

Chapter 54

Marine Spatial Planning

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Abstract Marine spatial planning (MSP) is considered a key instrument for managing the conflicts resulting from the increasing utilization and industrialization of the world's seas and oceans. MSP is a public process by which the relevant authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives. Even though environmental interests do not generally enjoy priority over economic and social interests, it must not be overlooked that MSP is a tool which substantially contributes to the protection of marine ecosystems. From the beginning of its evolution, MSP has been intrinsically tied to the concept of ecosystem-based management. Ecosystem-based MSP is promoted by the EU MSP Framework Directive (2014) which can be considered an important initial step towards an EU-wide harmonized and consistent comprehensive spatial planning approach for the European maritime waters.

Keywords Marine spatial planning • Ecosystem-based management • Ecosystem-based approach • UNCLOS • EU Directive establishing a framework for maritime spatial planning

54.1 Introduction

Marine spatial planning (MSP)¹ is considered a key instrument for managing the conflicts resulting from the increasing utilization and industrialization of the world's seas and oceans. In less than a decade, it has become “one of the most widely endorsed tools for integrated management of coastal and marine environments” (Carneiro 2013; Jay et al. 2013) or—according to Flannery and Ellis (2016)—“the dominant marine management paradigm”.

¹ Also referred to as *maritime spatial planning*.

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In the past, the application of spatial planning instruments at sea would have been unimaginable. Conflicts between traditional uses, such as fisheries, shipping, laying of cables and pipelines, extraction of mineral resources and the need to protect the marine environment were easily manageable without any form of planning. The capacity of the marine space exceeded the demands for use by far. In the last few decades, the situation has dramatically changed: traditional ocean uses have considerably expanded, and several new activities (particularly offshore renewable energy, aquaculture) have emerged (Douvere and Ehler 2009). These developments have led to a significant increase of competition for ocean space and potential for conflict. So-called *user-user conflicts* arise whenever there is competition between two or more parties to use the same sea space for the same purpose or for different but incompatible purposes. Additionally, spatial conflicts result from the negative (often cumulative) impact that many forms of use have on the marine environment (*user-environment conflicts*). Inevitably, unregulated uses of the seas will lead to severe, possibly irreparable damage. Given the fact that ocean space and resources are not infinite, and in the light of the sensitivity of marine ecosystems, a future-oriented, integrated and sustainable development of marine space has become an urgent desideratum.

Certainly, the majority of coastal States already allocate ocean space, regularly based on international and regional agreements (e.g. concession zones for resource exploitation, areas for wind farms, delineation of cables, pipelines and shipping routes, marine protected areas etc.). But as long as areas for economic activities and nature conservation are designated by several authorities on a sectoral basis, the above mentioned conflicts cannot adequately be solved. Only a powerful strategic and cross-sectoral comprehensive spatial planning instrument will provide for the necessary long-term reconciliation of competing human activities and protection requirements in marine areas, and consequently, for legal and investment certainty for marine developers and users of ocean resources (Douvere 2008).

54.2 Definition and Main Functions of Marine Spatial Planning

The concept of marine spatial planning does not fundamentally differ from its terrestrial counterpart (Douvere 2008, see also Kidd and Ellis 2012). Therefore it is widely agreed that many of the principles, procedures, and processes of land use planning systems can be applied to developing MSP, as long as the significant differences between land and sea, such as the three-dimensional and dynamic nature of the sea, ownership and rights, and available data are taken into consideration (Gilliland and Laffoley 2008; Duck 2012, see also Chap. 28). According to a commonly accepted definition, MSP is

“a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process” (Ehler and Douvere 2009, Maes 2008, Rothwell and Stephens 2010).

