regions with a large number of non-EU coastal states confusion has been reported (e.g. in the case study of the Black Sea Energy Centre), arising out of overlapping regionally- or sectorally-oriented EU policies. The



expanding range of EU policies makes inevitable the “repositioning” of some governance arrangements, such as OSPAR.

Data and mapping: The production, storage, dissemination, availability, accessibility and use of solid scientific information is everywhere a sound foundation of cooperation, certainly e.g. in HELCOM. Their absence creates serious problems. More effort is needed to produce databases and reliable maps of sea space with uniform specifications and data reliability. Hence, the importance of the function of scientific data collection, building data bases, monitoring biodiversity, ecosystems, climate change and pollution, as a function conducive to practical cooperation and well-informed policy-making (see cases of the Arctic Council, HELCOM and the Black Sea Ocean Observing System or GOOS).

Instruments: Governance arrangements reviewed in this report make use of a broad range of instruments and methods to improve their output and effectiveness. They are summarized here in a short paragraph: Accessibility to multiple financial resources and co-financing; emphasis on inclusiveness and activation of all stakeholders including LAs, NGOs, Civil Society organizations and academic and business communities; flexible coordination and learning-by-doing processes; combination of top-down and bottom-up approaches; cross-sectoral organization and structure; entering as partners in UN and EU project consortia; development of linkages with other political or governance structures; gradual expansion of their objectives, scope and remit; self-assessment criteria for monitoring progress as regards objective achievements; improvement of monitoring and information gathering and updating mechanisms; awareness-participation-training instruments; spatial and strategic plans, risk prevention plans and environmental assessment studies.

## 9.5 Governance Recommendations

Certain recommendations contained within Table 44 below are tentative and open to discussion. They should be regarded rather as issues over which choices have to be made. In a number of cases totally contradictory recommendations could legitimately be made, depending on different viewpoints and experiences. The “hard law” / “soft law” dilemma is a classic example. This shows perhaps the importance of maintaining a balance and of taking into account specific regional conditions.

**Table 44** Governance Recommendations

<b>Audience</b>	<b>Recommendation</b>	<b>Justification</b>
General and scientific community	Better integration of maritime dimension in spatial planning theory and analysis.	Maritime affairs and planning are generally poorly understood and poorly represented in planning literature.
	Cooperation of scientific communities involved in spatial (terrestrial and maritime) planning.	Relevant scientific communities often speak a different language and have communication problems.
	Spatial planning scientific community must develop new approaches, especially regarding the co-existence of top-down / holistic and bottom – up, place-based approaches in maritime space.	This is a key challenge especially in maritime space because of its material difference from terrestrial space. In addition, the concept of sovereignty is essentially different in sea space.
	Organization of further education and training courses to help overcome barriers between disciplines.	It is of importance for active practitioners to rethink and reformulate their approach to practice.
	Maritime spatial planning and marine environment protection must be well represented in university curricula of coastal states.	Future experts should acquire knowledge and skills of which present scientists were deprived.
European Union	Creation of more effective “hard law” frameworks in the case of exclusive EU regional sea spaces.	Although it is of essence to maintain a balance, implementation suffers in the absence of binding decisions to the detriment of effectiveness and of the status of governance arrangements.
	Greater EU involvement in negotiations with non-EU coastal states as the representative of regional sea governance arrangements.	Here too the proper balance is required, but a greater role for the EU would add prestige and power to governance arrangements.
	EU-guided boundary delimitation of European sea space.	Without prejudice to national sovereignties, the EU must play a role to break the stalemate of boundary delimitation in particular regional seas.

**Table 44** Governance recommendations (Continued)

<b>Audience</b>	<b>Recommendation</b>	<b>Justification</b>
European Union	Systematic screening of overlapping and competing governance arrangements as an input to decisions regarding EU support and funding.	The proliferation of arrangements is not convincingly justified and tends to create redundant bureaucracies and ineffective partnerships of doubtful usefulness.
	Coordination of sectoral interests, as pointed out under “sectors”.	The EU, in close cooperation with international bodies, especially those of the UN system, can bring together sectoral maritime interests on a Europe-wide scale and help eliminate mutual suspicion; this will have positive reflections on national conditions.
ESPON / technical studies	Studies to improve analytical foundations and information bases of maritime planning.	Maritime planning is still in an early development stage and needs a body of supporting work to reach the maturity enjoyed by land planning.
	In depth studies of regional seas to build upon findings of ESaTDOR.	ESaTDOR has done a lot to create an informational base and to accumulate practical experience; this has to be built upon to address regional sea- and place-specific particularities.
	Study of comparative legal frameworks of maritime governance.	The complexity of legal frameworks resulting from all governance levels demands specialized study, which will help make maritime policy and planning more effective.
Regional seas / governance arrangements	Cooperation of regional seas partnerships and <i>fora</i> to avoid replication of efforts.	This is one more point about the proliferation of agencies and partnership which have accumulated over the years and often address the same issues.
	Creation of overarching governance structures to avoid overlapping functions.	Agreement on a single overarching arrangement in each regional sea, without neglecting lower level , locally-oriented partnerships, might improve efficiency.
	Respect for subsidiarity and local particularities.	This is the other side of the coin. Management cooperation and concentration will be weakened if subsidiarity and local consensus are undermined.
	Effective combination of a regional sea binding framework with local partnership freedom.	The central challenge of maritime governance is the dual arrangement of a unifying, regional sea, regulatory framework and of place-based open partnerships. In a way, a two-tier system is advocated.

**Table 44** Governance recommendations (Continued)

<b>Audience</b>	<b>Recommendation</b>	<b>Justification</b>
Regional seas/ governance arrangements	Adaptation of governance arrangements to changing EU framework.	Regional sea governance arrangements cannot but reconsider their remit and field of action in the light of a tighter regulation regime at EU level, in order to serve effectively their objectives.
Sectors and activities	Sectoral business and professional communities must get together and work on common approach to maritime space.	Conflict of interests is what bedevils most efforts to coordinate actions in regional and sub-regional seas. Non-cooperation on the side of private interests undermines maritime policy.
	Key marine space activities such as wind-generated energy, shipping, oil drilling, fisheries and aquaculture, tourism and leisure must develop effective communication channels and set priorities, at EU and national level and under guidance of the respective official agencies. The creation of joint <i>fora</i> would help in this direction.	The first step of the above common approach is for private sector activities to set up communication channels, platforms and <i>fora</i> , for mutual information exchange and discussion opportunities, with the EU and member-countries acting as networking activators.
National / sub-national administrations	Coordination of terrestrial, coastal management and maritime spatial planning processes.	Land use planning, ICZM and MSP frequently remain disjointed and uncoordinated, even at national level, let alone at the local scale.
	Guidelines regarding marine space to be embedded in binding statutory provisions.	Statutory planning is often devoid of provisions for ICZM and, even more so, MSP. This is exacerbated by poor knowledge and expertise.
	Systematic information dissemination campaigns at local and regional level.	Marine environment problems and maritime planning barriers are on the whole much less understood by the public at large, than land use problems.
	Cooperation with business and professional organizations, NGOs and local communities.	Public planning authorities at all levels must improve their understanding of stakeholder views and appreciate the latter's potential contribution to maritime planning objectives.
	Coordination of sectoral interests, as pointed out under "sectors".	Public authorities must reach beyond their role as rule-makers and statutory planners, to act as instigators of supporting stakeholder networks.

## 10. Developing a Maritime Region Typology

Having developed a set of base maps indicating the boundaries of proposed maritime regions, a key task for the ESaTDOR project is to consider how these maritime regions may be characterised in terms of their territorial potentials and challenges thereby create a typology for maritime regions.

The approach adopted to this task has been to follow an iterative and experimental role, initially drawing on the ESPON experience of typology development, before considering how a typology for the seas can be developed which goes beyond simply looking at the risk (characterised by the approach adopted by the Marine Strategy Framework Directive with its emphasis on good environmental quality) to also think about the opportunities for better use of the marine environment and its assets as a mechanism for helping to promote territorial cohesion. From this perspective our reflections identified a weakness in the approach. Most existing typologies were land based, even those focusing on coastal or maritime regions, a seas typology was also focused on a specific area, we needed to try to integrate the land and sea interactions, although our efforts tended to focus on more coastal regions recognising that the reach of maritime influence and the impact of the land on the sea was much greater than this. The interactions were categorised along three dimensions, the impact of the sea on land based economic activity, measured in terms of employment; the human impact on the sea, measured in terms of adverse environmental impacts on the marine environment and finally the way that the sea is used to connect people and places, by measuring flows. Data availability drove the development of the composite maps which were integrated to create the final typology. The following paragraphs explain this logic in more detail and finish by describing the typology and identifying its limitations.

### 10.1 Reviewing Existing ESPON Typologies

In this initial phase of developing a maritime region typology we considered the use of existing ESPON typologies as a starting point. Under ESPON's Scientific Platform, the Typology Compilation Project draws together typologies that had been developed from a terrestrial rather than a marine perspective. The Typology Compilation identified four different coastal typologies which can be used to delimit the boundaries of coastal regions. These are:

1. Based on the European Environment Agency's map of *Population Density in the EU Coastal Zone (10Km) by NUTS3 (2001)*, which defines three zones: coastal strip up to 1Km, coastal hinterland up to 10 Km and non-coastal territory.
2. Based on the European Environment Agency's map of *Population Trends 1991-2001 in the European Coastal Regions (NUTS3)*. This uses a simple division of NUT3 regions into those bordering coastlines and those which do not.
3. Using data from CSIL, the Centre for Industrial Studies project on the *Impact of Tourism on Coastal Areas: Regional Development Aspects*. Like the EEA's population trends map, regions are divided into those that border a coastline or do not, using NUTS2 level geography.
4. The ESPON Project "Territorial Impacts of the Common Fisheries Policy" typology of coastal regions. This contains nine different classifications for coastal areas at the NUTS3 level, based on population density and Functional Urban Areas.

In the ESaTDOR Inception Report, an initial assessment of the ability to extend these typologies to apply to maritime areas was made. In terms of the coastal typologies identified it was felt that extrapolating these out into the seas, raised a number of problems. For example, two were quite simplistic based on population density, or population trends, and did not explore land and sea inter-relationships. The third created a typology of coastal regions at NUTS level 3, but was felt that this was probably too complicated to extrapolate in any meaningful way out into the seas, given the anticipated limitations of marine related data. The final typology, which also emerged from ESPON project 2.1.5 also identified coastal regions at NUTS 3 and then identified either regions or ports that were important places for landing fish. Whether this bears any relationship as to where the fish are caught is a moot point. Nevertheless none of the land based typologies offered a justifiable approach that we felt merited adoption. Instead it was concluded that the formulation of a new coastal/maritime typology should be a key output rather than input in our work. Indeed this view is reinforced following the relatively recent completion of other ESPON projects of relevance to the project notably, GEOSPECS and ReRisk

The ESPON GEOSPECS project has developed a conceptual understanding of two specific types of territory with particular relevance to land-sea interactions<sup>78</sup>. Firstly, islands, characterised by isolation caused by surrounding sea, and peripherality from political, social and economic activity. This demonstrates the predominance of island effects particularly in the central and eastern Mediterranean and in northern Europe, but is limited in scope and hardly comprehensive across all European Seas. Secondly a characterisation of coastal zones is presented, based on travel time by road to the coast. This highlights the maritime nature of a large proportion of Europe, and illustrates the particularly strong coastal influence at work in northern Europe. However, this definition of coastal zones is based upon only one socio-economic aspect of coastal processes, and is inadequate in itself for determining development opportunities associated with the coast.

The ESPON ReRISK project is also relevant in that it has highlighted aspects of future energy needs that may be partly met by marine energy resources and supply routes<sup>79</sup>. However, this preliminary assessment does not yet allow for a close correlation to be made between potential marine energy supply and points of greatest demand. Future study could investigate in more detail the possibility of developing marine energy resources with areas of highest need in view.

At a more general level, the use of any land-based typology as a foundation for maritime typologies has great disadvantages as the relationship between use of the sea and adjacent areas of land is uncertain and highly varied across European territory. Map 45 below shows an example from the Baltic Sea in which the number of maritime uses are plotted on a 50Km grid square system and compared with the populations of adjacent NUTS3 regions. From this exercise it can be seen that there is no clear spatial link between population values and the intensity of maritime activities in the Baltic Sea. Some of the highest values for maritime uses occur in Germany's coastal waters and EEZ where there are low population values. Similarly, for Estonian waters there is a low population but high levels of maritime use. In

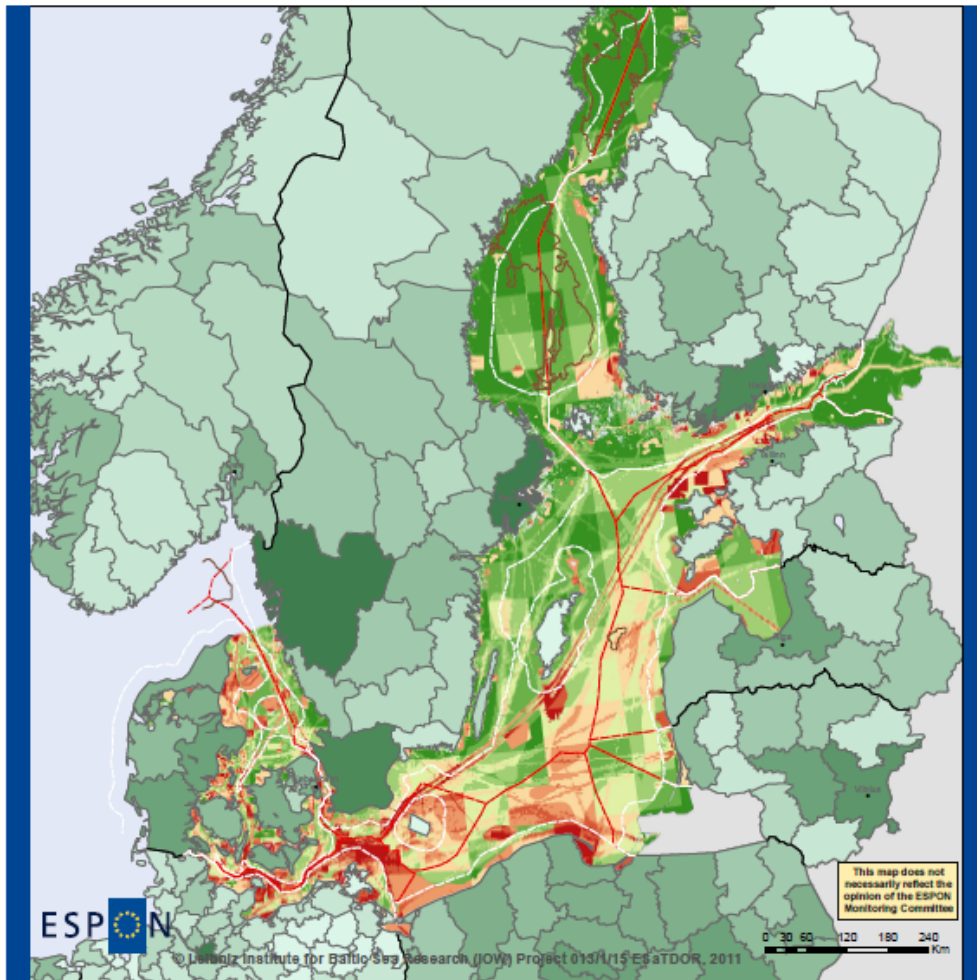
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<sup>78</sup> [http://www.espon.eu/main/Menu\\_Projects/Menu\\_AppliedResearch/geospecs.html](http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/geospecs.html)

<sup>79</sup> [http://www.espon.eu/main/Menu\\_Projects/Menu\\_AppliedResearch/rerisk.html](http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/rerisk.html)

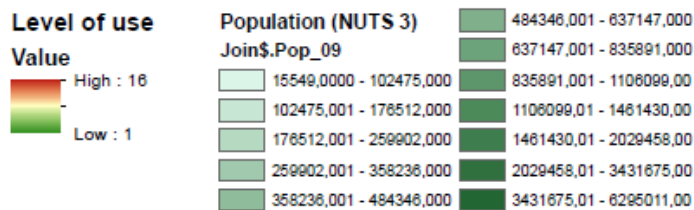
contrast, the Stockholm area of Sweden is highly populated, but the adjacent waters show a low number of uses.

