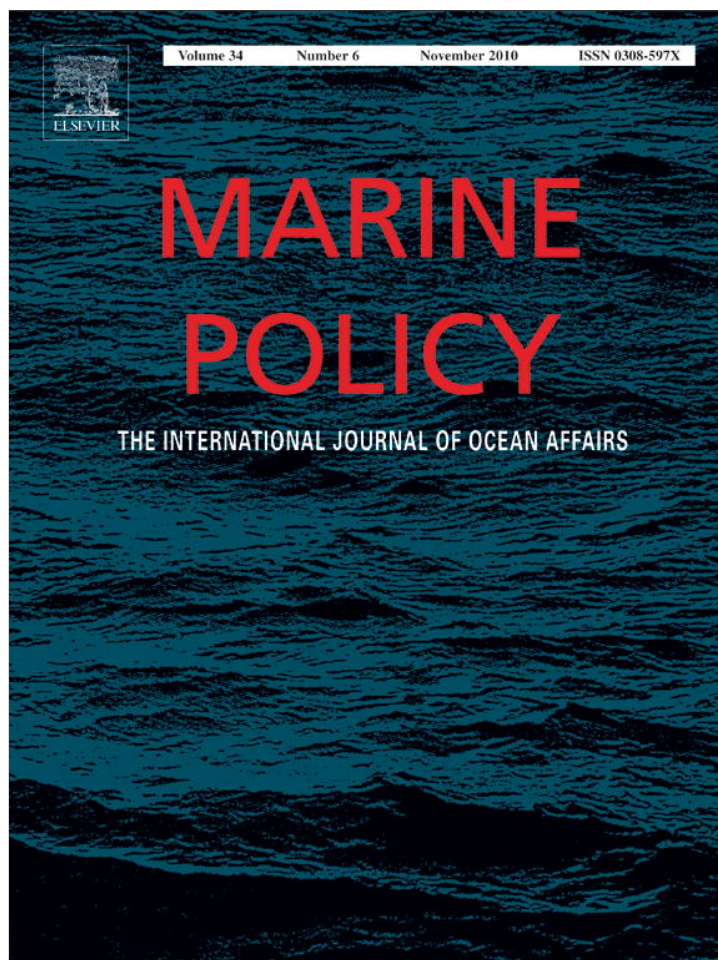




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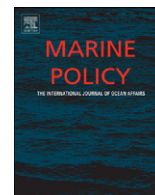
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Marine spatial planning: Lessons learned from the Portuguese debate

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ABSTRACT

This paper presents and discusses legal, methodological and political frameworks for the development of the proposed Portuguese Marine Spatial Plan initiated in 2008. It considers lessons learned and is informed by discussions that have taken place since publication of the 'Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU'. New goals are based on horizontal planning tools that cut across sea-related sectoral policies and support joined up policy making. It is in this context that Marine Spatial Planning (MSP) emerged as an essential process for sustainable decision making. The OSPAR Commission undertook an overview of national planning systems within its administrative boundaries, which confirmed spatial plans reduced conflicts. However, problems exist accessing good quality data and dealing with entrenched sectoral views. Furthermore, the transboundary nature of marine resources requires cooperation between neighbouring states. In 2006, Portugal developed a 'National Sea Strategy' that recognized the importance of developing its maritime space while valuing marine habitats and biodiversity. MSP development of the Portuguese sea commenced in 2008 and findings are now evaluated. They showed adaptation of existing tools to be possible and desirable, provided undertaken cautiously and found conceptual ambiguities were barriers to conflict resolution. Furthermore they showed management strategies should be designed and analysed on a case by case basis, recognising temporal and spatial variations.

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1. Introduction

The European Union (EU) recognizes the need for a more comprehensive planning and management approach to address conflicting and competing uses of ocean resources and space, in order to establish sustainable development of its seas and oceans. Some key aspects to achieve this goal include finding optimum locations for economic activities whilst avoiding conflict between various uses. This includes establishing the most efficient use of maritime space and effective management of maritime development and associated onshore development. Faced with re-evaluating the importance and sensitivity of marine ecosystems, the EU has launched an intense debate over the past year on the approach towards an integrated and challenging maritime policy. This approach is based on horizontal planning tools that

cut across sea-related sectoral policies which support collaboration in policy making, along with vertical planning instruments to integrate different levels of competence. It is in this context that Marine Spatial Planning (MSP), also known as Maritime Spatial Planning, has emerged as an essential process for sustainable decision making. In June 2008, the European Commission (EC) published a communication entitled 'Guidelines for an integrated approach to maritime policy: Towards best practice in integrated maritime governance and stakeholder consultation' [1]. It identified duplication of regulatory powers, planning coordination of competing maritime activities, strategic management of maritime areas and implementation of an ecosystem approach, as main drivers for integrated maritime governance. Guidelines recommend Member States to develop national integrated maritime policies, coordinated structures, and stakeholder involvement in decision making [1].