As on land, it is crucial to distinguish between sectoral and comprehensive forms of spatial planning. *Sectoral planning* focuses on particular uses or concerns in a certain area, e.g. planning of cable laying, traffic routes, installations, conservation areas etc. The perspective is subject-specific, and the planning process is guided by specific sectoral objectives regularly pre-defined by law, such as the development of energy infrastructure or the protection and conservation of natural species and habitats. *Comprehensive spatial planning* on the other hand, is a means to coordinate all sectoral demands, activities and interests that are or will be relevant within a particular planning area, taking an unbiased, cross-sectoral, holistic perspective. Generally, comprehensive spatial planning aims for a sustainable overall development of the respective planning area, in which social and economic demands for space are consistent with its ecological functions. Even though the term “marine spatial planning” theoretically encompasses both sectoral and comprehensive forms of spatial planning, it is generally used only for comprehensive planning. To avoid misconception, marine spatial planning should therefore not be referred to as an “instrument of marine environmental protection” or an “instrument advancing economic or social interests” (Soininen and Hassan 2015: 8). As Soininen and Hassan (2015: 8) point out: “The somewhat idealistic aim of MSP is to achieve all of these objectives at the same time. The rationale of this thinking is to enable maximum utilization as well as maximum protection of biodiversity and ecosystems simultaneously.”

Three *essential functions* of comprehensive spatial planning and MSP in particular can be differentiated: coordination, conflict resolution and precaution. First, MSP is an instrument to coordinate different, regularly conflicting demands for ocean space. Competing uses and functions of space, including those that are subject of sectoral planning, are being integrated in a single comprehensive spatial plan. Uses and/or functions that would impair one another need to be separated in space or time (e.g. wind farms and shipping). Uses and/or functions able to coexist next to each other without conflict can be bundled. In many cases of course, separation of incompatible uses and functions would be impossible. Particularly in densely used seas, MSP has to resolve actual and foreseeable conflicts, if necessary by preferencing single uses or functions and excluding others. Finally, MSP is an instrument for precautionary securing or reserving of marine space for potential future uses.

In the light of these vital functions, MSP particularly can—pursuant to Gilliland and Laffoley (2008)—contribute to:

- providing a strategic, integrated, and forward-looking framework for all uses of the sea space that takes account of economic, social, and environmental objectives and so helps sustainable development;
- organizing an efficient use of marine space to provide a balanced view between competing uses, clarifying where one activity might preclude another, helping avoid or minimize conflicts of interest, and, where possible, optimizing the co-location of compatible activities;
- better understanding the cumulative effects of different uses, both on marine ecosystems and each other;
- making rational decisions under the circumstances of uncertainty; these decisions should be guided by the precautionary principle.

54.3 Key Elements of MSP Promoting the Integration of Ecological Interests

Even though environmental interests do not generally enjoy priority over economic and social interests, it must not be overlooked that MSP substantially contributes to the protection of marine ecosystems. Several elements of MSP are meant to strengthen ecological interests in the planning process, most importantly

- the ecosystem-approach,
- the strategic environmental assessment,
- participation and consultation.

When applied effectively, these elements can significantly increase the ecological impact of MSP by providing the following environmental benefits (Ehler and Douvère 2009):

- Identification of ecological important areas;
- Incorporation of biodiversity objectives into the planning and decision-making process;
- Identification and reduction of conflicts between economic activities and environmental protection;
- Allocation of space for nature conservation, and
- Identification and reduction of cumulative effects of human activities on marine ecosystems.

From the beginning of its evolution, marine spatial planning has been intrinsically tied to the *ecosystem-based approach*. MSP has been considered a “tool to make ecosystem-based sea use management a reality” (Douvère 2008). Even though a broad consensus can be detected when it comes to the high value of global marine ecosystems, the immense pressures humans have inflicted on them, and the urgent need for a shift to a holistic approach of managing human activities that have an impact on marine ecosystems (Crowder and Norse 2008, Foley et al. 2010), there has been an ongoing debate on the principles that should guide marine ecosystem-based management (EBM) and, accordingly, marine spatial planning. As a result, an enormous variety of definitions and key principles for EBM can be found, basically depending on the respective emphasis placed on ecological, social, and governance factors (Long et al. 2015).

In 2005, more than 200 scientists and policy experts from the US released a “Scientific Consensus Statement on Marine Ecosystem-Based Management” (COMPASS 2005). The widely accepted and workable definition of EBM and its background laid down in this document, can be considered a basis for the conception of ecosystem-based marine spatial planning. According to the statement (COMPASS 2005: 1), ecosystem-based management is

“an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want

and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors. Specifically, ecosystem-based management:

- emphasizes the protection of ecosystem structure, functioning, and key processes;
- is place-based in focusing on a specific ecosystem and the range of activities affecting it;
- explicitly accounts for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species;
- acknowledges interconnectedness among systems, such as between air, land and sea; and
- integrates ecological, social, economic, and institutional perspectives, recognizing their strong interdependences.”