**Relation between  
a) Population and b) Level of use  
in the Baltic  
- Draft -**



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**Map 45** Relationships between sea use and population density in the Baltic Sea

Map 45 also shows that the character of maritime areas varies greatly within seas, and thus it is neither possible nor desirable to apply one label to an entire sea - this risks over

simplifying the activities and interrelationships between environmental conditions, the number of uses in any given maritime location and their connection to land.

## 10.2 Conceptualising a Maritime Typology

From this analysis it was clear that a new typology is required that uses a broad set of variables to characterise land sea interactions. During the early phase in the data collection and mapping activities of the ESaTDOR project, the approach to developing a new typology was therefore based on a more qualitative assessment of the current situation in maritime regions. The idea was to build the typology iteratively and interactively based on conceptual thinking which was operationalised through a detailed consideration of available data, exploring both land and sea interactions

The initial draft proposed draft maritime typology used the following five categories in a continuum:

- European Core
- High Density
- Medium Density
- Rural
- Wilderness

This typology (and the terminology for proposed categories) is broadly based upon patterns of human use, and work by Smith, Maes, Stojanovic and Ballinger (2010), which relates the development of marine spatial planning initiatives in Europe and their integration with terrestrial spatial planning to the regional development goals of the European Union.

Given the argument that typologies based on population are inappropriate for maritime regions, the categories in the proposed typology aim to reflect the density of maritime uses and their significance for territorial development. Thus “European Core” represents the busiest maritime regions with the greatest strategic importance for future development. This is followed by regions of “high” and “medium” density use, “rural” regions, and “wilderness”, which generally applies to those areas of open sea which are largely unconnected with land.

In order to provide the basis for a consistent assessment of the state of European Seas, the individual characteristics that have been used to define these categories are shown in Table 45. An explanation of how the typology has been applied follows this table.



**Table 45** Proposed Maritime Region Typology (as set out in the ESaTDOR Interim Report)

<i>Sea Type</i>	<i>European Core</i>	<i>High Density</i>	<i>Medium Density</i>	<i>Rural</i>	<i>Wilderness</i>
Characteristics					
<b>Level of use</b>	Most heavily used	High degree of use	More localised concentrations of use	Low levels of human use	Very low and intermittent levels of use
<b>Footprint</b>	High human footprint	High human footprint	Intermediate human footprint	Low footprint	Minimal human footprint
<b>Maritime connections</b>	Great international connectivity	Nationally significant and some international connections	Nationally and regionally significant connections	Limited connectivity	Remote areas, limited connectivity
<b>Land-sea interactions</b>	Global hinterland	European-scale hinterland	National/regional hinterland	Local/ regional hinterland with some more significant sectors/ seasonal extensions	Very small local hinterland, some extensions
<b>Environmental risk</b>	High environmental risk associated with human footprint	Significant environmental risk	Medium environmental risk	Low environmental risk	Limited environmental risk
<b>Environmental conditions</b>	Most heavily degraded	Significant degradation in some areas	More dispersed pattern of environmental degradation	Less environmental degradation	Very low/unknown levels of environmental degradation
<b>Economic significance</b>	High strategic economic importance	Significant economic importance	More dependent upon a limited number of strategic industries	Economy dominated by primary production and tourist sectors	Limited direct economic importance

### 10.3 Applying the Initial Typology

In order to test the proposed typology, an attempt has been made to classify the Atlantic, and Baltic Seas using Table 45 to assess the character of different parts of each region. A limited number of key datasets will be associated with each characteristic to provide some quantitative basis for attributing a maritime region or sub-region to a particular category, but at this stage the categorisation is qualitative and intuitive based on expert knowledge.

For “level of use”, location of ports, passenger transport numbers, shipping routes, freight transport, tourism data and location of wind farms, distribution of the fishing fleet, cables and pipelines have been considered.

“Human footprint” is defined as the ecological footprint arising from human uses of the sea, therefore, where there is a high level of use, footprint is also expected to be high.

“Maritime Connections” refers to the number of links a region has with size of port, shipping routes and connections to wider Motorways of the Sea being considered.

“Land-Sea Interactions” attempts to capture the relationship between a maritime region, its adjacent coastal strip and areas further inland. For this characteristic, locations of ports and land based transport networks (TEN-Ts) have been considered.

“Environmental Risk” is defined as the risk associated with human use of the sea or natural risk such as flooding and erosion. Data relating to maritime accidents, oil spills, overfishing, coastal erosion and provide a baseline picture.

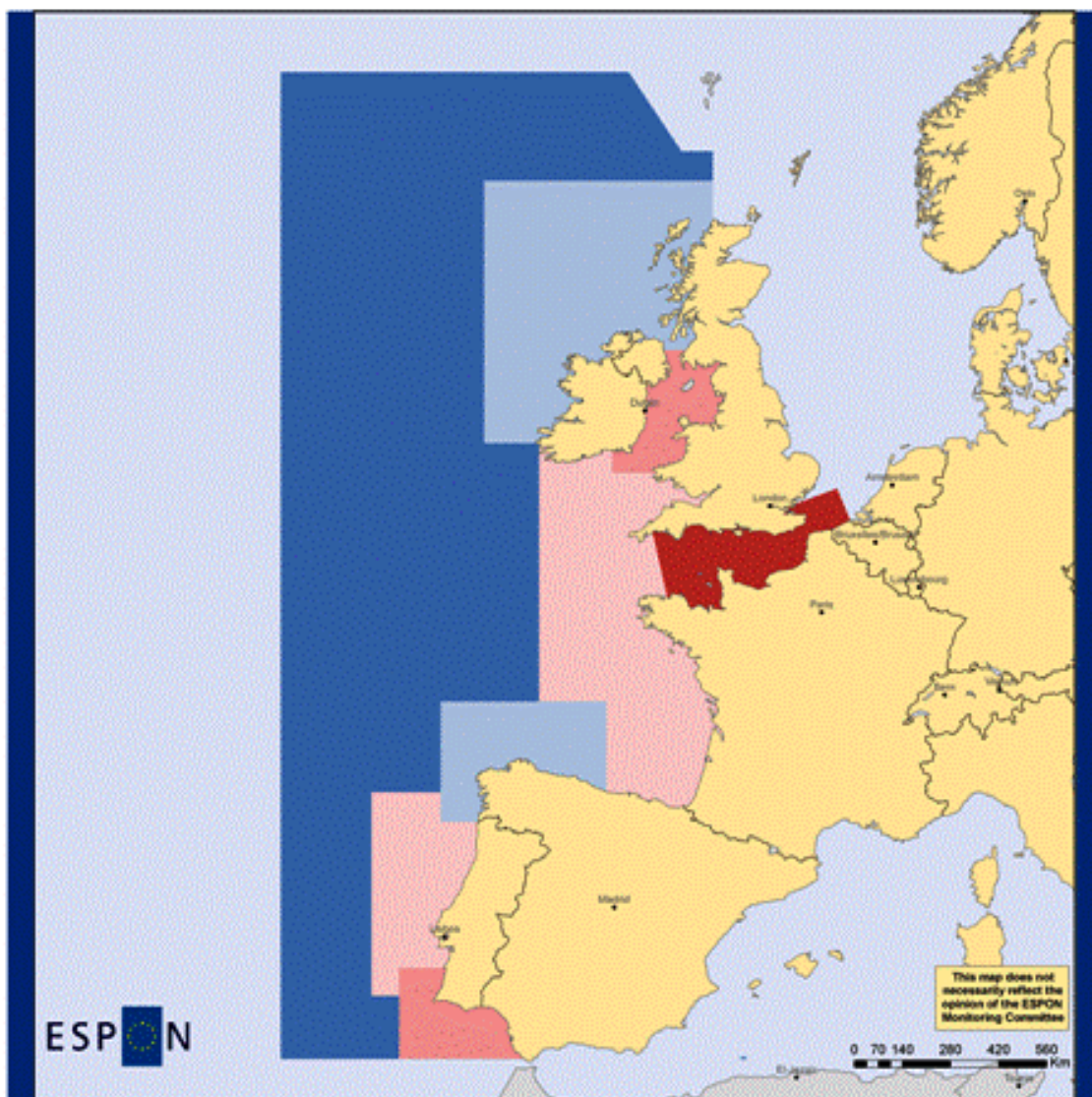
“Environmental conditions” refers to the current environmental status of marine regions. Status of fish stocks, surface temperature, location of Natura 2000 Sites and Regional Sea reports such as OSPAR’s Quality Status Report 2010 have informed the assessment of this characteristic.

“Economic Significance” attempts to determine the economic value of maritime regions in relation to Europe’s territorial cohesion agenda. Economic sectors such as shipping, tourism and proximity to Europe’s core or peripheral (land-based) regions have been considered key information for assessing this characteristic.

It is anticipated that region types are assigned by reference to the different characteristics and trying to provide a general or average picture of each region, noting that, for example, a sea region that could be the busiest, most economically significant and have the greatest connectivity, but not necessarily the most environmental degradation – in combination these factors could still lead to a qualitative decision that the overall picture for this region corresponds most closely with the European Core category.

The application of the proposed typology to the Atlantic is shown in Map 46. An alternative way of representing the typology is shown for the Baltic Sea in Map 47.






# Towards a Maritime Region Typology Atlantic Draft Map




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## Draft maritime region typology

-  European Core
-  High density
-  Medium density
-  Rural
-  Wilderness

**Map 46** Applying the Typology to the Atlantic Ocean

The rationale for classifying the Atlantic was as follows:

*European Core:* This is the busiest maritime region in terms of both passenger and freight transport, linking some of Europe's largest ports to Atlantic routes and providing access to Europe's densely populated and most economically significant inner central area. Because of maritime traffic this area is highly susceptible to oil spills and other maritime traffic accidents.

*High Density:* These areas are characterised by some busy shipping routes large commercial ports. Though their surrounding hinterlands are quite different in character – the Gibraltar Straits region is highly dependent upon coastal tourism whereas the Irish Sea hinterlands are dominated by maritime industries such as fishing and offshore renewable energy.

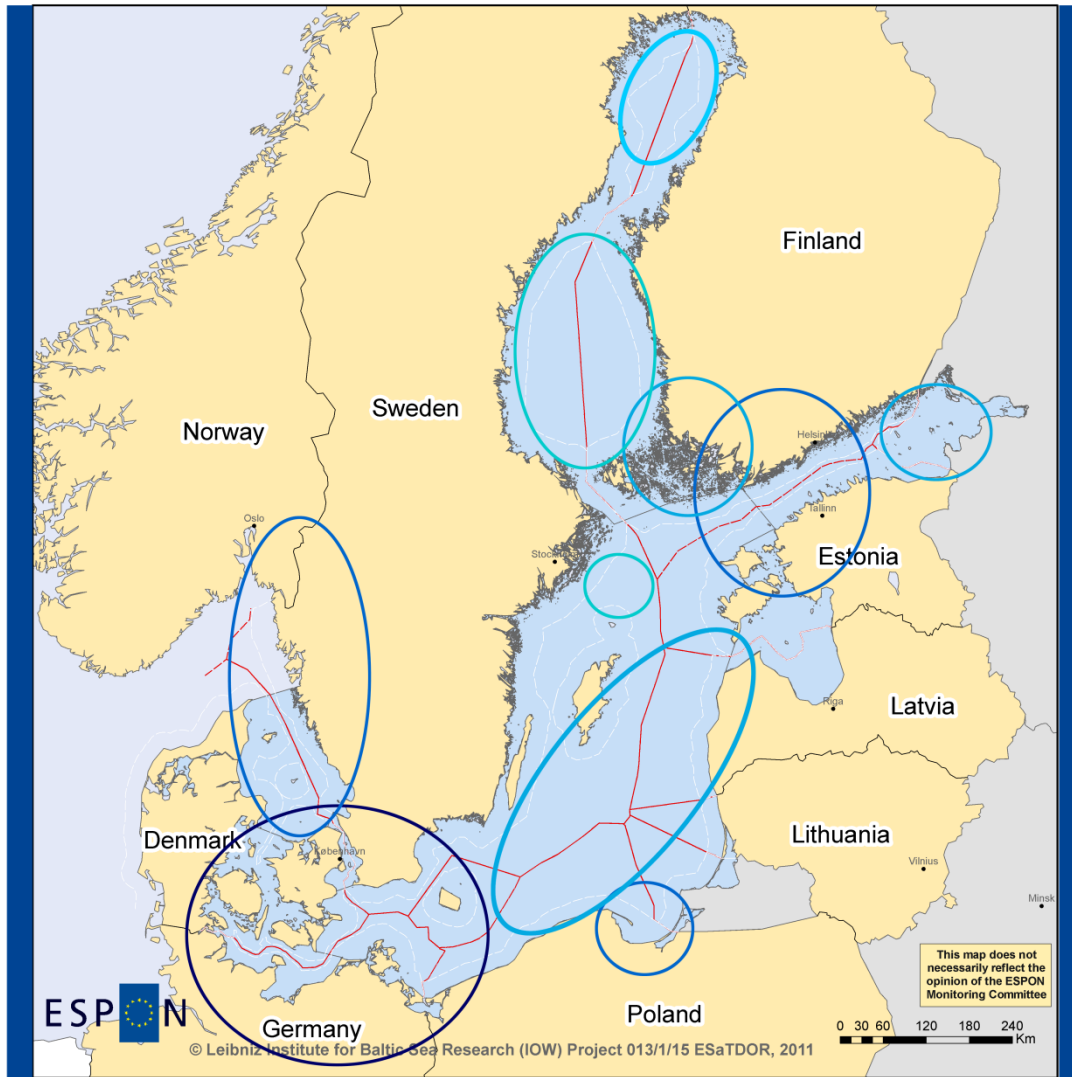
*Medium Density:* Shipping tends to be through traffic, though some smaller but significant ports. These maritime regions are well connected to other places along periphery of Europe, and have some connections to the central area and other parts Europe via the Motorways of the Sea network.

*Rural:* Areas dominated by fisheries and aquaculture with nationally significant fisheries ports and some tourist activity such as cruise ships and pleasure boating. Environmental pollution from land-based sources is low; main environmental risks are overfishing and coastal erosion although this is limited to some small areas.

*Wilderness:* Maritime activities in this area are highly dispersed. Given that this area is largely unconnected to land, economic benefits of marine traffic and fisheries activities taking place here are captured in other maritime and coastal regions; main risks are overfishing of some species.

# Towards a Maritime Region Typology






## Baltic Sea Draft Map






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### Draft maritime region typology

-  European Core/  
Global Integration Zone
-  High density
-  Medium density
-  Rural
-  Wilderness

-  Territorial waters
-  Exclusive Economic Zones (EEZ)

**Map 47** Applying the proposed typology to the Baltic Sea

## 10.4 Evaluation and Refinement of the Typology

The examples of applying the maritime typology to the Atlantic and Baltic Sea raise some key points. Both represent a relatively simplistic approach to classifying maritime regions, the two examples showing that the different categories developed within the typology from European Core to Wilderness Seas can be applied to different parts of the ESPON maritime space and are therefore suitable for use across all of Europe's regional seas.

Although the different types of maritime region have been shown on the two maps to be delimited by straight lines or circles, these are approximations and it is recognised that the transition between different types of sea may be more gradual and thus a further avenue to be explored in refining the typology was looking at how these transitional areas may be represented.