Recognising the importance of MSP as a key instrument for an EU integrated maritime policy, in November 2008 the EC published a further communication entitled 'Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU' (hereafter referred to as the EU MSP Roadmap) [2]. The EU MSP Roadmap provided an overview of current approaches to MSP, both within and outside of the EU. It reiterated the

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ecosystem approach as the overarching MSP principle and identified 10 additional key implementation principles [2]. As stated in the EU MSP Roadmap, most countries have well-developed terrestrial spatial planning and control systems, but in many cases these do not extend into the maritime area. However, national MSP systems have or are being developed in several countries [2]. Additional international instruments important to MSP development include the United Nations Convention on the Law of the Sea (UNCLOS), the International Maritime Organisation (IMO), the Convention on Biological Diversity (CBD), Agenda 21, and the World Summit on Sustainable Development Plan of Implementation (see Douvère and Ehler [3] for overview of each instrument). UNCLOS balances the rights and interests of States and provides the framework within which they exercise rights and obligations associated with maritime affairs, while IMO establishes internationally recognized rules and standards for shipping and maritime transport such as traffic separation schemes [4]. Maes [5] indicates that there is a clear evolution in support of an ecosystem-based MSP in international law with the CBD being the most important global convention. The CBD strives to protect marine biological diversity under the jurisdiction of coastal states. Furthermore, in light of the transboundary nature of marine resources and activities and the importance of cross-border collaboration between neighbouring states, regional sea conventions such as the OSPAR Commission (OSPAR) and Helsinki Commission (HELCOM), serve as efficient platforms to encourage and facilitate a regional seas MSP approach.

In the last decade, MSP developments have been initiated in international and European countries (Table 1). There is an increasing trend to classify and manage activities that occur in maritime areas under their jurisdiction, and not only for conservation areas of interest and Marine Protected Areas (MPAs). European countries such as Belgium, Germany, the Netherlands and Sweden are employing zoning as a MSP management tool.

In 2006, in response to the need to develop a framework for sustainable marine resource use, as well as for arbitrating between competing marine activities, Portugal approved the National Sea Strategy (Ministers Resolution No. 163) [8]. This promotes management of multiple activities (present and future), conservation awareness, and valuing marine habitats and biodiversity. Consequently in 2008, the Portuguese government began developing a MSP for its maritime space. Recognising the importance of building on others' experiences, this paper summarizes discussion outcomes from European MSP debates that took place over the past year (Section 2) and provides

regional perspectives of various spatial planning and control systems in the OSPAR maritime area (Section 3). It subsequently presents lessons learned from international and European MSP experiences relevant to Portugal (Section 4), discusses the legal and political framework for Portuguese MSP adaptation (Section 5), and lastly reflects on the challenges, recommendations and key issues for MSP development (Section 6).

2. Discussion of EU's ongoing debate on MSP

In 2009, following publication of the EU MSP Roadmap, discussions were organized in Brussels, Ispra, Rome, the Azores and Stockholm to discuss 10 key principles and implementation options identified as critical for MSP in the EU [9]. Outcomes of the Ispra and Azores workshops are summarized in Table 2. Discussions highlighted the need for integration among various administrative agencies and across sectoral disciplines; the need to be in line with existing rules and regulations, and to build up different competence levels ranging from municipal, regional, national, EU and international. Consequently, one-stop shop licensing processes that integrate sectoral planning responsibilities, as well as more efficient processes to evaluate impacts across sectors and borders, are suggested in light of governance issues [9]. It is also critical to ensure coherence between marine and land planning strategies and their implementation. Therefore, Integrated Coastal Zone Management (ICZM) should be taken into account when developing MSP [9].

Over the past year, general MSP discussion feedback acknowledged it to be necessary, efficient, and useful, but challenges lie in the process and ability to translate principles, with workable tools and methods, into implementable reality. To strive for a common understanding of objectives and approach, there is a call for Member States and stakeholders to share practical experiences for further developing MSP best practice. It is important to learn from countries that have or are in the process of developing MSPs. Other useful information include manuals for MSP application such as 'A Step-by-Step Approach towards Ecosystem-based Management' produced by UNESCO's Intergovernmental Oceanographic Commission (IOC) [10] and MSP guidelines under development by Non-Governmental Organizations (NGOs), and review and update of various MSP plans from regional sea conventions, such as OSPAR and HELCOM. Additionally, the growing number of peer-reviewed academic journal articles will help countries and institutions in MSP development and implementation.

Table 1
Examples of International and European MSP Developments (adapted from Douvère [6] and UNESCO [7]).

Country	MSP developments	Date
Australia	Great Barrier Reef Marine Park Zoning and Re-Zoning	1978–2005
	Marine Bioregional Plans	2002–2012
Belgium	Master Plan for the Belgium Part of the North Sea/GAUFRE Project	2003–2005
Canada	Large Ocean Management Area Integrated Management Plans	1998–2007
	Eastern Scotian Shelf Integrated Management Plan	2006–2012
China	Marine Functional Zoning of Territorial Sea	2002–ongoing
Germany	Spatial Plan for North Sea and Baltic Sea	2004–ongoing
	Spatial planning for the German coastal state waters of Mecklenburg-Vorpommern	2005
New Zealand	Marine Protected Areas Policy and Implementation Plan	2006
NL-DE-DK	Trilateral Wadden Sea Plan	1993–2010
Norway	Integrated Management Plan for Barents Sea-Lofoten Area	2002–2006
	Norwegian Sea Management Plan	2009–ongoing
Sweden	Marine Environment Inquiry	2006–2008
The Netherlands	Integrated Management Plan for the North Sea 2015	2003–ongoing
United Kingdom	Irish Sea Pilot Project	2002–2005
United States	Florida Keys National Marine Sanctuary and Revised Management Plan	1990–2007
	Massachusetts Integrated Oceans Management Plan	2008–2009

Table 2

Discussion outcomes on key MSP principles [9].