In view of this definition and the conceptual characteristics of MSP described above, it becomes evident that MSP and EBM are substantially and procedurally linked in many ways—that is the reason why MSP is considered an essential instrument to facilitate ecosystem-based ocean management.

As mentioned before, ecological interests do not generally enjoy absolute priority over economic and social interests when it comes to weighing of interests in the planning process. If one of the key elements of EBM is to “make protecting and restoring marine ecosystems and all their services the focus, even above short-term economic or social goals for single services” (COMPASS 2005), this does not necessarily hold true for MSP itself, even if it is ecosystem-based (Foley et al. 2010). However, the development of each MSP concept must be based on a clear decision over the relative roles of social, economic and ecological objectives. It is a widespread desideratum that “ecological principles should be at the foundation of any ecosystem-based process” (Foley et al. 2010). This issue goes back to the different paradigms of sustainability (“weak” vs. “strong” sustainability). The decision whether the three dimensions of sustainability (social, economic, ecological) are seen as equally important, or ecosystems are seen as boundaries for social and economic development, obviously has far-reaching implications in the decision-making process (Reuterswård 2015; Soininen and Hassan 2015).

In European Union Law, for example, the application of an ecosystem-based approach in MSP is legally required in Article 5(1) of the MSP Directive 2014/89/EU (Kistenkas 2016). The Fourteenth Recital in the Preamble to the MSPD illustrates this requirement as follows:

“In order to promote the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources, maritime spatial planning should apply an ecosystem-based approach as referred to in Article 1(3) of Directive 2008/56/EC with the aim of ensuring that the collective pressure of all activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while contributing to the sustainable use of marine goods and services by present and future generations.”

It becomes clear that under the MSP Directive 2014/89/EU the ecosystem-based approach is meant to restrain the economic and social development of marine space

by setting boundaries marked by the Marine Strategy Framework Directive 2008/56/EC (MSFD). Being the environmental pillar of the EU Integrated Maritime Policy, the MSFD aims to achieve Good Environmental Status of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend (COM(2012) 662 final). Particularly, the cumulative impact of all human uses allowed on the basis of one or more marine spatial plans must not compromise the capacity of marine ecosystems to respond to anthropogenic changes. Obviously, Art. 5(1) MSPD is based on two important insights: (1) without functioning ecosystems, sustainable economic and social development of the seas and oceans are utterly impossible, (2) marine ecosystems must be maintained "within limits where they are resistant to change or are resilient, able to return to their former (desirable) state even after they experience a perturbation that puts them (temporarily) in a different state" (Crowder and Norse 2008).

One of the major challenges for both MSP-related science and practice is to operationalize the ecosystem-based approach and to cope with the issues of complexity and uncertainty on the one hand and practicability on the other. Most importantly, the ecosystem-based approach has to be gradually substantiated. Finding key guiding principles, rooted in "essential ecological insights" (Crowder and Norse 2008), is an important first step (see Foley et al. 2010; Long et al. 2015). Foley et al. (2010) have proposed *four basic ecosystem principles* to guide ecosystem-based MSP, describing structural components that are essential for healthy, functioning marine ecosystems:

- Maintain native species diversity;
- Maintain habitat diversity and heterogeneity;
- Maintain populations of key species;
- Maintain connectivity among habitats and populations.

Foley et al. recommend to incorporate these principles into a decision-making framework with clearly defined targets for these ecological attributes. Additionally, two overarching guidelines should be applied: the need to consider (1) *contextual factors*, such as geomorphology and biogeography, as well as the type, distribution, frequency, and intensity of existing and contemplated ocean uses, and (2) *uncertainty* (Foley et al. 2010). Definitely, one of the most important insights for ecosystem-based MSP is the *heterogeneity of marine areas* (differing values in biophysical and human dimensions, differing sensitivities etc.) that needs to be reflected by MSP at appropriate spatial and temporal scales (Douvere 2010). Further, MSP has to deal with the fact that marine ecology is not yet able to accurately predict how components of complex marine ecosystems respond to all kinds of plan-induced human influence and probably never will be. When it comes to dealing with this uncertainty, MSP should "provide a high level of assurance that we will not lose what we value" (Crowder and Norse 2008), by taking a *precautionary approach*, "such that the absence of information on the effect of an activity is not interpreted as the absence of impact or harm to the ecosystem" (Foley et al. 2010). Building *redundancy and buffer areas* into the MSP framework will also help to protect ecosystem functions and services in the face of uncertainty (Crowder and Norse 2008; Foley et al. 2010).