In the early stages of the project, collection of data and mapping within the framework of ESPON maritime boundaries was not well advanced and presented a challenge to the ESaTDOR project as a whole and in particular the mapping of key data sets in a way that provides a more robust foundation for characterising maritime space. Earlier in this section, the example of the Baltic Sea was used to demonstrate the ambiguous relationship between population and levels of maritime activity in adjacent waters (Map 45) and thus why maritime typologies based on measures of population were unsuitable.

The use of a single indicator to represent high and low levels of sea use did however provide an exemplar for how levels of maritime activity might be best defined in the ESaTDOR maritime typology, bringing together a number of datasets or several layers of maps into one composite indicator. Similarly, other characteristics contained within the typology such as "environmental risk" and "maritime connections" could be represented in this way by producing a composite indicator from a number of datasets. In combination, these indicators would inform a more objective methodology for defining maritime regions.

Furthermore it became clear that the representations outlined above focused on the intensity of activity within the maritime environment. It assumes that intensive sea activities are dependent on and coincidental with intensive activities on land. The initial proposed typology therefore represented a marine typology, not one that seeks to combine land sea interactions.

A further concern reflected the labels characterising the sea types, particularly in relation to high density and medium density compared with the other synthesising labels. "Density" (whether high or medium) simply describes the number uses in a particular locality, is land based and urban in character and really has no spatial reference or indication of territorial development opportunity potential. Instead these two terms have been replaced by "regional hubs" and "transition" area, although the defining characteristics have stayed the same. The regional hubs could be characterised as being areas with strong regional land-sea interactions with potentials for further development opportunities. The transitional areas were between the more intense interactions of the core and regional hubs and the more rural and wilderness areas where interactions were lower, and could either focus on maintaining the situation or developing using their natural assets.

Considering how this ideal might be achieved, a critical decision for ESaTDOR was the selection of key data sets that contribute to a rounded picture of the state of European sea

use. In this instance, the selection of data was informed by reference to the key thematic interests of transport, economic use, energy and the environment, with prospective data sets comprising land sea interactions, rather than simply being land or sea based and exclusively based around risks to the marine environment.

### Developing an Integrated Typology

Since this qualitative testing phase the typology has been refined to make use of a limited number of datasets for land and sea which can be layered to build up a more robust picture of land-sea interactions. A summary of the characteristics associated with each type of region is shown in Table 46.

**Table 46** Components of the refined typology

<i>Characteristic</i>	<b>European Core</b>	<b>Regional Hub</b>	<b>Transition</b>	<b>Rural</b>	<b>Wilderness</b>
<b>Economic Significance</b>	Greatest concentration of maritime employment/ high strategic economic importance	High maritime employment, significant economic importance	More localised concentrations of maritime employment/ more dependent upon a limited number of strategic industries	Low levels of maritime related employment, economy dominated by primary production and tourist sectors	Very low and intermittent levels of maritime employment, limited direct economic importance
<b>Flows</b>	Great international connectivity, global hinterland	Nationally significant and some international connections, European-scale hinterland	Nationally and regionally significant connections and hinterland	Limited connectivity, local/regional hinterland with some more significant sectors/seasonal extensions	Remote areas, limited connectivity. Very small local hinterland, some extensions
<b>Environmental Pressures</b>	High environmental pressure associated with human uses	Significant environmental pressures	Medium environmental pressures	Low environmental pressure	Limited environmental pressure

**Economic Significance** - this attempts to show the economic importance of coastal areas through mapping employment clusters in different maritime (and related) sectors such as shipbuilding, tourism, transport, fisheries and others.

**Land/Sea Flows** - this grouping tries to capture the movement of goods (including container traffic, other freight, liquid energy products) and people across maritime regions.

**Environmental Pressures** – this covers data relating to the state of the marine environment and attempts to capture natural changes and human impacts such change in sea surface temperature, organic pollution, incidents of invasive species introduced through shipping etc.

The process of data collection and mapping was informed by two main sources. Firstly, the INSPIRE Directive (Directive 2007/2/EC, established an Infrastructure for Spatial Information in the European Community), which aims to provide a common spatial data infrastructure, allowing for the harmonisation of datasets across the European Union. Where possible the

ESaTDOR project has sought to collect and compile data in line with INSPIRE principles. In addition, the Annexes of the INSPIRE Directive provide a list of 34 spatial data themes which ESaTDOR has used as a starting point for listing the types of activities it would be desirable to collect information on in order to map sea uses and land-sea interactions.

The second source has been the knowledge of thematic experts within the ESaTDOR team who have been able to suggest additional topics relating to transport, the environment, economic use (the maritime economy) and energy, cables and pipelines where data should be collected. Using both the INSPIRE themes and expert knowledge; the ESaTDOR team have sought the best available datasets to represent these different topics. Through a process of iteration, ensuring that the data was available and usable across the European space a limited number of data sets were identified from which the typology could be built (Table 47).



**Table 47** Data sets used in developing the composite maps and typology

<b>Economic Significance (Maritime Economy)</b>	<ul style="list-style-type: none"> <li>• Employment in fisheries at NUTS2 level (2009)</li> <li>• Employment in shipbuilding at NUTS2 level (2009)</li> <li>• Employment in other traditional maritime sectors at NUTS2 level (2009)</li> <li>• Employment in other sectors associated with the maritime cluster at NUTS2 level (2009)</li> <li>• Employment in transport at NUTS2 level (2009)</li> <li>• Employment in tourism at NUTS2 level (2009)</li> </ul>
<b>Environmental Pressures</b>	<ul style="list-style-type: none"> <li>• Incidence of invasive species</li> <li>• Organic inputs (pesticides)</li> <li>• Nutrient inputs (fertilisers)</li> </ul>
<b>Flows</b>	<ul style="list-style-type: none"> <li>• Economic influence of container ports, based on port proximity and container volume</li> <li>• Economic influence of cruise ports, based on port proximity and cruise passenger volume</li> <li>• Marine exposure due to port influence, based on port proximity and volume of energy products</li> <li>• Undersea cable influence, based on proximity to cable and length per grid square</li> </ul>

Having chosen the data sets to be used, the composite maps were produced to create an impression of the intensity of marine based activity or impact on the land or in the sea. The approach taken was consistent between the land and the sea, although given the data manipulation challenges the approach was slightly different. But for each composite map, data from individual layers was combined to produce one composite value from 1 to 5 according to the importance of an activity or environmental pressure. This information is classified by quintiles in five groups and the following category names are given from lower to higher: *Very low, Low, Medium, High* and *Very high*.

On the land, and in relation to the Economic Significance data sets, a sum of percentages was calculated of every economic sector related to maritime activities in each NUTS 2 region<sup>80</sup> (percentage of the total employment representing the maritime cluster) to generate an economic significance composite map. These sums have been classified by quintiles as outlined in Table 1 (first shown in Chapter 3) and as follows:

<sup>80</sup> Data for Denmark, Ireland and Slovenia are on national level because as no data was available on NUTS-2-level

**Table 2** Ranges selected for the classification of the composite map “Total maritime cluster employees (as a percentage of total employment)” on land

Total Percentage of Employment	Category name
5.42 - 15.52	Very Low
15.52 - 17.60	Low
17.60 - 21.06	Medium
21.06 - 24.69	High
24.69 - 36.35	Very High

In the sea a similar approach was taken to the individual datasets for flows and environmental pressures. All data sets were initially converted into 10x10km raster format (where they were not already produced in this way).

For flows four sets of data were used (see Table 4, Chapter 3 and below), which report the influence of different kinds of infrastructure (freight, passenger, energy, and information) on the seas that host. For each cell in each data set, the levels of influence of the different infrastructure were synthesised onto 5 different classes (*Very low, Low, Medium, High* and *Very high*). These data sets were weighted according to their influence, based on expert judgement. Data for ports, which is largely point based was extrapolated outwards into the sea to produce a measure of “maritime influence” using the function:

$$I_i = A \cdot \exp(-\beta \cdot d_i)$$

Where:

A = Activity of the port (depends on the data set dealt with, e.g. total cargo, TEUs, passengers, tonnes of liquid bulk)

$\beta$  = a constant representing the decaying factor

d = distance separating the port from the cell i

**Table 4** Datasets used in Flows Composite Map and weight of each dataset.

Map \ Category	Weight
Economic influence of container ports, based on port proximity and container volume	50%
Economic influence of cruise ports	30%
Marine exposure due to port influence, based on port proximity and volume of liquid energetic products	10%
Undersea cable influence	10%
<b>FLAWS COMPOSITE MAP</b>	<b>100%</b>

The environmental pressure composite map was obtained by calculating the average (equal weight basis) of layers with information about invasive species as well as organic and inorganic inputs. Their values were reclassified into five groups (based on quintiles) as follows:

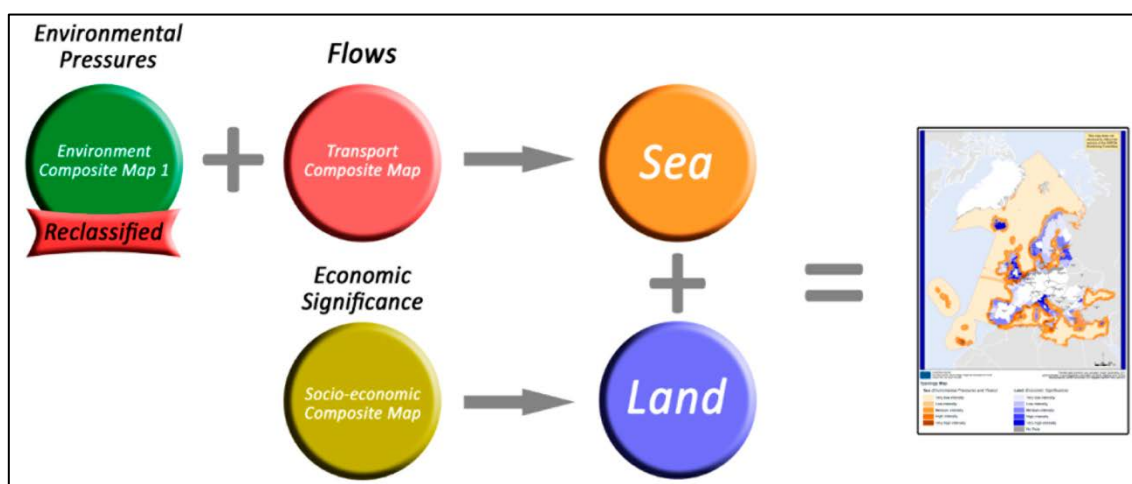
**Table 3** Ranges selected for the composite map on seas-coasts classification

<b>Organic Inputs</b>	<b>Invasive Species</b>	<b>Inorganic Inputs</b>	<b>Category name</b>
-	0*	-	-
1 – 60	1 – 60	0.1 – 320	Very Low
60 -120	60 -120	320 - 640	Low
120 – 180	120 – 180	640 - 960	Medium
180 - 240	180 - 240	960 – 1,280	High
240 – 7,662	240 – 3,030	1,280 – 10,186	Very High

The composite maps therefore provide an indication as to how and where key significant impacts of land sea interaction occurs

In the final stage of typology development the composite maps for both land (economic significance) and sea (flows and environmental pressures) have been brought together in order to identify where land-sea interactions are at their most or least intense, i.e. “hot” and “cold” spots of activity (see Figure 8). For land based activities, data categorization is the same as in the original economic significance composite map (five classes based on quintiles). The union of data present in the Environmental Pressures and Flows composite maps shows the human impacts on and pressures suffered by the sea. The original five categories from the composite maps were converted to numbers from 1 to 5. Then the two layers were added and the values were classified into five groups with the new category names (*Very low, Low, Medium, High and Very high intensity*).

**Figure 8** Production of the ESaTDOR Maritime Region typology



In order to identify areas of greater or lower land-sea interaction, two separate maps of “hot” and “cold” spots were produced (Maps 48 and 49). For these maps the two highest or lowest quintiles for land and sea activity were shown respectively. These “hot” and “cold” maps were then used to identify what should be classified as the Core, Regional Hub, Transition, Rural and Wilderness areas within the regional seas using a qualitative approach.

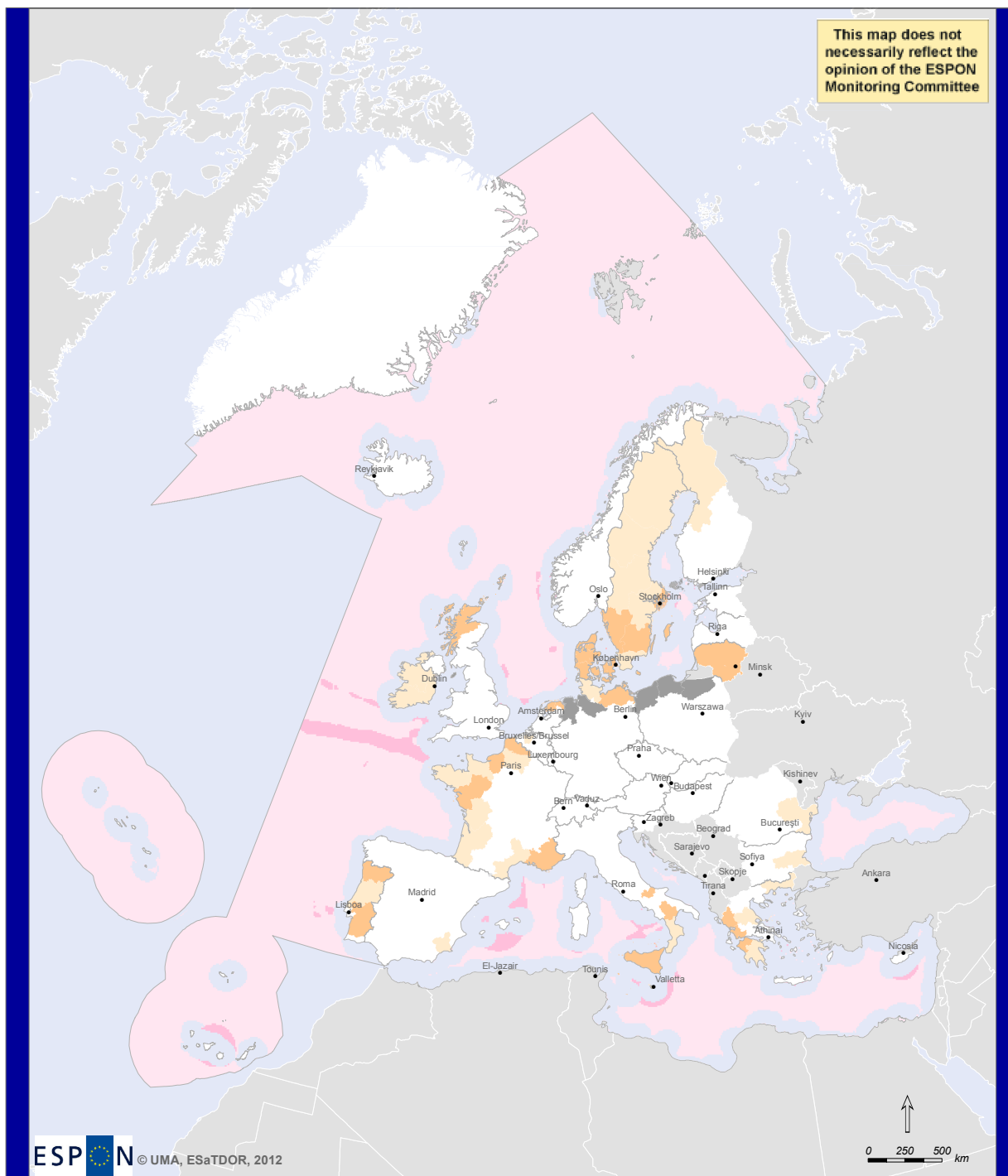
### 10.5 Exploring the Typology

The Economic Significance composite map (Map 18, shown in Chapter 4 on the Maritime Economy) which focuses on the land, shows a high or very high percentage of total employment in maritime related industries in Iceland, Norway, Estonia and Latvia, the UK, parts of northern Spain, northern and central Italy, southern Portugal, and many European islands including the Canaries. These areas are where local economies appear to be most strongly related to their maritime setting. Interestingly, a slightly different pattern emerges if gross employment in maritime industries is considered. Here, for example the mega port regions of The Netherlands and Belgium stand out, however proportionally maritime industries are less significant in the overall make-up of employment in these densely populated and urbanised regions. In contrast the Flows composite map (Map 31, see Chapter 5 on Transport) which is focuses on activity on the sea, does show the Southern North Sea and Channel as the major focus for marine transport and cables in Europe, with other hotspots also evident around major ports in the Mediterranean, in the Baltic around the Danish Straights and Gulf of Finland and around the Canaries. The Environmental Pressure composite map (Map 44, see Chapter 7 on the Environment) also reflects the presence of major ports as these are focal points for invasive species and in addition it shows areas where land based organic and inorganic pollution associated with farming and industrial activity is at its most intense. Taken together these environmental pressures are most concentrated around the Atlantic, North Sea and Baltic coastlines while other hotspots are evident along the northern shores of the Mediterranean and in the Black Sea.