10 Key MSP principles from the roadmap	Key discussion outcomes from 2009 MSP workshops
Using MSP according to area and type of activity	• Ecosystem and its capacity are not negotiable • Develop a multi-step assessment of sectoral needs • Open debate among different sectors to identify conflicts and means of co-existence • Trust building between sectors
Defining objectives to guide MSP	• Agree overall strategic objectives • Plan objectives on different spatial scales • Ecosystem should be the basis • Political and sectoral objectives should be reconciled • Needs long term perspective which is future oriented
Developing MSP in a transparent manner	• Identification of decision-makers and stakeholders • Reasons for decisions taken within the process to be communicated and justified • Transparency underpins accountability and legitimacy
Stakeholder participation	• Involve all stakeholders at an early stage • Understand motives of participants and have clarity of roles and responsibilities. • Stakeholders should bring their interests into the discussions and be open to find flexible solutions • Allow enough time for stakeholder involvement (process will be longer) • Encourage interaction between different stakeholders, not just between policymakers and stakeholders
Coordination within Member States – simplifying decision processes	• One agency to lead the MSP process • No new authority/agency needed, once MSP is in place: a decentralized one-stop shop to be driven by sectoral departments • Hindering factor: heritage of decision making and established power structures • Leave highly conflicting issues for longer term solution. Length of time in MSP process needs to be sufficient to resolve conflict • Authorization level needs to be clarified (national vs. regional)
Ensuring the legal effect of national MSP	• MSP must agree with international law, as embodied in the United Nations Convention on the Law of the Sea (UNCLOS) and other relevant treaties • Inter-institutional cooperation should be ensured and administrative competences identified. Broad public and stakeholder participation (involving all interest groups), as well as consultation of adjacent countries and EU bodies, is mandatory • Tools that are legally binding and those of a more indicative nature can be used and combined in MSP processes
Cross-border cooperation and consultation	• All activities will benefit from cross-border MSP • Communication with neighbouring countries should take place at an early stage of the process • Making cross border plans for specific sea regions is important, it can be helpful if Member States have an initial plan at national level, preferably developed in a parallel and comparable way for that region • Strong political will for cooperation is needed • Identify relevant contact persons and groups (policymakers, stakeholders, researchers, marine sectors, etc.) in other/neighbouring countries • Pro-actively investigate common multi-lateral interests (e.g. wind energy grid, fisheries, shipping) • Learning by doing instead of discussing concepts. • Make a joint vision at an early stage to look for synergies • Build on existing regional processes/ structures for stakeholder involvement
Incorporating monitoring and evaluation in the planning process	• Necessary for adaptive management and covers both socioeconomic, environmental and governance issues • Monitoring needs to incorporate various issues with different spatial/temporal scales • Build on existing frameworks (European, regional, national, local), which can be useful for MSP, but fill gaps • Other sources of data than monitoring (surveys, research) and important sources of information for evaluation (emerging issues)
Achieving coherence between terrestrial and MSP – relation with ICZM	• Continuity of activities on land and on sea is crucial. Knowledge is a critical element for successful continuity. This also requires compatibility between marine and land strategies and planning, as well as coherence in implementation • Land is planned by urbanisation laws, with the sea as a visual asset. Sea specialists see the land as the enemy. The sea needs a vision with outputs devised in a sensible manner
A strong data and knowledge base	• Design principles of EMODNET are valid and compatible with those of other initiatives (INSPIRE, SEIS, etc.) and can be used for MSP • Different types of knowledge are needed (environmental and socioeconomic data on human activities, to assess status and stress on marine environment) • Different scales of data: more detailed near coastlines and coarser at sea-basin level (offshore areas); data should be managed at the appropriate level (EU, sea-basin, national, local)

In order to verify the usefulness and practicality of these key principles, existing or ongoing MSP developments need to be evaluated to assess related issues and challenges. This will also serve as a continuation and expansion of MSP debates by learning from experience.

3. Towards a regional perspective

3.1. The OSPAR maritime area

The OSPAR Commission is, in accordance with article 197 of UNCLOS on regional cooperation, the competent regional organisation guiding international cooperation on the protection of the North-East Atlantic marine environment. OSPAR considers MSP as a new tool for delivering ecosystem-based management of human activities. OSPAR has observed that *'while plans can be implemented unilaterally within a Contracting Party's internal and territorial waters, providing there is no interference with innocent passage, further offshore planning is generally limited to activities such as exploring, exploiting, conserving and managing living and non-living natural resources'* [4].

Nevertheless, within the OSPAR maritime area and its five regions (Fig. 1) MSP has been taken forward by North Sea States e.g. The Netherlands Integrated Management Plan for the North Sea (2003–ongoing), the Belgian GAUFRE/Master Plan for BPNS (2003–2005) and the German Spatial Plan for the North Sea (2004–ongoing), essentially identifying priority uses within their highly congested marine areas, and for discrete geographic areas trialling or applying integrated management approaches e.g. Irish Sea Pilot Project (2002–2005), Barents Sea Management Plan (2006–ongoing), and Norwegian Sea Management Plan (2009–ongoing). National priorities have strongly influenced planning directions. As a consequence national spatial planning initiatives within the North-East Atlantic comprise significantly varying approaches, albeit that some related tools, such as environmental impact assessments, are applied more consistently and most Contracting Parties recognise sustainable development as the guiding principle of MSP.

3.2. A variety of national plans

Some Contracting Parties to OSPAR (e.g. Ireland, Iceland, and Denmark) have no immediate plans to implement forward-looking MSP, although there is a recognition that MSP is likely

to be needed in future. Norway, Spain and the UK are in the process of implementing marine planning using different approaches. Spain is applying MSP out to 12 nautical miles to a single sector (wind farms), Norway is implementing management plans on an area by area basis throughout its economic exclusive zone (EEZ) and the UK is attempting to implement a wholesale plan for its entire EEZ. Sweden has marine spatial plans in place for territorial waters and Germany and the Netherlands have published plans for their entire EEZs [11].

Where marine spatial plans exist, they can serve to reduce conflicts. For example, the most 'recent' plan is the German Marine Spatial Plan for its EEZ. It was subject to three rounds of public participation during 2008 and 2009, and the legal ordinance came into force on 26 September 2009. It establishes guidelines and coordinated regulations for single uses and functions. Planning tools comprise:

- (a) planning targets – these are legally binding for sectoral projects (e.g. wind farms);
- (b) planning principles – guidelines that must be particularly considered in the planning process;
- (c) priority areas – reserved for a defined use where other conflicting uses are excluded
- (d) reservation areas – defined uses with special weighting in the balancing process; and
- (e) suitable areas – where a defined use is excluded outside suitable areas.

The result is that some existing uses are given precedence based on UNCLOS freedoms. Thus existing shipping routes (both traffic separation schemes and other high density shipping routes) provide an essential structural mainstay for the plan: they are established as priority areas, have a special weighting (reservation area) and the plan imposes no traffic regulations. Priority areas are established for wind energy, but no turbines are allowed in Natura 2000 areas and limited 'gates' have been demarked for associated electricity cables.

3.3. Effectiveness of plans currently in place

For several marine spatial plans within the OSPAR maritime area, priority in case of a conflict is given to protecting living

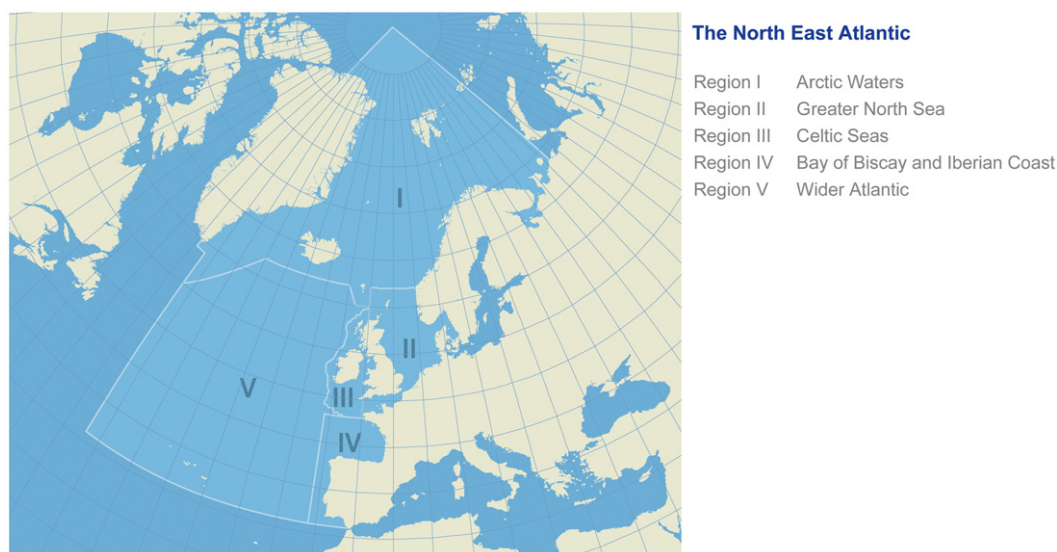


Fig. 1. OSPAR maritime area and its five regions (courtesy of OSPAR Commission).

resources and environmental values. The Norwegian integrated management plans, for example, incorporate zoning schemes, establishing frameworks where different sectors must implement their own regulations (e.g. petroleum activities are restricted during periods of fish spawning and seabird breeding). Plans also aim to protect cold water corals from potentially destructive fishing practices.