The second step in producing the typology was to draw the three composite pictures together in order to distinguish patterns in the current overall intensity of land sea interactions. Two separate maps were produced showing cold spots (Map 48) and hotspots (Map 49) and these were then used to identify which maritime regions should be classified as Core, Regional Hub, Transition, Rural and Wilderness areas. Map 50 shows these cold and hot spots combined on the same map, and Map 51 shows the schematic outcome of the typology analysis, whereby hot spots of activity are interpreted to form part of the European Core or Regional Hub and cold spots form either the Rural areas or Wilderness. As may be expected it highlights the significance of the Channel and southern North Sea as the Core maritime region of Europe. This is where overall land sea interactions based on the data sets we examined are currently at their greatest. It reflects the concentration of population and economic activity in the London, Paris, Amsterdam axis, the presence of mega ports such as Rotterdam and the channelling of communication and trade routes between Europe and the rest of the world through this strategically important area.

Beyond the Core the map shows a number of Regional Hubs which relate to significant spatial concentrations of strong land sea interactions. These are home to important maritime clusters and they are all transnational in character and in some cases also relate to more than one European sea. So for example the UK /Ireland and Northern France regional hub spans both the Atlantic and the North Sea, while the hub related to Norway, Sweden, Germany and Denmark spans the North and Baltic Seas. Beyond these hotspots lie Transition Areas where land sea interactions are still locally significant but where they are more dispersed in character relating most frequently to smaller ports and tourist destinations. The eastern Mediterranean is the largest area defined in this way, but all European Seas have areas of this type. Much of the remaining maritime areas are classified as rural reflecting the increasingly low levels of human use. For the most part these are areas of sea, but areas such as the west coast of Ireland and Northern Ireland as well as the Azores and the coastal regions bordering Gulf of Bothnia are also included in this designation. Only the Arctic still has areas that can be characterised as Wilderness at the present time.

# "Cold Spots" of Land-Sea Interactions




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Thematic data: Typology Map.  
 Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
 Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Typology Map (coldspots)

### Sea (Environmental Pressures and Flows)

- Very low intensity
- Low intensity

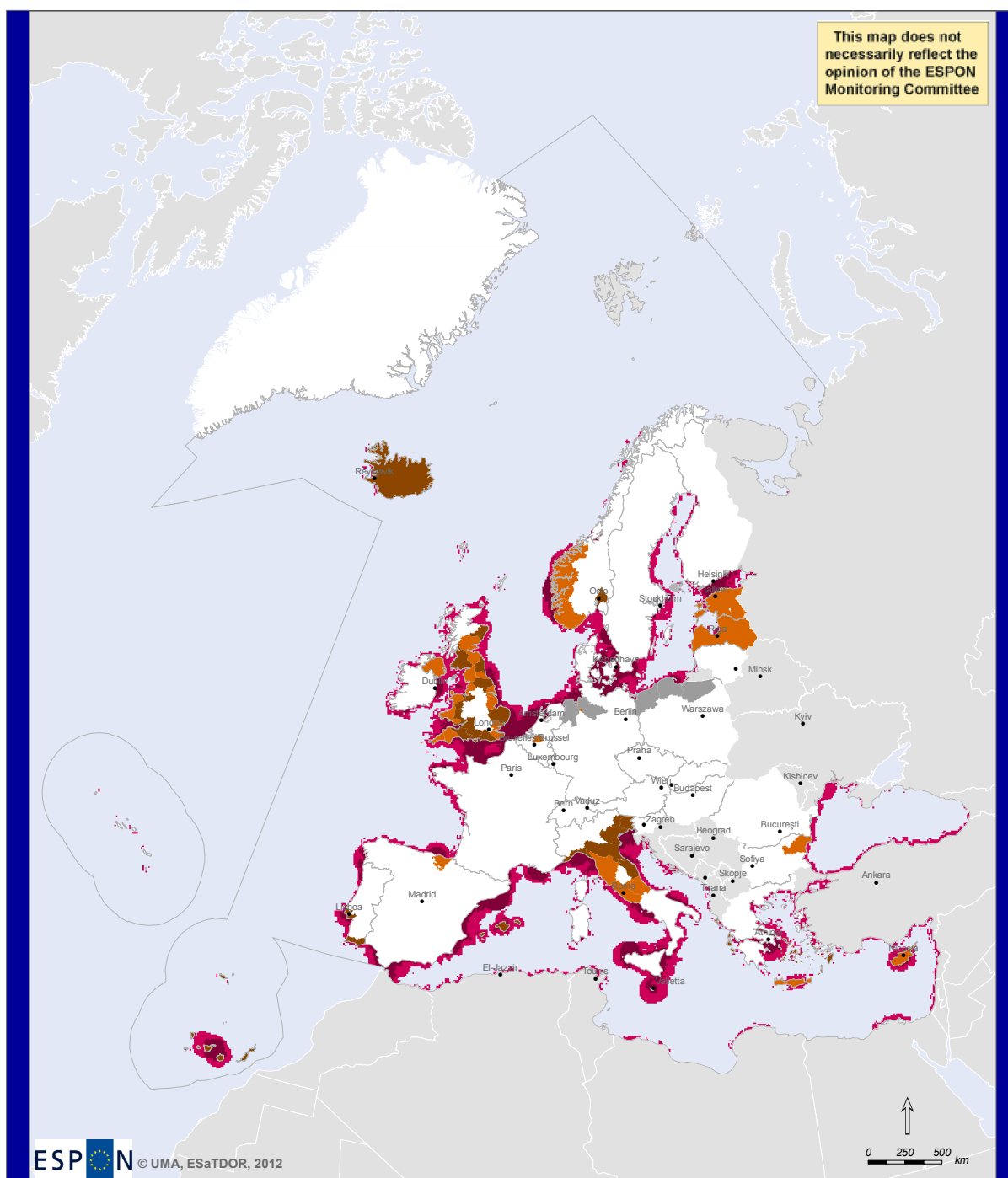
### Land (Economic Significance)

- Very low intensity
- Low intensity
- No Data

*This map shows where land-sea interactions are at their least intense in Europe's seas. The effect of the sea on the land is measured in terms of economic significance (employment in maritime sectors) and the effects of anthropogenic activities on the sea are resented by environmental pressures (pollution from pesticides and fertilisers, incidence of invasive species introduced by shipping) and flows (of goods, including container traffic and liquid energetic products, people, from cruise ships and information, from telecommunications cables).*

**Map 48** "Cold spots" of land-sea interactions (low intensity)

# "Hot Spots" of Land-Sea Interactions



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Thematic data: Typology Map.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Typology Map (hotspots)

### Sea (Environmental Pressures and Flows)

- High intensity
- Very high intensity

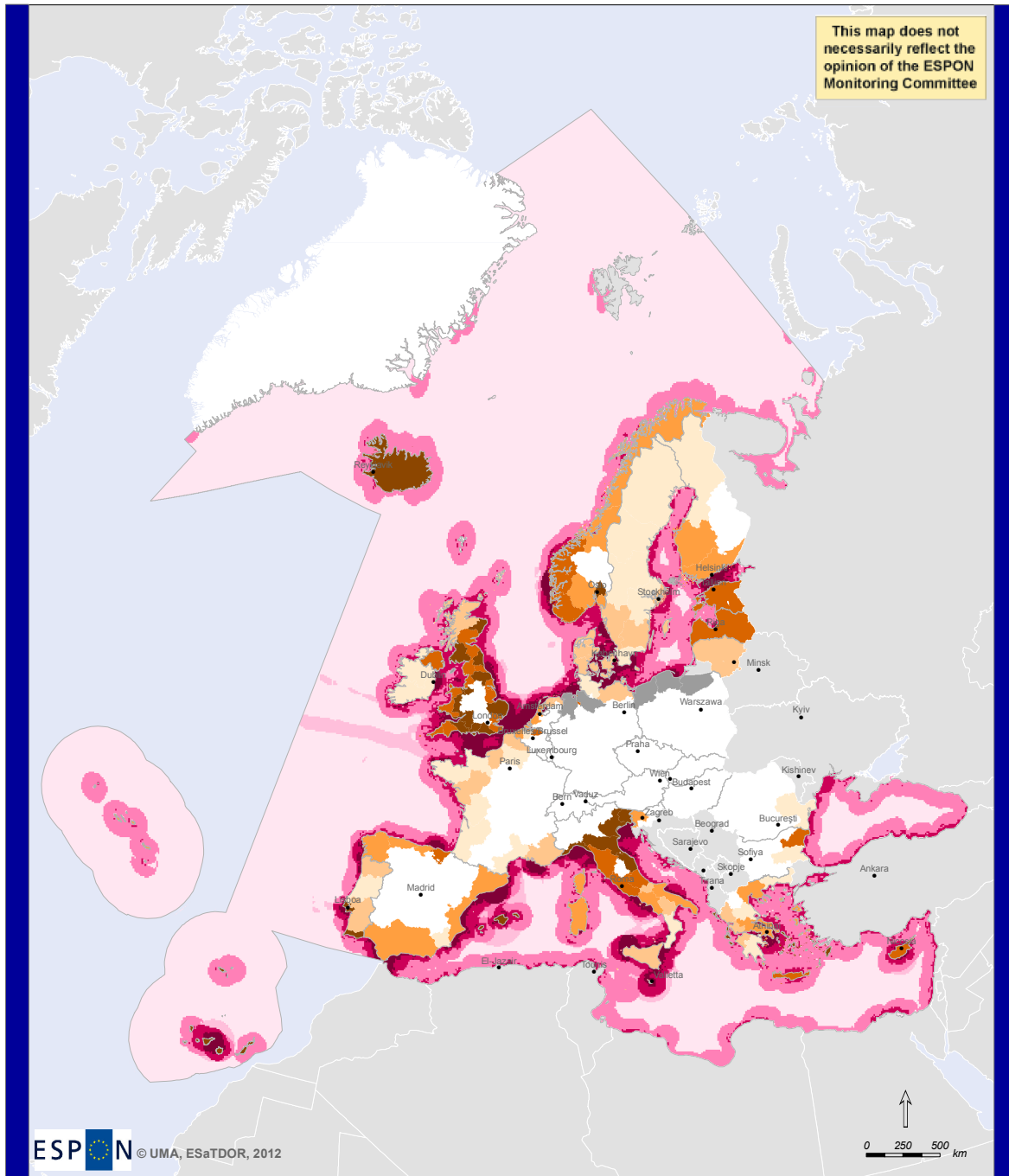
### Land (Economic Significance)

- High intensity
- Very high intensity
- No Data

*This map shows where land-sea interactions are at their most intense in Europe's seas. The effect of the sea on the land is measured in terms of economic significance employment in maritime sectors) and the effects of anthropogenic activities on the sea are resented by environmental pressures (pollution from pesticides and fertilisers, incidence of invasive species introduced by shipping) and flows (of goods, including container traffic and liquid energetic products, people, from cruise ships and information, from telecommunications cables).*

**Map 49** "Hot spots" of land-sea interactions (high intensity)

# Intensity of Land-Sea Interactions Across Europe



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Thematic data: Typology Map.  
Land boundaries: © EuroGeographics Association and ESRI. Regional level: NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Typology Map

### Sea (Environmental Pressures and Flows)

- Very low intensity
- Low intensity
- Medium intensity
- High intensity
- Very high intensity

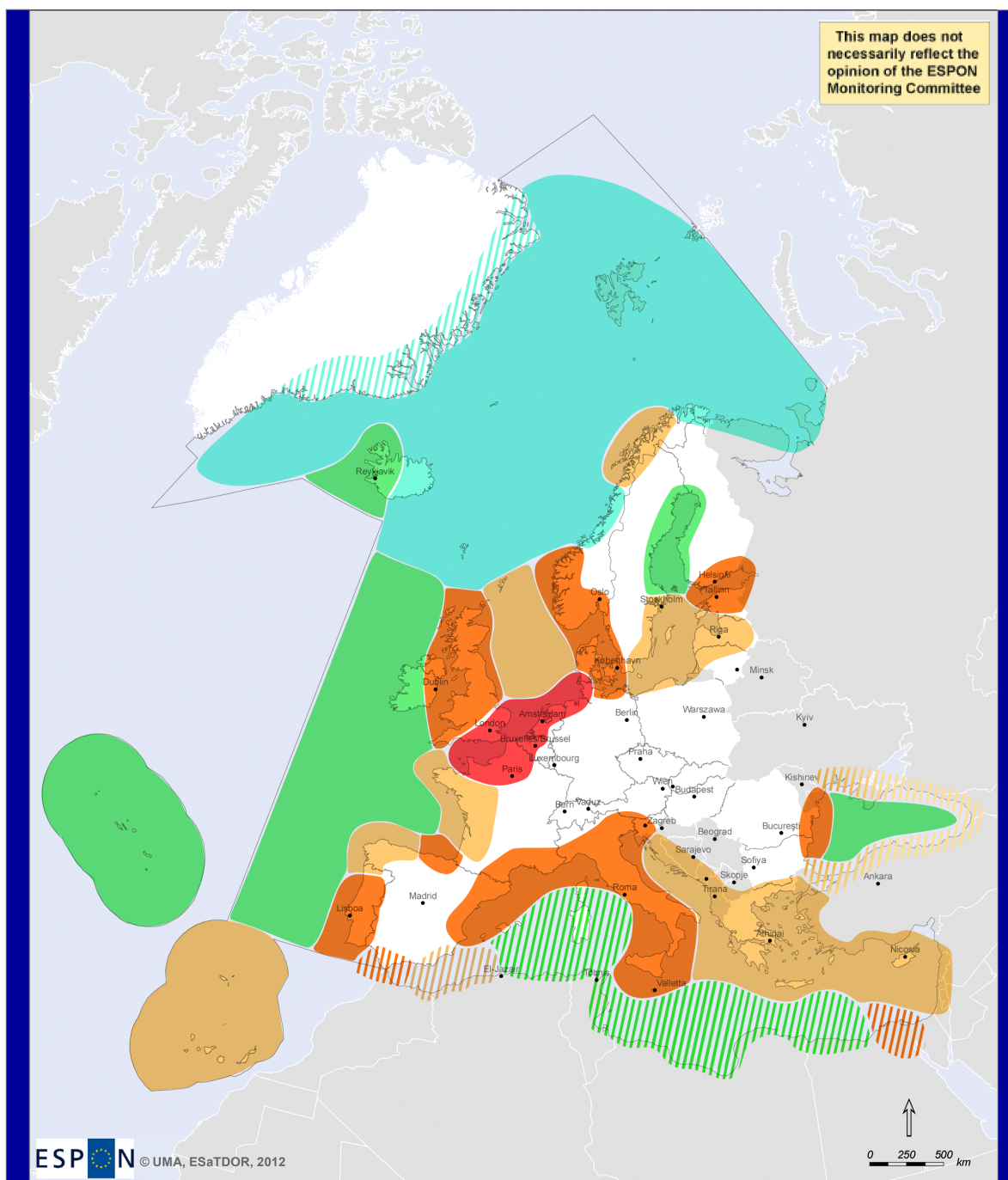
### Land (Economic Significance)

- Very low intensity
- Low intensity
- Medium intensity
- High intensity
- Very high intensity
- No Data

Map 50 Intensity of land-sea interactions across Europe



# Typology of European Maritime Regions



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Thematic data: Typology Map, Economic Significance and Environmental Pressures Composite Maps  
Land boundaries: © EuroGeographics Association and ESRI, Regional level, NUTS2.  
Sea boundaries: OSPAR Convention, EU Integrated Maritime Policy and EEZ.