However, establishing and revising marine spatial plans has encountered problems dealing with entrenched sectoral views that, in some cases, have been allowed in the past to develop without any clear overview of long-term environmental costs and consequences. To this end the development of a glossary of terms, to facilitate integration of highly specialised knowledge held within each sector has been suggested [4]. The slow progress towards MSP by some OSPAR Contracting Parties and 'battles' yet to come as time-limited plans are redrafted will test the resilience of marine spatial plans and their enforcement. The duration of plans varies from undetermined to ranging from 10 to 25 years, but all can be amended and this entails the same consultation and adoption processes used in the original plan development.

All planning activities in place emphasise the need for data availability at a suitable resolution and associated metadata (information about a dataset, such as when, where and how it has been collected). This includes ecological and scientific data for the plan area, including oceanographic, bathymetric and environmental data, together with information on marine activities (although often military activity and fisheries regulated under separate regulations are excluded). Similarly marine spatial plans in place confirm the importance of stakeholder engagement and public hearings, regular reviews and clear lines of communication. In other words 'to play the game, everyone must understand the rules', but currently the level of stakeholder involvement encouraged varies from relatively tokenistic participation (such as inviting stakeholders to comment on draft plans) to full consultation with stakeholder advisory committees. For their EEZ marine spatial plans, Germany and the Netherlands actively consulted neighbouring countries.

3.4. Towards enhanced integration and transboundary cooperation

Since 2003, OSPAR has been committed to an ecosystem approach on the basis of a series of thematic strategies and a joint assessment and monitoring programme. The preliminary conclusions of the Quality Status Report 2010 (in press) suggest that levels of coherence between the different themes need to be enhanced. On this basis OSPAR is currently developing a new holistic Strategy, predicated by its overarching ecosystem approach, that will provide the platform to help coordinate and implement the European Union's Marine Strategy Framework Directive [12].

In future, implementing the Marine Strategy Framework Directive is likely to require enhanced cooperation between neighbouring States. Such cooperation has been achieved between OSPAR Contracting Parties in terms of tackling pollution sources, such as hazardous substances and eutrophication, but evaluating the impacts of human uses, relating these to other pressures and understanding and managing their cumulative impacts beyond national waters is less well developed. Solutions will embrace MSP in they require consideration and understanding of how all natural and human activities function and their impact on an area at any chosen scale in order to seek a balance between conservation and use of biodiversity. Spatial management for mutual benefit must then be within the limits of ecosystem function, recognising economic advantage and accounting for long-term developments and changes.

Cartwright-Taylor [11] scoped a series of 'perspectives' by which to apply the ecosystem approach and take forward MSP in each of the OSPAR regions. The concept envisages the development of national plans, which if coordinated within an OSPAR region could build over time to provide a coherent OSPAR plan. OSPAR expert groups are currently considering the development of a transboundary map for the Belgian, Dutch, German and UK waters of the North Sea and a combined GIS map of human uses in the OSPAR maritime area based on existing maps and information held by Contracting Parties. Guidance is also being developed to support early trans-national consultation and exchange of information on marine spatial plans.

4. Lessons learned from international and european experiences on MSP

As described above, MSP initiatives in international and European countries are beginning to classify and manage activities occurring in the entire maritime area under their jurisdiction, and not only focusing on conservation areas of interest and MPAs. To build on others' MSP experiences, the Portuguese team analysed various MSP approaches employed by both international and European plans. Taking into consideration the EU MSP roadmap, as well as practical experiences of other countries, the Portuguese team developed a proposed MSP based on what is applicable and feasible for Portugal. Table 3 presents a general comparative analysis of the proposed Portuguese MSP with synthesized characteristics of the international MSP, European MSP and EU MSP Roadmap. General characteristics of international and European MSPs are gathered from New Zealand, the United States and Australia, and Belgium, Germany, the United Kingdom and Netherlands, respectively.

The proposed Portuguese MSP intends to encompass not only the EEZ and territorial waters (TW), but also the coastal waters (CW) before the maximum high water mark of equinox tides (MHWMET). It is developed with the goal of making MSP legally binding and will employ zoning as a management tool. In order to ensure that social, economic and environmental requirements are taken into consideration, many countries employ environmental assessment tools such as strategic impact assessments, as well as public participation. Analysis of various international and European MSP approaches shows that development must be accompanied as early as possible, with strategic environmental assessment (SEA). This ensures that impacts on the environment are considered, which will in turn benefit the decision making process and contribute to more sustainable and effective solutions [13]. Based on others' experiences, the proposed Portuguese MSP involves a baseline study and analysis, followed by scenario development leading to a preliminary plan proposal. Additionally, the Portuguese MSP team developed a website for a platform to encourage active stakeholder participation and efficient communication between the MSP team and public. Recognising the iterative and adaptive nature of an efficient MSP, the first Portuguese review is programmed to take place in 3 years, with subsequent reviews determined and based on projected necessity.

5. Portuguese MSP adaptation

5.1. Framework

In Portugal, the National Sea Strategy [8] seeks to integrate sectoral policies and define principles for MSP and ICZM. It recognized that to foster the economic, environmental and social importance of the Portuguese sea, there is a need to manage

Table 3

General comparative analysis of the International MSP, European MSP, EU MSP Roadmap and the proposed Portuguese MSP (adapted from POEM [14]).

	MSP			
	International	European	EU roadmap	Portuguese (proposed)
Spatial limits	TW	TW+EEZ	EEZ	EEZ+TW+CW (before MHWMET)
Legally binding	Yes	Yes	Yes	Yes
Strategic environmental assessment (SEA)	Yes (some)	Yes (some)	Yes (implied in SEA directive)	Yes
Objectives	Marine biodiversity protection	Management of uses in conjunction with marine biodiversity protection	Balance sectoral interests and achieve sustainable use of marine resources in line with EU sustainable development strategy [15]	Management of activities and future development of the maritime areas, minimizing of conflicts and safeguarding the protection and conservation of marine ecosystems.
Key elements of MSP	Zoning map	GIS (maps for characterization of intensity and opportunity); matrices of (in)compatibility	N/A	Web platform; GIS; SWOT analysis; zoning of uses
Characterization of uses				
Current	Yes	Yes	Yes	Yes
Potential	Yes	Yes (majority)	Yes	Yes
Zoning	Yes	Yes	N/A	Yes
Matrices of (in)compatibility	Yes (some)	Yes (some)	N/A	Yes
Marine protected area (MPA)	Yes	Yes	Yes	Yes
Development of scenarios	No (majority)	Yes (some)	N/A	Yes
Public participation	Yes	Yes	Yes	Yes
Plan review	Yes (yearly)	Yes (time not specified)	Yes	Programmed review in 3 years

present and future uses of maritime space in close integration with coastal zone management. This will ensure sustainable use of its resources (preservation and regeneration), and enhance efficient use of maritime space through an integrated and cross-sectoral approach. It also stated that the multi-dimensional extent of the sea (the bottom, water column, surface and atmosphere) needs regulation in a coherent and integrated manner. In response to the National Sea Strategy [8], Plano de Ordenamento do Espaço Marítimo (POEM), a Portuguese effort in MSP development, was initiated in 2008 by Ruling No. 32277/2008 [16]. One representative each from the Azores and Madeira autonomous regions and a representative from each ministry with a seat in the Comissão Interministerial para os Assuntos do Mar (CIAM; Inter-ministerial committee for sea affairs in Portugal) are required for approval of any resolution with regards to POEM. It is led by a multidisciplinary team consisting of representatives from the ministries, Instituto Nacional da Água (INAG; Portuguese Water Institute) and four external consultants, including some universities. The multidisciplinary team is tasked to provide MSP and corresponding SEA expertise. Instituto de Conservação da Natureza e Biodiversidade (ICNB; Institute for Nature Conservation and Biodiversity), Estrutura de Missão para os Assuntos do Mar (EMAM; Structure on the Mission for Maritime Affairs), Agência Portuguesa do Ambiente (APA; Portuguese Environment Agency) and Estrutura de Missão para a extensão da Plataforma Continental (EMEPC; Structure on the Mission for the Extension of the Continental Shelf) given the strategic importance of their MSP input, also participate in POEM.

The intervention areas of the Portuguese MSP (Fig. 2) include the EEZ, TW and CW (before MHWMET). The general objectives of MSP development include: determining current and potential activities, planning present and future maritime space uses and activities; ensuring sustainable use, conservation and regeneration of marine resources; fostering economic, environmental and social

importance of the sea; and establishing guidelines for monitoring and evaluation. Specifically, the team aims to: (1) ensure unbiased information is included with a view of safeguarding sectoral interest and associated technical implications; (2) ensure knowledge sharing among the public, stakeholders and experts; (3) ensure assessment of environmental impacts from plan implementation; (4) support the development process and ensure scheduled monitoring is undertaken; (5) facilitate a consensus agreement process; and (6) provide support for organising events related to MSP development, such as panel discussions and workshops.

5.2. Methodology

In order to achieve the MSP development objectives, the team needs to develop effective sectoral studies and determine a methodology that takes into account national specificities (for both the mainland and two autonomous island regions), resources and activities, temporal and spatial multi-dimensionality of the sea, followed by a zoning proposal for the maritime space. This will include integration and balance between activities and environmental protection, as well as coherence between land and marine planning strategies through ICZM. The MSP development consists of four phases and to date, POEM has completed Phases 1 and 2, and is currently working on Phase 3 [18].