## Regions derived from typology map

- European Core
- Regional Hub
- Transition
- Rural
- Wilderness
- Typology influenced by lack of data

*This schematic typology map shows how Europe's coastal and maritime regions may be classified based on the intensity of land-sea interactions (economic activities, flows of goods, people and information and environmental pressures). These interactions are greatest in the European Core and at their lowest in the Wilderness.*

**Map 51** Typology of European maritime regions (schematic map)

## 10.6 Final Reflections

The typology presented here is not a final product and should be regarded as a first step towards a better understanding of the current pattern of land sea interactions in Europe's maritime regions. While previous typologies have focussed either on the land or the sea, the ESaTDOR typology has sought to integrate land and sea perspectives. As the task has been to produce a European-wide typology we have been significantly constrained by the limitations of the data available to us and there is plenty of scope to refine and develop the typology as the quality of data improves over time. However with these limitations in mind it is felt that the typology is helpful in informing a more holistic perspective on what territorial development should encompass for Europe's maritime regions. Not only is there a need for this bridge the land sea divide, but the typology highlights the importance of a transnational perspective for example in coordinating regional hubs for example. Similarly it emphasises that the regional seas themselves are not discrete units but highly interlinked and that planning for future territorial development would do well to take this into account.

## 11. Future Scenarios

The ESaTDOR Scenarios Workshop *Towards a European Maritime Vision* formed part of Work Package 2.6 of the ESaTDOR project. The purpose of the workshop, held in Amsterdam on 21<sup>st</sup> June 2012 was to draw together the ESaTDOR project's findings to date regarding the current state of maritime regions, opportunities and risks for territorial development and consider how these might affect change in maritime regions under different scenarios in the period up to 2050. The discussions in the scenarios workshop were therefore intended to:

- Test the four spatial development scenarios outlined in a briefing paper and their implications for maritime regions,
- Establish what might be the most desirable outcomes from each scenario in order to develop a European Maritime Vision,
- Generate policy recommendations which may help to achieve these outcomes.

This chapter uses reflections from the workshop to develop clearer Maritime scenarios that might be useful in the implications of land sea interactions for policy makers at the scale of European seas and indeed in relation to the specific regional seas themselves.

The original Briefing Note used by participants in the workshop is included in Annex 15 of this Draft Scientific Report.

### 11.1 Context

The European territory faces several challenges over the next decades, including overcoming the current economic crisis, integration into the global economy, growing interaction between different parts of the EU territory and neighbouring countries due to enlargement, migration, changing patterns of production and trade, increasing risks from natural hazards and climate change, increasing energy prices and a new energy paradigm. Given the great diversity between different regions of the European Union, each part of the territory has different strengths and weaknesses in being able to meet the challenges ahead and contribute to the overarching European aim of territorial cohesion.

At a policy level, the European Union is seeking to address these challenges in a number of ways. *Europe 2020*, the European Union's growth strategy, has the overarching aim of creating the conditions for growth under three main priorities –

- Smart growth: developing an economy based on knowledge and innovation.
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

By spreading the benefits of economic growth throughout the European Union, including its outermost regions, territorial cohesion should be strengthened.

As part of the drive for economic growth, EU Member States and Neighbouring Countries are increasingly looking to their maritime assets as a means of delivering growth. Coastal tourism, offshore renewable energy, more efficient shipping and aquaculture provide some examples of sectors that may contribute to future economic development, however, maritime assets must also be democratically and effectively managed to ensure their sustainable use. At the Informal Ministerial Meeting of Ministers responsible for

Spatial Planning and Territorial Development, Hungary, 2011, it was noted that:

*“Maritime activities are essential for territorial cohesion in Europe... The Marine Strategy Framework Directive and EU Integrated Maritime Policy call for coordinated actions from Member States on Maritime Spatial Planning. Such planning should be integrated into the existing planning systems to enable harmonious and sustainable development of a land-sea continuum.”*

*(para55)*

In line with this, the following policy initiatives from the Directorate General for Maritime Affairs and Fisheries (DG Mare) support integrated planning across the land-sea divide and may help to facilitate territorial cohesion:

### ***Integrated Maritime Policy***

The European Union adopted its Integrated Maritime Policy (IMP) and Work Programme in 2007. IMP recognises that a more coherent approach to maritime issues is needed in order to meet the challenges of sustainable development. This will require a new framework of governance that applies an integrated approach to decision making at every level and on cross cutting issues.

Under the IMP Programme of Work, projects will include a European maritime transport space without barriers, a strategy for marine research, national integrated maritime policies to be developed by Member States, a European network for maritime surveillance, a roadmap towards maritime spatial planning by Member States, a strategy to mitigate the effects of Climate Change on coastal regions, cleaner shipping, elimination of pirate fishing and destructive high seas bottom trawling, a European network of maritime clusters and a review of EU labour law exemptions for the shipping and fishing sectors. In order to implement IMP more effectively according to the diversity of different European coasts and Member States, the Commission has decided to adopt a regional sea-basin approach.

See the “Blue Book” – Communication on an Integrated Maritime Policy for the European Union (COM (2007) 574 final)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007DC0575:EN:NOT>

## ***The Roadmap for Maritime Spatial Planning (MSP): Achieving Common Principles in the EU***

The Roadmap for MSP was published in November 2008 and was intended to stimulate discussion amongst Member States about a common way forward for implementing MSP across the Union. The Roadmap draws on examples of Maritime and Marine Spatial Planning alongside other legislation and policy initiatives such as Integrated Coastal Zone Management (ICZM), regional sea conventions against pollution such as OSPAR and HELCOM, the Marine Strategy and Water Framework Directives and the Common Fisheries Policy to develop a set of principles which should underlie MSP. These include an ecosystem approach, defining long-term objectives to guide MSP, ensuring stakeholder participation from an early stage, simplifying decision-making processes, application in accordance with international law, cross-border cooperation and consultation, having a strong data and knowledge base and achieving coherence between terrestrial planning and MSP (for example through ICZM).

A Communication on achievements and future development of the Roadmap issued in 2010 noted that progress towards implementing MSP in Member States was developing in an ad-hoc manner, with varying pace and at different scales across different parts of the EU territory. Further work on promoting a common approach to MSP, particularly in relation to sea-basin wide and cross-border cooperation was required.

See the Roadmap for MSP: Achieving Common Principles in the EU (COM(2008) 791 final)

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:DKEY=483715:EN:NOT>

## **Blue Growth**

Blue Growth is DG Mare's long term strategy to support growth in the maritime sector and contribute to the aims of *Europe 2020* and is thus defined as "*smart, sustainable and inclusive economic and employment growth from the oceans, seas and coasts*". Blue Growth aims to identify and tackle challenges (economic, environmental and social) affecting all sectors of maritime economy, including those sectors which support maritime activity but may be based far inland. In doing so, DG Mare hopes to identify activities with high growth potential in the long term and support them by:

- removing the administrative barriers that hamper growth,
- fostering investment in research and innovation,
- promoting skills through education and training.

Blue Growth focuses on existing, emerging and potential activities such as short-sea shipping, coastal tourism, offshore wind energy, desalination, use of marine resources in the pharmaceutical and cosmetics industries. DG Mare has commissioned research to support its Blue Growth proposals, first identifying business areas to look at in terms of Blue Growth

potential, then examining in more detail a sub-set of economic activities, their value chains, strengths and weaknesses and future policies which contribute to their further development.

The Blue Growth Third Interim Report, “*Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts*” provided some of the source material for the workshop. In particular, the report described the future growth potential of different sectors based on a life cycle approach. Under this approach economic activities may be classified as being:

- at the **Pre-development** stage – in which the full potential of a product is still unclear. Much research and development is still required and commercial viability of a product may still need to be proven.
- **Growth**: (strong) economic growth and/or employment growth takes place, enabling smaller firms to enter the market. Prices of production are likely go down as economies of scale are realised.
- **Maturity**: economic activity remains stable at a big size. Market positions of main players are clear and competition is fierce.
- **In Decline**: economic activities are declining; no major innovations are being made. It is clear which players are dominating the market.

See “Blue Growth Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts” (Third Interim Report)

[http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/blue\\_growth\\_third\\_interim\\_report\\_en.pdf](http://ec.europa.eu/maritimeaffairs/documentation/studies/documents/blue_growth_third_interim_report_en.pdf)

Whilst not an exhaustive list of European policies supporting maritime activities, the examples given here provide a good overview of some of the emerging policy context within which the ESaTDOR project is being undertaken. In the following sections, we outline in brief the research work that has been carried out so far and how it informs the inputs into this scenarios chapter.

## 11.2 Developing Maritime Visions

Here we describe the approach that has been used to develop the scenarios presented at the end of this chapter. As with much of the rest of this multifaceted and multidimensional project, the approach has been experimental and iterative in character. The Visions that we have developed are intended to be spatial representations of what might happen in the future. The visions are not intended to be predictions but a mechanism of beginning to think about the future. We have adopted a “pressure driver response” approach, which through engagement with stakeholders has refined the outcomes. The following section describes the process.

In developing the scenarios we also drew heavily on the approach being developed by the ET2050 ESPON Scenarios project, which at the time of writing had just started. For this project the scenarios are a combination of being expert and politically driven (evidence based, scientific and utilising stakeholder engagement). We have adopted a similar approach, by using expert knowledge which has been adapted in the light of stakeholder feedback.

From the outset it is important to understand that the scale of the scenario building exercise was generic and broad brush, attempting to explore land sea interactions at the European scale. Many other scenario building exercises might take a broad European approach but are often based on a narrow definition of the European territory which is land based and terrestrial in character. In contrast this project has conceptualised the European territory as including the maritime space, understanding that social and economic cohesion on land is dependent upon the two way inter-relationships of flows, that is, flows of resources from or through the sea to the land, and of course vice versa the flow of goods, information and pollution from land to the sea.

Our starting point has been the development of a baseline scenario, which uses available information to map these land-sea interactions. This mapping aims to capture three elements; firstly, human impacts on the marine environment, second, land-sea flows of goods, people, energy and information where the sea acts as a conduit for these flows, and thirdly maritime economic activity, measured in terms of land-based activities such as employment. These three dimensions have been combined to create the baseline typology.

The drivers for change were largely drawn from DG MARE (2012) *Blue Growth: Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts*. Although following our stakeholder workshop held in Amsterdam in July 2012, there was clear feedback that the implications of the current financial crisis had not been fully articulated and this was clearly one of the key drivers for the short, medium and longer timeframes. These drivers for change (see Tables 49 to 51) could then be qualitatively described in relation to the groupings of data being used to construct our typology. Again these perspectives have been reviewed and refined in the light of stakeholder feedback and comment.

The implications of the drivers for change for these groupings were then considered on a spatial basis, originally using the four emerging scenarios from the ET2050 project:

- A Europe of Flows;
- A Europe of Creative Cities;

- A Europe of Balanced Region; and
- A Europe of Self Sufficient Towns.

A brief description of these scenarios is provided in Annex 15. There was a consensus amongst the stakeholders that these four scenarios were too land based and as a consequence underplayed the marine environment; where too similar and often too closely overlapping in character; too much driven by economic (regional policy considerations) and therefore underplaying the marine spatial planning ecosystem services perspectives of DG Mare.

Consequently, following the workshop, we have reduced and recast the four scenarios that were presented. Instead we focus on only more contrasting scenarios:

- A Europe of Flows
- A Europe of Self-sufficient maritime regions

These are outlined in section 11.4. It should be reiterated that these scenarios are not predictions of the future, but broad images of potential futures, providing a broad framework for a policy debate.

Using these scenarios we have then begun to think about what the implications at a broad scale might be for the three components that have helped to create the typology. This then provides the framework for a discussion about policy recommendations that that can be targeted at a range of stakeholders at a variety of different scales (see Table 48).

**Table 48** Illustrative framework for Policy Recommendations based on Stakeholder Workshop

<b>Stakeholder Group</b>	<b>Recommendation</b>	<b>Justification</b>
e.g. the European Commission, Regional Sea Secretariats	...	...
...	...	...

For the purposes of the scenarios workshop and report, the three categories of Europe's marine environment (environmental pressures), land/sea flows and coastal areas (economic significance) were used in conjunction with spatial scenarios to help identify the impacts each scenario will have on the terrestrial or marine environment and movements between the two.



### **11.3 Scene Setting: Current Opportunities and Risks, Future Challenges and Drivers for Change in Europe's Maritime Regions**

This assessment draws upon the findings from the ESaTDOR project to date, together with the findings from DG MARE (2012) *Blue Growth: Scenarios and drivers for Sustainable Growth from the Oceans, Seas and Coasts*. The future challenges and drivers for change outlined in the Blue Growth Report are listed below. Additional challenges and drivers, notably the implications of the financial crisis have been subsequently built into the analysis following feedback from the workshop.

Tables 49 to 51 provide a summary of the current position, opportunities, risks, drivers and challenges for Europe's marine environment, land-sea flows and coastal areas.

#### **Key Challenges facing Europe's Maritime Regions (DG MARE, 2012, p7)**

##### *Globalisation and competitiveness:*

in 2025, nearly 2/3 of the world's population will be living in Asia, which is likely to become the first producer and exporter of the world and which catches up or even overtakes the US and Europe in the area of research as well as industrial production; overall, the economic and financial crisis has weakened Europe's competitive position vis-à-vis third countries, notably those in Asia;

##### *Global warming and climate change:*

climate change is expected to continue unabated and radical changes in production and consumption will be required to keep global warming to acceptable levels. The economic and financial crisis is not helpful in addressing these challenges, and progress in the decarbonisation of the economy has slowed down;

##### *Poverty and mobility:*

international migration will develop and, without an important inflow of immigrants, the European population would start to decrease as from 2012; a third of the world population is undernourished;

##### *Increasing scarcity of natural resources and vulnerability of the planet:*

new geopolitics of energy are characterised by a relative balance of the strategic importance of the Middle East, Russia and the Caucasus; more than 50% of the major ore reserves are located in very poor countries; three billion people will be lacking water in 2025; and it is essential that Europe's efforts to slow down climate change are taken not only by Europe but especially by other powers;

##### *Urbanisation and concentration in coastal regions:*

today more than 41 % of the EU population lives in coastal regions. For the coming decades a further concentration of people in these regions is expected. This will increase the pressure on land, fresh water and other resources available in these zones and thus increase the need for integrated policies.

##### *Demographic change:*

ageing of Europe's population in general and in coastal areas in particular, which may be a driver for specific maritime economic activities.

In addition to these perspectives an additional factor needs to be considered:-

*Implications of the Financial Crisis:*

The full effects of the global financial crisis, its consequences for the financial stability of European nation states - and the Euro itself - will have long term implications for governments trying to stimulate economic growth. It is unclear whether the current situation is a relatively temporary blip or indicative of a sustained downturn in economic wellbeing.

When these trends continue, they will lead to unprecedented tensions between the current methods of production, of consumption and the future availability of non-renewable resources. These tensions are likely to focus on food, health, energy, raw materials, and water. Additional challenges will arise in the areas of trade, investment and Europe's industrial competitiveness, but also in leisure and urbanisation. A continuous search will remain for new energy sources to reduce the dependency on third countries and world regions.