5.2.1. Phase 1 – Characterization studies and diagnosis

Phase I involved identifying and analysing international and European plans and methodologies. Relevant stakeholders were identified and involved from the beginning. Efforts were made to foster acceptance, participation and support from all parties and gain information and knowledge from them. Marine resources

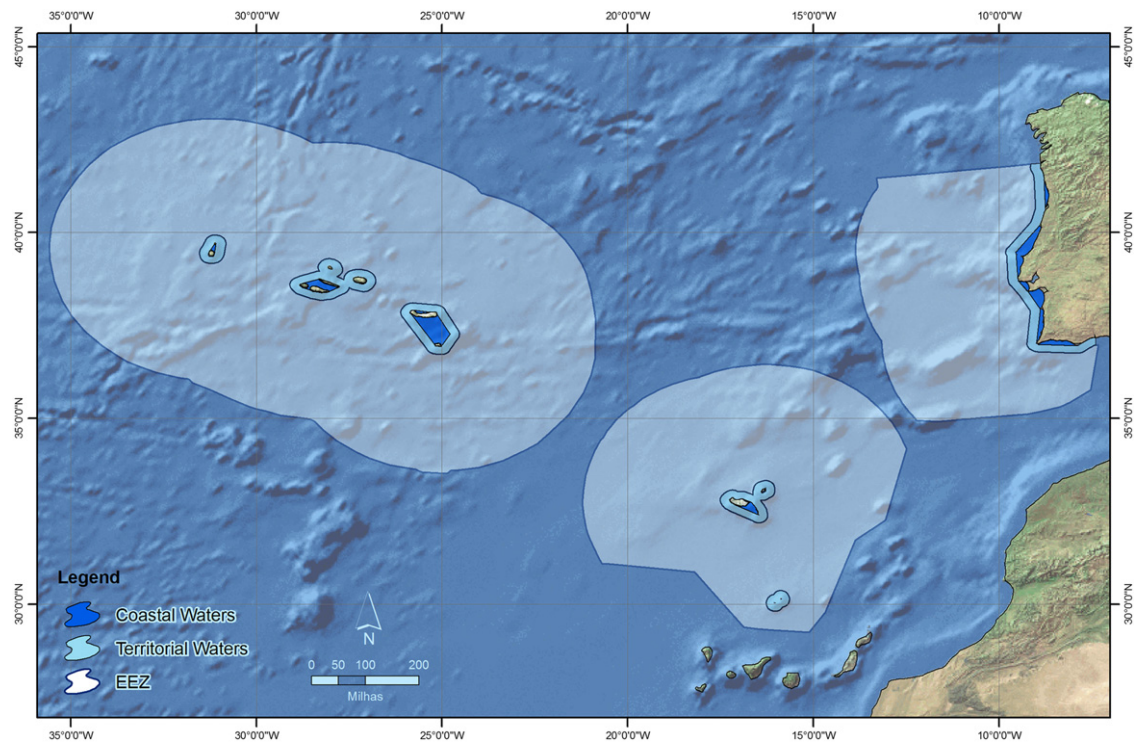


Fig. 2. Maritime areas under Portuguese sovereignty or jurisdiction [17].

and activities were characterized and mapped, potential future activities at mid to long term were identified, and factors necessary for sustainable development were determined. A geographic information system (GIS) is being developed to incorporate resources, activities and associated data within the Portuguese maritime space. Lastly, diagnoses and strengths, weaknesses, opportunities, and threats (SWOT) analyses were developed for each sector, as well as for the maritime space, to analyse co-existence of activities and inter-correlation between multiple use and protection statutes.

5.2.2. Phase 2 – Preliminary proposal of the plan

In Phase 2, the future potential of each activity was assessed from a sustainable development perspective. The current and future social, economic and environmental values, as well as the maritime space and natural resources needed for their development were determined and evaluated. Potential conflicts between natural resource protection and economic activities and various sectoral activities were analysed. Integrating and matching various competing interests e.g. navigation and maritime transports, fisheries, aquaculture, oil and mineral resources extraction, offshore energy production, algae production, tourism, nature conservation and water quality, were also assessed. The preliminary proposal included: designated areas for resource conservation and usage; management guidelines and measures for the protection of resources and economic activities, taking into account the multi-dimensional extent of the maritime space; and the temporal and spatial compatibility needs of maritime space use. Initial results of the SEA were also presented in this phase.

5.2.3. Phase 3 – Zoning plan, implementation programme and financial plan

In Phase 3, zoning maps will be produced for the Portuguese maritime space, along with management guidelines related to

various planned or ongoing activities and associated environmental impacts. A monitoring and control programme will be implemented and a schedule and financial plan generated for the proposed actions and measures.

5.2.4. Phase 4 – Public discussion

In Phase 4, the team will prepare for public discussions given that this is mandatory by law for all Portuguese plans. Comments and feedback will be considered and a report produced.