The implications of these trends can be considered in aspatial terms for the three broad types of land sea interaction identified above. Tables 11.2 to 11.4 provide a summary of the current position, opportunities, risks, drivers and challenges for Europe's marine environment, land-sea flows and coastal areas.

**Table 49** Scene Setting for Maritime Region Territorial Development – Europe’s land/sea flows

<b>Europe’s Land/Sea Flows</b>	
Current Position	
<b>Opportunities</b>	<b>Risks</b>
<p><i>Mature Stage*</i> Offshore oil and gas Short sea shipping Yachting/Leisure boating</p> <p><i>Growth Stage*</i> Offshore wind Cruise Tourism Maritime surveillance</p> <p><i>(Pre) Development Stage</i> Ocean renewable energy</p> <p><i>Other</i> International energy grids Carbon storage Development of motorways of the sea New shipping routes in the Arctic</p>	<p>Increased carbon emissions associated with oil and gas development Environmental damage associated with new energy sources Restrictions to other sea uses associated with energy development Increased shipping accidents Increased air and sea pollution and invasive species Administrative barriers to short sea shipping/transport of goods Poor landward connections limiting shipping growth potential</p>
<b>Future Challenges and Drivers for Change</b>	
<b>Challenges</b>	<b>Drivers for Change</b>
Globalisation and competitiveness	<p>Increased world trade Increased through traffic through European Seas Relative decline in importance of European trade and ports</p>
Global warming and climate change	<p>Increased focus on energy efficiency of shipping Increased focus on renewable energy production Greater use of telecommunications as an alternative to travel</p>
Poverty and mobility	<p>Increased international passenger movement both legal and illegal</p>
Scarcity of natural resources and vulnerability of the planet	<p>Continuing interest in oil and gas development in European seas Increasing long distance movement of oil, gas, water by pipeline</p>
Urbanisation and concentration in coastal regions	<p>Settlement pattern supporting increased short sea shipping / marine renewable development</p>
Demographic change	<p>Supporting growth in cruise tourism / leisure boating?</p>
Global and European Financial Crisis	<p>Uncertainty as to the implications for global trade (sustained decline or medium to longer term recovery?)</p>

**Table 50** Scene Setting for Maritime Region Territorial Development – Europe’s coastal areas (economic significance)

<b>Europe’s Coastal Areas</b>	
Current Position	
<b>Opportunities</b>	<b>Risks</b>
<p><i>Mature Stage*</i> Coastal Tourism Coastal Protection</p> <p><i>Other</i> Research and innovation and industrial cluster development associated with: Short Sea Shipping Offshore Oil and Gas Offshore Wind Cruise Tourism Marine Aquatic Products Maritime Monitoring and Surveillance Blue Biotechnology Ocean renewable energy Marine minerals mining</p>	<p>Environmental pressures caused by intensive coastal land use</p> <p>Relatively high labour costs requires high capital intensity and ongoing innovation to maintain competitiveness</p> <p>Inadequate governance arrangements for resource exploitation</p> <p>Pollution threat to marine living and non-living resources</p> <p>Poor landward connections limiting shipping growth potential</p>
<b>Future Challenges and Drivers for Change</b>	
<b>Challenges</b>	<b>Drivers for Change</b>
Globalisation and competitiveness	<p>Increasing focus on development based around indigenous regional strengths.</p> <p>Increased importance of research and innovation to maintain competitive edge</p>
Global warming and climate change	Decarbonisation of maritime industrial clusters a major focus
Poverty and mobility	Potential labour shortages if international immigration is not supported
Scarcity of natural resources and vulnerability of the planet	Increased competition for land and natural resources in coastal areas
Urbanisation and concentration in coastal regions	Population flows may help counterbalance peripherality of coastal regions and support regeneration and economic growth
Demographic change	A driver for development of types of leisure and care industries in coastal regions
Global and European Financial Crisis	

**Table 51** Scene Setting for Maritime Region Territorial Development – Europe’s marine environment (environmental pressures)

<b>Europe’s Marine Environment</b>	
Current Position	
<b>Opportunities</b>	<b>Risks</b>
<p><i>Growth Stage*</i> Marine aquatic products Marine monitoring</p> <p><i>(Pre) Development Stage*</i> Blue Biotechnology Marine minerals mining</p> <p><i>Other</i> Conservation Services</p>	<p>Pollution/invasive species</p> <p>Continuing fisheries depletion</p> <p>Species loss</p> <p>Decline in water-based/ecotourism due to poor environmental quality</p> <p>Human health impacts</p>
<b>Future Challenges and Drivers for Change</b>	
<b>Challenges</b>	<b>Drivers for Change</b>
Globalisation and competitiveness	<p>Increased world trade linked to increase in invasive non native species</p> <p>Growing recognition of positive linkages between environmental care and economic prosperity</p>
Global warming and climate change	<p>Leading to species migration</p> <p>Rising sea temperatures reducing carbon absorption</p>
Poverty and mobility	
Scarcity of natural resources and vulnerability of the planet	<p>Increasing human exploitation of marine resources in/on/under the sea</p> <p>Increasing environmental awareness and protection/management measures for both land and sea</p>
Urbanisation and concentration in coastal regions	<p>Increased surface runoff/pollution</p> <p>Intensification of agriculture and increased diffuse pollution affecting marine environment</p>
Demographic change	
Global and European Financial Crisis	

## 11.4 The Scenarios

Rather than focusing on particular sectoral policies or economic growth trajectories, two spatial scenarios provide differing examples of how the European territory might be structured in the future have been developed.

Following the stakeholder workshop the original scenarios were revisited so that they were more radical and contentious and were/are more discrete from each other. The four visions presented (see Annex 15, original Scenarios Briefing Note) had many complementary and overlapping dimensions and the new visions should, as far possible be distinct and different. To this end we have revisited the scenarios and indeed some of the key drivers for change. The purpose of the scenarios is not to predict a future but to envision different possibilities as a mechanism for framing an informed discussion, about what land sea interactions we want to promote and better understand the importance of these interactions for broader territorial cohesion.

A Europe of Flows envisions a future based around sustained global economic growth and independency and assumes a business as usual model, although the pace of recovery remains debatable.

### A Europe of Maritime FLOWS

Under this scenario globalisation is a significant driver as Europe's maritime and inland connections are maximised with flows of goods and people increasing making use of the seas. The current global financial crisis is a relatively temporary phenomenon and soon trade links with the rest of the world become re-established and patterns of sustained growth are enjoyed. There is increasing emphasis on the development of long distance transport corridors linking European centres of production and consumption with neighbouring countries and the rest of the world. New global networks are opened up as the Arctic becomes increasingly more navigable over time due to climate change. Changes in the size of global shipping see greater concentration on a few large ports with associated increase in short sea shipping.

Alongside growing movements of goods and services, reinforcing the core, the use of the maritime environment for other forms of exploitation including energy, aggregates and fisheries intensifies. Planning and regulation becomes more relaxed and environmental costs are accepted more readily as a cost of maintaining Europe's position in an increasingly competitive global economy. Europe is seen as a peninsula connecting the global community through north south and east west axles(Henocque and Lafon, 2011).

The European core remains dominant and there is a high intensity of sea use as goods and services continue flow into this area as a European gateway. Goods are then redistributed to other parts of the EU from this hub. For the core the seas have relatively little importance in maintaining European hegemony apart from this gateway function. New channels of global communication may open up new ports as transshipment points.

Henocque, Y., Lafon, X. 2011. *EU's Strategy on Maritime & Environmental Issues in the Four Seas: multilateral approaches in the Baltic, Black, Caspian & Mediterranean Seas*. EU4Seas Papers.

[www.eu4seas.eu](http://www.eu4seas.eu)

### **A Europe of self-sufficient maritime regions**

In this more ecologically centred scenario the current financial crisis, at least for western economies is a long term attribute. Local public investment and governance works to stimulate local economic growth based on territories with distinct identities. Decarbonisation of the economy and moves towards greener energy are required, leading to slower growth. Local markets and production becomes more important. The maritime regions become more important points for short sea connectivity and they are better able to exploit locally derived benefits from the sea. Endogenous development and the empowerment of bottom up organisations promote greater local self-sufficiency. Due to climate change some coastal communities are more threatened whilst others are more resilient to environmental change. A pattern emerges where local sub-sea regional communities explore local potentials and opportunities and seek to capture more of the local maritime resources for the wellbeing of local communities, thereby creating a more diverse and differentiated, but more balanced Europe.

These scenarios then provide the basis for a discussion of the future and policy makers at different scales of activity will prioritise different agendas. At a European scale there are debates to be had regarding the extent to which the EU should as a body seek to manage the seas through formal or softer mechanisms, recognising the importance of the maritime environment for coastal and other communities. Clearly funding activities in the various seas provides an opportunity to both guide and influence policy and project initiatives which explore land sea interactions. With actors involved in the regional seas themselves working collaboratively they can begin to think about opportunities and risks, probably being able to draw on experiments, experiences and activities that have already occurred. National governments can begin to think more clearly how the maritime environment offers opportunities, but also possible risks and threats. Whilst sub-national actors, whether from a governance, sector or civil society perspective can begin to envisage whose interests are being served (and by default) whose (or what) interests are being compromised by exploitation of the maritime environment as part of a growth agenda strategy.

It is beyond the role, scope and function of this project to suggest who or what interests should be preferenced. These ultimately are political decisions, but what this emerging approach is beginning to highlight is that land sea interactions are inextricably linked, with decisions made for one environment having consequences for the other, and that integrated thinking should be a way forward.

## 12. Project Findings, Recommendations and Suggestions for Further Research

In this chapter we draw together some of the main findings of the ESaTDOR project. First, we provide a brief synthesis of the current situation in the six European Seas that have been the focus of our research. Alongside the findings relating to the creation of a new maritime region typology and scenarios for future development, these serve as a context for the recommendations that are set out in the following section. Finally, some “food for thought” is provided, to enable further discussion of the findings and recommendations of the project, whilst suggestions for further research are also outlined.

### 12.1 European Seas Overview

Table 52 provides an overview of the current situation in each of the European Seas based around the themes which have been the focus of the ESaTDOR project. This helps to clarify the existing character of each maritime region by identifying key areas of distinctiveness and similarity. The focus of the discussion here is upon drawing out key messages rather than repeating the findings in relation to each European sea, which are set out in the accompanying Annexes to the Scientific Report.

#### *Key Areas of Distinctiveness*

The distinctive character of each European sea has been shaped by a complexity of natural and human factors and both global and place specific interaction between these elements over millennia. This situation has produced a hugely rich and varied maritime picture which is fundamental to the environmental, social and economic well-being of Europe. Some headline messages to emerge from our analysis in terms of the distinctiveness of European seas are set out below.

- The Arctic is Europe’s most pristine maritime environment with enormous untapped natural resources.
- The Black Sea and the Baltic are enclosed seas serving very large inland catchments as a drainage basin, trade route and leisure and tourism destination. They are low salinity, brackish seas with very distinctive ecosystems.
- The Arctic, Baltic and Black Seas are particularly fragile ecosystems making them especially vulnerable to human pressures.
- The southern North Sea is the most intensively used maritime region in Europe and is the focus of European trade with the rest of the world.
- The Mediterranean is both a biodiversity and cultural heritage hotspot. It is of global importance for tourism and a major global route for east-west trade.
- The Atlantic is a key route connecting Europe with the rest of the world and offers the greatest potential within Europe for marine renewable energy development.



- Maritime activities with relatively high value added tend to be located around the Arctic Ocean, the Baltic Sea and the North Sea, whereas activities with relatively low high value added per employee are to a higher degree located around the Atlantic Ocean, the Black Sea and the Mediterranean.

### *Key areas of similarity*

While each sea has its own particular set of characteristics, some common features can also be identified. Some headline messages to emerge from our analysis in terms of the similarities between the six European seas are set out below.

- All seas have a mixed and closely interconnected maritime economy, and in all cases tourism is by far the largest maritime sector in terms of employment.
- Human use of the sea is increasing in all regional seas.
- Shipping and renewable energy are key areas where growth is occurring or expected.
- All seas have seen significant improvements in bathing water quality and are building a network of maritime or marine related protected areas for nature conservation.
- Problems of pollution and unsustainable exploitation together with the impacts of climate change continue to pose significant threats to the health of the marine environment.

**Table 52** Overview of the current condition in Europe's Sea Regions

	<b>Economic Use</b>	<b>Energy, Cables and Pipelines</b>	<b>Transport</b>	<b>Environment</b>
<b>Arctic Ocean</b>	Despite a low density of bed spaces, tourism is an important employment sector in the Arctic accounting for 12-14% of employment in coastal areas. Fishing/aquaculture is also significant and the region is a world leader in this sector in many respects. The Vestlandet region in Norway is important for shipbuilding industry and has experienced a change-process in the last ten years, in which the offshore-based part of the industry has experienced the strongest growth.	Energy is an important and growing sector in the Arctic with oil and gas extraction, hydropower, wind, wave and other renewable sources and nuclear energy all being significant in different parts of the area. At present cable and pipeline capacity in the region is low compared with other European seas but important telecommunication links exist between Norway and Svalbard and Iceland and pipelines take oil and gas from offshore Norwegian fields to the mainland and the UK. Major growth in these sectors is underway.	Shipping traffic in the Arctic is currently generally low, the exception being relatively heavy traffic along the Norwegian and Russian coastlines as well as between Iceland and mainland Europe. This may change due to reduction in ice presence. Already there are reports of increased traffic through Arctic waters to save travel time compared with Suez Canal shipment. Cruise travel is also increasing in the region. Currently there is a dispersed pattern of small ports showing a mixed pattern of growth and decline.	The Arctic Ocean is a unique but fragile marine ecosystem and relatively large parts of North-Eastern Greenland, Svalbard, Frans Josef's Land and their adjacent waters are now protected areas. At present levels of pollution in the region are low but current threats to Arctic biodiversity are climate change, unsustainable fishing practices and overharvesting of some species such as walrus and whales and sea mammals The increasing acidity of the ocean and thinning of the Arctic icecap also pose threats to the ecosystem.
<b>Atlantic Ocean</b>	Coastal tourism is the most significant maritime sector in most parts of the Atlantic followed by fishing which remains significant in some areas but is in decline. A wide range of other economic uses are also present reflected for example in regional clusters of industries associated with shipping and military activities. Activity is most concentrated in the Channel, and also to a lesser extent in the Irish Sea, on the north coast of Spain centred on Bilbao, around Lisbon in Portugal and the Straits of Gibraltar centred on Algeciras.	Oil and gas production have been important in the N. Atlantic and S. France but production is in decline. However offshore wind development is one of the Atlantic's fastest growing industries again presently focused in the north but with interest throughout the region. Wave and tide power are at an early development phase. The region is a focus of transatlantic telecommunication cables linking mainland Europe with north and south America, Africa and the Azores and Canaries.	Shipping is a key feature of the Atlantic. Many routes pass through the area with strong north/south and east/west flows. There is a concentration of activity around the Channel but Europe's mega ports are located outside the region. A dispersed pattern of larger and smaller ports (mainly import) provide focal points for maritime employment throughout the area. Activity is mainly focussed on freight but activity includes cross Channel passenger routes and two of Europe's top 10 cruise passenger ports – Southampton and Lisbon.	Generally good performance in improving quality of bathing waters and also good level of coastal protected area coverage. A new network of MPAs is beginning to emerge with notable concentrations at present in the Bay of Biscay. However organic and inorganic pollution remains a problem in coastal waters most notably within the Irish Sea. The presence of Invasive species is concentrated around many ports.

**Table 52** Overview of the current condition in Europe’s Sea Regions (continued)

	<b>Economic Use</b>	<b>Energy, Cables and Pipelines</b>	<b>Transport</b>	<b>Environment</b>
<b>Baltic Sea</b>	Coastal tourism is a major economic sector especially in south-western parts of the Baltic Sea Region. In contrast fishing is in decline in most countries. The largest fishing fleets are located in Denmark and Poland. Leisure boating in the region supports many related activities including numerous shipyards, although employment in this sector is also in decline.	The production and transportation of energy is increasingly significant including a major flow of tankers exporting Russian oil to destinations beyond the Baltic and gas pipelines connecting Russia and Germany. Two oil platforms in Russian and Polish waters produce oil. Offshore wind is at an early stage of development with a spatial focus on southern and western parts of the Baltic Sea.	The Baltic Sea is dominated by short sea shipping with more than 80 % of Baltic states’ trade transported by sea. It is a growing sector that is of strategic importance in the region and is of particular importance to the new EU member states. Activity includes bulk cargos, containers and a significant ferry trade. However, the majority of ships on the Baltic Sea are leisure boats served by numerous wharfs.	High compliance with bathing water standards. Pattern of improvement in relation to organic pollution. Currently around 7% of the area is covered by Natura 2000 designations. However despite many positive developments according to the HELCOM HOLAS-Assessment 2010 “None of the open basins of the Baltic Sea has an acceptable environmental status at present.” Eutrophication is a major problem. This situation reflects the enclosed nature of the sea.
<b>Black Sea</b>	Economic activities are concentrated into three sectors. Firstly, traditional activities, in which shipbuilding and marine equipment are the most important. Secondly, fisheries, though these have deteriorated dramatically. Thirdly, tourism, where the Black sea remains an important regional tourist destination, and is now attracting a wider market. The region also contributes a significant proportion of the global seaman work force. Maritime clusters are under development in Bulgaria and Romania.	The Black Sea region lies at the crossroads of major oil and gas export flows to the world energy markets. A number of regional initiatives are under way to maximise the opportunities presented by oil and gas export, including major pipeline construction, some of which will make use of seabed pipelines. However, renewable energy is underdeveloped at present, with only limited offshore potential.	The importance of Black Sea ports in international maritime trade is increasing, and cruise shipping is of modest but growing importance. Shipping accident rates are relatively small in comparison to the other EU regions.	The Black Sea has been exposed to natural and environmental fluctuations and to strong anthropogenic stresses. The state of the Black Sea environment continues to be a matter of concern due to the ongoing degradation of its ecosystem and the unsustainable use of its natural resources. The most important polluting factors in the Black Sea are land-based sources: tributary rivers and domestic and industrial discharges. Nutrient input and eutrophication are widespread problems, and there are hot-spots of heavy metal and oil pollution, especially in some coastal areas.

**Table 52** Overview of the current condition in Europe's Sea Regions (continued)

	<b>Economic Use</b>	<b>Energy, Cables and Pipelines</b>	<b>Transport</b>	<b>Environment</b>
<b>Mediterranean Sea</b>	<p>Of all European maritime regions, the Mediterranean has the greatest share (52%) of people working in coastal and marine tourism. It accounts for approximately 30% of the world's international tourism. Fisheries also remain a key industry with Turkey, Italy and Spain reporting the largest catches, and Greece and Turkey being major fish farming nations. Other significant sectors include recreational boating, navy and coastguard. Clusters of shipping building and other maritime industries are evident throughout the region often linked to key naval establishments.</p>	<p>The region contains major centres of oil and gas production, mostly land-based in North Africa; there are some small offshore fields. It is important as a zone of transit for oil and gas, with major pipelines connecting N. African supply to European demand. To date offshore renewable energy development has been limited but interest in wind and wave power is growing. There are also important international telecommunications cables running mainly in an east-west direction plus some north-south connections, notably between France and N. Africa.</p>	<p>On a key east west route the region sees 30% of World maritime traffic. Growth in shipping reflects increased trade between the far East and other parts of the world. Most traffic is passing through to other areas including North Sea ports. Most ports in the region have a major transshipment component e.g. Algeciras, Gioia Tauro, Marsaxlokk and Valencia. Short sea shipping between Med. destinations is important. Passenger transport is particularly significant in the eastern Mediterranean, with Piraeus (Greece) being Europe's busiest passenger port. Cruise trade is growing, with Barcelona, Civitavecchia, Palma de Mallorca and Venice attracting the largest number of cruise passengers, supported by many smaller destinations.</p>	<p>The region is a biodiversity hot-spot. Good progress with special area protection has been made particularly in the western part of the Mediterranean basin. Organic pollution has been a major issue and is heightened by the intensity of seasonal tourism with pollution hotspots remaining in areas with high eutrophic conditions. Good progress has been made on meeting bathing water standards although further progress is required in East and South Mediterranean Basin countries. Alien species present challenges around key shipping lanes, major ports and areas of aquaculture in the north west Mediterranean and Adriatic Sea.</p>

**Table 52** Overview of the current condition in Europe’s Sea Regions (continued)

	<b>Economic Use</b>	<b>Energy, Cables and Pipelines</b>	<b>Transport</b>	<b>Environment</b>
<b>North Sea</b>	Maritime services, navy and coastguard activities, marine equipment and shipbuilding are all important sectors reflecting the presence of mega ports and energy development in the region. Fishing has historically been a major activity and fleets are highly industrialised with vessels operating increasingly outside the region in the Atlantic and beyond. Coastal tourism is popular and growing and of particular importance in more sparsely populated areas of the UK and in the southern part of the region.	The North Sea is one of Europe’s premier energy production regions. Large-scale oil and gas production mostly in Norwegian, UK and Dutch waters has been significant over the past 40 years but output is declining and there is a shift to more, smaller fields. The region is home to the greatest concentration of offshore wind farms in the world and further expansion is planned, particularly in UK and German waters. The North Sea has a high concentration of power and telecommunications cables linking its bordering countries.	The North Sea contains some of the busiest shipping routes and largest ports in Europe including Rotterdam, Antwerp and Hamburg which all have growing container trade and a good balance between imports and exports. Ferry activity is significant but declining in the southern North Sea and across the Skaggeak. Cruise activity is distributed throughout region with a concentration in the North around Copenhagen, Oslo and Bergen. Southern ports mainly operate as passenger embarkation points.	The North Sea is a young, relatively shallow sea with highest biodiversity occurring in coastal regions and in areas such as the Dogger Bank and along tidal fronts. Good progress has been made in establishing protective designations and in meeting bathing water standards but organic pollution remains an issue with hotspots associated with the Rhine, Elbe and Humber Rivers. Invasive species present significant environmental threats particularly in the vicinity of the very busy Channel and large ports.

## 12.2 Key Findings

Besides providing a more qualitative assessment of the regional seas in terms of current conditions and future territorial development opportunities, the key thematic findings of ESaTDOR relating to a variety of scales are:

### ***A New Maritime Region Typology***

Previous ESPON typologies are all land-based and do not adequately capture uses of maritime space or land-sea interactions. To this end, a new maritime region typology was developed by combining a limited number of land and sea-based data sets based around **economic activity, environment and flows**.

**The final typology map produced (Map 51, see page 325) indicates the intensity of land-sea interactions expressed by types of maritime regions** – these are the **European Core**, where land-sea interactions are at their most intense, through **Regional Hubs, Transition, Rural and Wilderness regions** where land-sea interactions are at their least intense. Table 46 (page 315) explains the different characteristics of each maritime region. The typology creates a visual representation of the land-sea interactions. It suggests that it is difficult to prescribe a particular characteristic or label to individual seas. There is considerable variation within the regional seas as well as between them. The traditional European core or pentagon is predominant in this imagining, with the English Channel and southern North Sea being characterised by the most intense maritime activity and forming the European Core Maritime Region. The Arctic represents the only true wilderness region of Europe; however future developments such as the opening up of new shipping routes and increased hydrocarbon exploitation could have direct effects on the characteristics of this region.

From the typology and consideration of the opportunities and risks that might be faced by each maritime region, it is clear that **land-sea interactions are dynamic and careful consideration needs to be given in thinking about the policy implications of different developmental scenarios which explicitly consider these dynamics**.

### ***Maritime Scenarios underpin the significance of integrated thinking***

In the same way that a new typology was required to help understand land-sea interactions, the ESaTDOR project has developed two new spatial scenarios that may be used to consider how the European territory may be structured in the future. Building on the work of the ESPON “Territorial Scenarios and Visions for Europe (ET2050)” project and the outcomes of a stakeholder workshop, the two new scenarios are a **Europe of maritime flows** and a **Europe of self-sufficient maritime regions**.

The *Europe of maritime flows* envisions a scenario in which economic globalisation continues to be the dominant force shaping territorial development, with increasing maritime connections over longer (deep sea) and shorter routes and with greater use of inland waterways. The European Core maritime region remains a central gateway for the import and export of goods.

Under the *Europe of self-sufficient regions* scenario, environmental concerns and slower economic growth are the main drivers of territorial development. Short sea connectivity is improved as there is greater emphasis on endogenous growth and the

diversity of maritime regions as they seek to exploit more localised opportunities in the maritime sector, such as offshore wind and coastal tourism.

A more detailed explanation of the scenarios and their potential impacts on European seas is provided in Chapter 11 of the Scientific Report. The scenarios outlined above are a basis for discussion about future territorial development policy, considering more explicitly how land-sea interactions shape growth and development, recognising the different opportunities and risks that exist for exploitation of maritime assets in each region. The work on the scenarios highlights the **importance of integrated thinking as land and sea are inextricably linked, with decisions made for one environment having consequences for the other. Good Governance is required to reconcile different interests.**

Early governance arrangements in most of the regional seas originated from a concern about deteriorating environmental quality caused by human activity, with a desire to repair this damage. One of the key findings is that **effective governance arrangements are needed at all levels to address and reconcile differences of interest between traditional and new uses of the sea, and between environmental and development interests.** The project has shown that the existing governance arrangements dealing with cross border and transnational issues within a maritime context are generally ad hoc, incremental and tailored to meet the specific needs of particular issues or specific agendas. They are highly complex and often there is a lack of integration between institutions working in the same area, with overlapping or competing remits. The most well established institutional arrangements dealing with integrated territorial development linking land and sea are found in the Baltic, although even here there are continuing integration and implementation issues.

Overall, this research highlights that **the seas matter for territorial cohesion.** They are spaces that offer development opportunities and should therefore be considered as integral to territorial development. However this brings with it challenges. How these development opportunities should be managed? All activities carry risks and can lead to competition with other interests. There is a growing recognition that good governance is a key pre-requisite to managing these conflicting claims and to achieving integrated territorial development.

### 12.3 Policy Recommendations

Taken together the preliminary insights and improved understanding provided by the above findings of the ESaTDOR project highlights key potentials for policy development at a strategic scale. Given the initial hypothesis of the project, that

*“the marine environment is a critical yet undervalued component of the EU’s, national, regional and local territorial space. Its associated risks and opportunities need to be better understood and more effectively managed in an integrated manner to ensure that these significant marine assets and resources can better contribute to broader European strategic goals”,*

a series of policy recommendations are therefore set out. These recommendations first take into consideration the findings of the project for issues of territorial development and governance, in particular focusing on Blue Growth policy and integrated Maritime Spatial Planning as important tools for

promoting territorial development based on marine and coastal activities. Secondly, the recommendations pick up some of the major outcomes of this research in terms of developing a maritime region typology and scenarios and how they can be used to inform future policy debates and spatial planning activities. Finally, the recommendations offer some practical advice with regards to data collection and mapping that can assist in improving the territorial evidence base for maritime policy and spatial planning which are relevant to a broad spectrum of stakeholders, but have particular relevance for the ESPON community as it begins to consider the “territorial” as encompassing terrestrial and marine space.

### ***Promoting Good Governance***

**Recommendation 1: Maritime spatial planning needs continuing support and promotion at both EU and national level to ensure that states maximise the opportunities presented by Blue Growth in a way that is consistent with the ambitions of the Marine Strategy Framework Directive whilst contributing to the territorial cohesion objectives of the *Territorial Agenda of the European Union 2020*.**

The ESaTDOR project supports the hypothesis set out at the start of the project. Despite the statement in the EU’ Territorial Agenda 2020 that ‘maritime activities are essential for territorial cohesion in Europe’ and that Maritime Spatial Planning ‘should be integrated into the existing planning systems to enable harmonious and sustainable development of a land-sea continuum’, the project has revealed that this process is still at an early stage. While there are many efforts being made to improve understanding of maritime resources and their value (for example at the EU level through the European Atlas of the Seas and DG Mare’s Blue Growth reports), much still needs to be done to integrate efforts more effectively to underpin the development of maritime spatial planning at a national level and in macro-regional strategies for sea basins. The project has revealed extensive experimentation with transnational governance arrangements for maritime regions, but in all European seas it is evident that integrated management both across national boundaries and the land sea divide could be strengthened. Progress in this area will be key and continuing support, promotion and capacity building for maritime spatial planning and associated developments in governance are needed.

**Recommendation 2: At a European scale, there should be greater recognition of the importance of marine space within EU activities and greater integration of sectoral policies with maritime dimensions. Close collaboration between DGs Environment, Mare, Move, Energy and Regio (for example) should be encouraged.**

The EU has already taken a leading role in promoting maritime spatial planning. The development of macro-regional strategies for the Baltic and Atlantic are good examples of where the EU has highlighted the significance of maritime assets and has adopted integrated and collaborative working across different directorates. Opportunities to extend this mode of working to other aspects of the EU’s activities and in other regional sea areas should be explored.



**Recommendation 3: There is a need for continuing efforts to develop effective transnational working in support of maritime spatial planning at different spatial scales.**

Many of the existing maritime governance regimes reviewed by the ESaTDOR project have developed organically over time to deal with particular issues or sectoral interests, and may be regionally or sub-regionally focused. They tend to be relatively weak, lack formal powers and have insufficient finance to ensure that progress is maintained. The case studies also demonstrate that informal (non-binding) governance can be as effective as formal (legally binding) governance arrangements. In many areas an evolutionary process is evident and some good practice is emerging which reflects growing recognition of the need to address trans-boundary maritime planning issues at different spatial scales. The EU has an important role to play in encouraging and facilitating the development of effective maritime governance both in national and transnational space.

**Recommendation 4: National governments should develop integrated maritime planning arrangements that ensure consistent planning across the land sea continuum in both national and transnational space that takes account of the strength of land-sea interactions.**

With some exceptions, especially in Germany where the Länder have planning responsibilities that encompass land and marine areas, planning arrangements for the land and sea tend to be distinct with only a very small area of overlap. Efforts will be needed to ensure more effective integration of maritime policies across the land sea divide. At the present time ICZM activity is often land orientated and focused towards environmental concerns and is general poorly positioned to take on an integrative role. The scope for a complementary relationship between maritime (or marine) spatial planning and ICZM should be established.

**Recommendation 5: The typology of maritime regions developed in this project could be used as a spatial tool for understanding land-sea interactions and informing integrated maritime policy development at a range of different scales.**

A key output from the ESaTDOR project has been the development of a Maritime Region Typology which illustrates the strength of land sea interactions and spatial variations across European maritime space, taking account of maritime related economic activity, maritime related flows and environmental pressures. The five types of maritime regions have distinct identities that can be used to inform policy makers and consequently may benefit from different types of policy intervention.

Possible options for developing policy responses for the different maritime regions identified in the typology could include the following:

- The **CORE** area should be the focus of the next integrated sea basin strategy. Some of this core region is already included within the proposed Atlantic Strategy, however to maximise opportunities for integration, a North Sea basin strategy should follow swiftly.

- Regional **HUBS** have potential capacity to benefit from many areas of economic activity identified in DG Mare's Blue Growth work. They demonstrate an established diversity of maritime activity and are well placed to take up new opportunities, release pressure on the European Core and strengthen their relative position.
- **TRANSITION** areas have a more narrowly defined maritime economy and need to identify their key maritime features/strengths and how they can be developed in sustainable way. In addition, opportunities for new maritime activities should be explored.
- In order to protect the characteristics of the valuable but vulnerable ecosystems of **RURAL** and **WILDERNESS** areas, environmental protection policies remain predominant, with strong precautionary principles being applied to economic development proposals.