6. Conclusions and recommendations

Analysis of the MSP initiatives clearly demonstrates the generally accepted need and importance of managing increasing demands on maritime space in association with the need to preserve and protect marine ecosystems. Over the past year, the EU's MSP debates have highlighted issues and challenges in translating the key principles outlined in the EU MSP Roadmap, into practical workable reality. Discussions indicated that regional sea conventions such as OSPAR and HELCOM are important in providing comprehensive regional marine perspectives and initiating cross-border cooperation, both of which are critical to sustainable development. Based on international and European analyses, most countries employ zoning when developing MSPs, but it is important to note that zoning is only a management tool for implementing MSP. A comprehensive strategic spatial planning of the entire maritime space within each country's jurisdiction, along with a broader regional perspective of its neighbours, are essential to achieve effective MSP implementation. According to Douvere and Ehler [3], the interconnectedness of neighbouring ocean space, cross-boundary impact of ocean use, and the broader scale necessary to be ecologically meaningful, imply that national marine spatial plans need to be incorporated into a broader

international scale. More specifically, they recommend that national marine spatial plans are translated into international spatial policies where sea use and biodiversity protection measures are complementary on an international or regional scale. Therefore, regional sea conventions should play an important role in stimulating consultation and cooperation between and among cross-border nations, as well as analysing implementation programmes submitted by contracting parties. This will enable a comprehensive overview of the regional sea and consequently, will be a well-informed guide towards integrative and sustainable development. Thus, for Portugal to promote cross-border consultation and cooperation in its MSP development, it would seem beneficial to collaborate with OSPAR.

From the Portuguese MSP experience, two types of challenges were encountered in its development: operational and conceptual. From the operational perspective, major challenges are access to good quality data and the lack of implementation tools to facilitate an effective public discussion. To overcome the lack of ecosystem data, efforts were initiated to collect relevant information for the Portuguese maritime space. However to date, the MARBIS project tasked to collect ecosystem data, and the collaboration study among invited Portuguese marine research centres, have yet to publish any results. In addition, gathering information from sectors was more difficult than anticipated, generally due to vested interests and non-sharing of data, and labour intensive data processing from various formats. The Portuguese web platform, which facilitates data exchange and transparency of POEM's MSP progress, has been proven effective. It also provides a personal approach for collecting information from each sector. An added benefit for the sectors was the production of geographical information under metadata standards, which provided an opportunity for several agencies to advance their knowledge in this area. The final phase of the Portuguese MSP development is a mandatory public discussion, which currently constitutes no more than a tokenistic approach based on the requirements of the law. Hence, the lack of a detailed legal procedure is challenging when it comes to gathering feedback and comments involving full and active consultation with the public.

The next challenge stems from conceptual ambiguities and in this respect, several issues need further clarification. Confusion often arises regarding terms such as maritime versus marine, strategy planning versus zoning-based planning, and potential areas versus exclusion areas, etc. Conflict resolution, perhaps the most sensitive MSP development parameter, is being made more difficult because of this confusion. Consequently, it is recommended that a glossary of terms, as suggested by OSPAR, be developed to facilitate efficient communication among stakeholders. It is also suggested that initially employing a neutral third-party mediator and negotiator in this process could prove effective in conflict resolution situations. Importantly, it is recommended that with the help of a mediator and/or negotiator, stakeholders who are more aware of relevant issues and concerns better than the MSP team, could resolve their own conflicts. Therefore, it is likely to be more efficient and effective to reach common agreements among one another. The MSP team's involvement is only necessary when conflict involves laws associated with national defence and/or public health and safety, which in the Portuguese context supersede all other interests. To this end, the Portuguese evaluations indicated the need of an effective step by step approach to identify and resolve conflicts. Finally, assimilating experiences of others within the Portuguese context strongly indicates that adaptation of existing tools is possible and desirable. However, this process needs to be developed with caution and methods should be designed and assessed on a case by case basis. In particular as indicated

by Gilliland and Laffoley [19], lessons learned from implementation and evolution of land use planning can be applied to MSP, understanding that there are significant differences between planning on land and at sea. As such, involving terrestrial planners and their decision support methods would offer many benefits to MSP development. It is also essential to stress the importance of including temporal perspectives as well as spatial dimensions of the maritime space, as compatibility of certain uses and consequent management needs can vary with time (e.g., seasonality). Therefore, the MSP process needs to be continuous, iterative and adaptive in order to accommodate ecosystem changes, alternative human uses and activities in the maritime space, and the uncertainty associated with climate variability.

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Glossary

CBD: convention on biological diversity;
CIAM: Comissão Interministerial para os Assuntos do Mar (Inter-ministerial committee for sea affairs in Portugal);
CW: coastal waters;
EEZ: economic exclusive zone;
GIS: geographic information system;
HELCOM: Helsinki Commission;
ICZM: Integrated Coastal Zone Management;
IMO: International Maritime Organisation;
INAG: Instituto Nacional da Água (Portuguese Water Institute);
IOC: Intergovernmental Oceanographic Commission;
marine: 1. Of or relating to the sea; 2. Native to, inhabiting, or formed by the sea;
 3. Of or relating to shipping or maritime affairs;

Maritime: 1. Of, relating to, or adjacent to the sea; 2. relating to marine shipping or navigation;
MHWMET: maximum high water mark of equinox tides;
MPA: marine protected area;
MSP: marine spatial planning or maritime spatial planning;
NGO: Non-Governmental Organization;
OSPAR: OSPAR Commission;
POEM: Plano de Ordenamento do Espaço Marítimo (Portuguese Marine Spatial Planning);
SEA: strategic environmental assessment;
SWOT analysis: strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project;
TW: territorial waters;
UNCLOS: United Nations Convention on the Law of the Sea.