**Recommendation 6: Transnational programmes (e.g. INTERREG) should make use of the typology, maritime scenarios and regional sea reports produced by ESaTDOR in developing their future activities.**

In addition to the maritime region typology, the outputs of the ESaTDOR project include the development of maritime scenarios and a series of regional sea reports covering each of the 6 European seas. Taken together this material could provide a considerable source of maritime information to assist policy makers in the development of the next round of EU transnational programmes and stakeholders are encouraged to view not only the final project report but also the extensive Scientific Report which contains full details of the project's findings.

### ***More Consistent Data Collection and Mapping of Maritime Resources is Required***

**Recommendation 7: The EU should develop a common framework for the collection of maritime data to facilitate harmonisation and consistency of spatial data across maritime regions.**

Valuable data collection is already taking place on a regional basis. However, consistent data specification and definition of key terms is needed to apply this information in a useful manner across Europe's maritime space. In addition to regional variations, our research has revealed inconsistencies in the language and definitions for environmental pressures and impacts used by the Marine Strategy Framework Directive and INSPIRE Directives and the European Environment Agency. These inconsistencies should be resolved in order to facilitate interoperability between these different sources of data and provide a clear basis for the future collection of maritime spatial data.

**Recommendation 8: The scope of maritime data collection should be broadened thematically, spatially and beyond the current ESPON boundaries to develop a more comprehensive understanding of land- sea interactions.**

There are significant thematic gaps in publicly available data (e.g. fisheries and the disaggregation of areas caught and where fish are landed, short sea shipping information below NUTS0 level and the disaggregation between offshore/onshore energy production). There is also a variation in the quality and availability of data spatially. A particular gap relates to environmental data beyond coastal waters; here data is more scarce and often relies on modeling from limited samples. Gaps also exist in relation to maritime data for non EU countries that share regional seas, highlighting a key area where cooperation on data collection could be beneficial. Identifying and attempting to fill these gaps should be considered as part of the Marine Knowledge 2020 programme.

**Recommendation 9: Existing maritime data sources should be made more widely accessible.**

Our research revealed a number of sources of privately held data and also where use of data required payment. One significant example related to data on oil and gas installations and it is recommended that efforts should be made as part of the Marine Knowledge 2020 programme to bring these into the public domain.

**Recommendation 10: In order to facilitate more consistent approaches to mapping land-sea interactions, the 10x10km grid square framework used in this project should be adopted as a marine equivalent to the NUTS units used on land.**

A major challenge faced by the project was the absence of an established system for defining comparable sea units in order to provide reliable and informative multi-thematic maps. Existing definitions such as EEZs, marine regions for the MSFD and EU Integrated Maritime Policy do not always correspond, being focused on political jurisdiction, ecosystem functions or thematic interests such as transport and relate to different sized geographical areas. In order to address this problem ESaTDOR has devised the 10x10km grid square framework for mapping marine data across comparable spatial units which can then be overlain with political boundaries as needed for policy development purposes. Again it is proposed that formalisation of this approach should be considered as part of the Marine Knowledge 2020 programme and future development of the INSPIRE Directive.

## 12.4 The Need for Further Analysis/Research

This research is the first time ESPON has dipped its toes in the sea. The project has been very wide ranging in terms of the diversity of issues that it has tried to deal with across a broad range of dimensions. It should therefore be seen as a scoping project rather than a definitive and final statement on a rapidly evolving, emerging and important European topic. The policy recommendations outlined in the previous chapter should therefore be seen as initial rather than definitive and there are plenty of opportunities for further research which is both generic and specific, in order to more clearly unravel the importance of land sea integration for territorial cohesion. This final section seeks to stimulate discussion and debate by providing food for thought related to key issues and also to identify clear areas where further research is needed.

### Governance

The governance case studies focused on transnational activities within specific seas. Many of these arrangements are relatively informal, having developed from a need to address particular sectoral issues or opportunities. Hence although the issues they address are significant, they tend to be relatively narrow in scope, rather than broad and integrative. In addition, many of these arrangements are still relatively embryonic. However, the case studies do point to the growth of the concept of marine / maritime spatial planning (MSP) as an integrative approach to managing the multiple demands on marine space and resources. MSP has the potential to draw upon land-use and spatial planning experience. However, this needs to be carefully adapted to the marine environment, which, as noted above, is much more complex and dynamic setting. So as these new governance arrangements develop, a series of questions and opportunities arise.

ESaTDOR is based upon the concept of territorial cohesion and the role of the marine space within this agenda. However, we are witnessing the emergence of separate territorial regimes for land and sea. How these are to be effectively integrated is yet to be resolved. MSP regimes are generally developing at a national level, particularly where coastal states have largely agreed EEZs. There is a need, therefore, to encourage the development of systems of MSP that integrate maritime strategies with those emerging for terrestrial space within those nations. There is also the potential to develop transnational strategies covering both land and sea, especially as co-operation with neighbouring countries is so vital within a marine context. This leads on to questions as to what should the most appropriate governance arrangements for the effective management of regional seas, given the mutual interdependence of land sea interactions for nations bordering a given sea. For example the Danube Strategy should have positive benefits for the quality of the Black Sea.

Finally, there is the question as to whether the EU should play a more formal role in facilitating these interactions, or whether the more informal approach currently being used is preferable in that this encourages locally specific experimentation. These remain unanswered questions. If the tradition of spatial planning on land are followed, which one of diversity and distinctiveness across Europe, MSP will also reflect historical, cultural political and locally specific differences. What may emerge is therefore a complex set of multi-level governance arrangements. So many marine governance arrangements have developed out of a desire to restore or at least prevent the further deterioration of the marine environment. More emphasis is now being placed on exploitation of maritime assets, but with recognition that a

good quality status is critical to maintaining the economic and social wellbeing of maritime communities. More work will be required to identify the numbers and scope of governance activities in the sea and appraising the characteristics that make them more resilient.

### ***Governance - Further Research***

- The maritime governance case studies considered during the ESaTDOR project revealed a spectrum of governance styles in terms of relative formality and level and extent of stakeholder engagement. The appropriateness of different governance styles in different contexts seems to merit further investigation to identify best practice and inform future development in this area.

### **Typology/Scenarios**

ESaTDOR has begun to set out baseline conditions as a means of thinking more creatively about future development scenarios. This is not intended to be a predictor of the future, but rather a way of engaging in more informed policy debate about what could happen. The focus has not specifically been on building scenarios, but on providing a starting point for further and more specific work. In building our initial scenarios we drew our inspiration from other ESPON work, in particular the scenarios being developed as part of the ET2050 project. Our stakeholders suggested a number of limitations in the use of these scenarios for understanding land sea interactions. Firstly, the ET2050 scenarios, in common with other ESPON projects, are land (terrestrially) orientated. For broader territorial scenarios, the role and importance of the sea must be explicitly considered. Secondly, the numbers of scenarios presented were too many and complex and in some regards too similar. There was a call for fewer, more distinctive and diverse scenarios. Finally, it was highlighted that one of the key drivers for change is the way in which Europe responds to the global economic crisis, and more particularly the financial challenges within the Euro zone. It is noted that many of our baseline maps rely upon data that relates to situations as the crisis was only just starting. More work needs to be undertaken to explore the spatial implications of the global economic and the European financial crises, in order to examine the resilience of maritime regions to change.

ESPON has stepped into the sea for the first time. This project was enormously wide ranging in its scope and expectations. The research has illustrated how important land-sea interactions are for territorial cohesion. MSP is an emerging activity which will encourage much further work on the implications of marine space for wider territorial agendas. Enormous and challenging questions still remain about the quantity, quality, availability, consistency and comparability of data across European maritime space; the need for appropriate integrative multi-level maritime governance arrangements; and about our understanding of which interests are being served (and which are being compromised) by the new demands we are placing on our maritime resources. As this broader concept of territoriality gains momentum, ESPON will need to integrate this dimension fully into its future programmes.

Spatial scenarios provide a useful tool for stimulating debate about future developments and the policies that could be put in place to achieve desired outcomes. A key finding from the scenarios workshop in this project was that

scenarios should be limited in number and focus on highly contrasting visions of the future rather than scenarios which are only incrementally different. Such an approach was judged to encourage more innovative and imaginative thinking.

### ***Typology/Scenarios - Further Research***

- Further development of the typology could include adding new datasets and extending geographical coverage to all inland areas within ESPON space and to neighbour countries.
- DG Mare's Blue Growth report has identified a number of "hot spots" based on maritime clusters. These could be compared to the "hot spots" identified by ESaTDOR in order to determine additional maritime regions with the greatest potential for growth, or those maritime regions where declining environmental conditions may suggest limits to growth.
- Within this ESPON project, notwithstanding the limitations of data availability, a typology has been created which shows the current picture of land-sea interactions in Europe's seas. Attempting to show how these patterns may change under different scenarios could form the basis of further investigation, providing powerful images to stimulate debates around future maritime policy.

### **Data and Mapping**

One of the main challenges this research faced was in terms of identifying suitable data sets that were available in a consistent manner across all of the European regional seas. This is also an issue for other (land based) ESPON projects which have been challenged by the availability of data, its consistency across ESPON space and the scale at which it is available. However, obtaining suitable data for this project proved to be much more problematic, especially regarding sea-based issues, for a number of reasons.

Firstly, there are no administrative units established for sea space equivalent to land-based data units (NUTS), and therefore there is no established practice of gathering data relating to such units. Data that is available is therefore of a highly inconsistent nature, relating to different spatial scales, a range of political and administrative boundaries, and is of highly variable coverage. Secondly, some of the data that is available, particularly at a national scale, does not allow disaggregation between information for land and sea (e.g. for energy production), or between different seas (where a nation borders more than one regional sea). Third, data quality was sometimes questionable, as it was partial or appeared to be contradictory compared with other data sets (this was particularly an issue with environmental data) making interpretation very problematic. For instance, one of the key risks factors for environmental integrity was the number of shipping accidents, and although most regional seas reported that the number of incidents was on the decline, there was no mechanism of verifying this on a European seas basis. Fourthly, some data proved not to be publicly available, especially that related to energy production. Finally the quality and quantity of data tends to declines with distance from the shoreline; hence better data exists on land and the coastal zone rather than the open seas. . Much time was therefore spent identifying whether key data sets could be used or not. The pragmatic outcome was that this project relied upon the best available data with the

greatest possible coverage for the study area. However, it is recognised that significant data gaps remained, with consequences for the following stages of the project.

The issue of data availability is increasingly being recognised in the context of European projects and initiatives relating to the seas and maritime activities. Hence the INSPIRE Directive aims to ensure that marine data is collected and made available in a more consistent and comparable manner. More work does need to be undertaken in this regard. A starting point for ESPON would be to establish a limited number of land-sea interaction indicators, and set about consistent and spatially-meaningful data collection in relation to those indicators. For example, within the environmental field there should be closer alignment between the requirements of the Marine Strategic Framework Directive and the INSPIRE Directive.

Once suitable data sets had been identified, the second challenge related to mapping the information in a meaningful way, particularly for the marine environment itself. As noted above, on land, the Nomenclature of Units of Territorial Space (NUTS), notwithstanding their limitations, provides a framework of broadly comparable units for mapping purposes throughout Europe. Within the marine environment no such system exists. The ESaTDOR project therefore had to develop its own framework of spatial units for mapping purposes beyond the shoreline. After considering various options, we decided upon a grid-square system, and chose 10x10 km grid squares as the most suitable for the data available and geographical coverage in question. However, the original data varies considerably in character, including point source, area-based polygons, modelled and extrapolated data. An additional challenge was therefore to convert data into a suitable form for geo-referencing into the 10x10 km grid squares and calculate an intensity of activity within each square. This proved to be time-consuming, but possible.

An important conclusion of the project is that a consistent grid square approach to the mapping of marine data does allow different attributes to be compared, and also combined into the composite maps, for example. The actual spatial resolution could be revisited; for instance, 1x1km or 100X100 km grid squares would equally be possible, depending on the type of data that was being used, leading to differences in the way that indicators might be seen within European Sea.

We have suggested that a system of this kind could be used as the basis for Marine Units of Territorial Space (MUTS), analogous to the terrestrial NUTS, providing an opportunity for effectively mapping different data sets within a spatial unit. There is scope to further explore this approach, to identify the relative advantages and disadvantages of mapping maritime assets at a variety of different scales of resolution. A further aspect of including the maritime environment in mapping would be to give thought has to be given to the different physical conditions of the sea compared to the land. The most important difference is the three-dimensional nature of marine space, and the way in which this space is already being used by different human activities. For example, shipping uses the surface, fishing uses the water column, cables lie on the seabed and mineral exploitation takes place under the seabed. Moreover, these activities may take place in the same location. It is difficult to capture this complexity in conventional two-dimensional maps. Also, physical conditions are intrinsically more dynamic than on land. For instance, currents transport substances, such as sediments and pollutants, over long distances, and human activities are also typically

more mobile. Again, movement of this kind is not easily represented on maps which tend to illustrate static conditions. So there is a need to develop new forms of representing marine space and activities. Consideration should be given to more responsive forms of mapping, such as overlay maps and time-sequence maps.

Attention should also be given to the way in which the national jurisdiction of coastal states is being extended beyond the coastline, with the development of international law, especially under the United Nations Convention on the Law of the Sea. It is now accepted that states have complete sovereignty over their internal waters (including estuaries, bays and island waters) and territorial waters (12 nautical miles from the internal water baseline, or to the median line with a neighbouring state). They may also claim rights of exploitation over much more extensive exclusive economic zones (EEZ), out to a maximum of 200 nautical miles from the baseline, and possibly over further continental shelf waters. Agreements have been reached for the boundaries of EEZs throughout most of European waters (with the main exception of most of the Mediterranean). National jurisdiction is being extended over the majority of European seas, allowing stronger management and use of marine resources. Consideration could therefore be given to widening the remit of ESPON to cover the territorial implications of this extension of national jurisdiction. For example, internal and territorial waters could be incorporated into mapping exercises where relevant, and possibly also EEZs.

There are a number of global and EU funded projects and initiatives for the collation and synthesis of coastal and marine data with overlapping aims (e.g. GMES, SEIS, EMODnet, WISE-water, WISE-marine, INSPIRE etc.). Can these projects be brought together under one spatial data manager? We welcome the aspirations of the Marine Knowledge 2020 Green Paper (CEC, 2012), which has also noted the challenges we have faced and seeks to develop a more co-ordinated and integrated approach.

#### ***Data and Mapping - Further Research:***

- Data collection focuses mainly on land or sea based attributes, but there is a paucity of data or information which focuses specifically on the land-sea interactions; these are assumed but largely unproven. For example, the degree to which coastal communities are dependent on their links to adjacent seas and the potential for them to benefit from growing maritime sectors could be investigated in more depth.



## **13. List of Annexes to the Scientific Report**

- 1** List of Maps and Data Sets
- 2** Arctic Ocean Regional Sea Profile
- 3** Atlantic Ocean Regional Sea Profile
- 4** Baltic Sea Regional Sea Profile
- 5** Black Sea Regional Sea Profile
- 6** Mediterranean Sea Regional Sea Profile
- 7** North Sea Regional Sea Profile
- 8** Arctic Ocean Case Studies Report
- 9** Atlantic Ocean Case Studies Report
- 10** Baltic Sea Case Studies Report
- 11** Black Sea Case Studies Report
- 12** Mediterranean Sea Case Studies Report
- 13** North Sea Case Studies Report
- 14** Data and Mapping Technical Information
- 15** Scenarios Workshop Briefing Paper

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<sup>81</sup> The final report is available at  
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