54.4 Legal Framework

54.4.1 *International Law: UNCLOS*

First and foremost, marine spatial planning must be applied in accordance with international law. In particular, national regulations on MSP have to be consistent with the rights and duties of States imposed by international law. Of course, there is no international convention originally stipulating the legitimacy or the general conditions of MSP. However, basic constraints for MSP activities are set in the United Nations Convention on the Law of the Sea (UNCLOS). Although the Convention does not contain any explicit provisions on MSP, it provides the legal basis for sea exploitation, the right to allocate activities and the obligation to conserve the marine environment. Most importantly, UNCLOS delivers legal mechanisms for resolving spatial conflicts.

The world's seas and oceans are divided by UNCLOS into six basic zones in which the types and degrees of State's rights and jurisdiction vary. These zones are: the territorial sea, the contiguous zone, the exclusive economic zone (EEZ), the continental shelf, the high seas, and the Area. Practically, the internal waters, the territorial sea and the exclusive economic zone are most relevant to spatial planning.

The waters on the landward side of the baseline of the territorial sea form part of the *internal waters* of the State (Art. 8(1) UNCLOS). As part of its territory the internal waters are under full sovereignty of the State which means complete MSP jurisdiction (Maes 2008), barring one exception concerning the right of innocent passage in specific internal waters enclosed by straight baselines (Art. 8(2) UNCLOS).

In the *territorial sea*, which extends up to a limit of 12 nm from the baseline (Art. 3 UNCLOS), the coastal State also has full jurisdiction based upon sovereignty (Maes 2008). The only limitation upon this is the right of innocent passage through the territorial sea, which ships of all States enjoy (Art. 17 UNCLOS). However, the coastal State may adopt laws and regulations relating to innocent passage in respect of the safety of navigation and the regulation of maritime traffic, the protection of facilities, installations, cables and pipelines, the conservation of living resources and other aspects enumerated in Art. 21(1) UNCLOS. Beyond these laws and regulations, the coastal State is not entitled to take spatial planning measures that could impede the innocent passage of foreign ships (Art. 24(1) UNCLOS). Yet, the coastal State may, where necessary having regard to the safety of navigation, require foreign ships to use such sea lanes and traffic separation schemes as it may designate or prescribe for the regulation of the passage of ships (Art. 22(1) UNCLOS). As a result, in the territorial sea the coastal State may adopt MSP regulations if they comply with the right of innocent passage (Schubert 2015).

The question whether the coastal State is entitled by international law to establish a spatial planning regime in the *exclusive economic zone* is rather difficult to answer. The EEZ must be proclaimed by the coastal State and shall not extend beyond 200 nm from the baseline (Art. 57 UNCLOS). It is neither part of the State's territory nor subject to its sovereignty. Art. 56 UNCLOS confers limited sovereign

rights on coastal States for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil. These sovereign rights apply to other activities for the economic exploitation and exploration, such as the production of energy from the water, currents and winds (Art. 56(1) lit. a UNCLOS). Furthermore, the coastal State has jurisdiction with regard to the establishment and use of artificial islands, installations and structures, marine scientific research and the protection and preservation of the marine environment (Art. 56(1) lit. b UNCLOS). In exercising these rights, the State shall have due regard to the rights and duties of other States, such as the freedoms of navigation and overflight and of the laying of cables and pipelines (Art. 56(2), 58(1) UNCLOS).

UNCLOS does not explicitly grant the sovereign right or jurisdiction for spatial planning. This does not necessarily implicate that the coastal States are not entitled to regulate MSP in the EEZ. A regulatory competence might be found by interpretation. There are no provisions in UNCLOS stipulating whether or how the coastal State has to exercise its sovereign rights. These matters are left to the State's decision, which indicates that the State is entitled to use planning instruments. Moreover, planning is commonly not regarded as a task itself but as a mode or method of exercising a task. The sovereign rights and jurisdiction conferred upon the coastal State imply the power to regulate the terms of use relating to those activities including spatial planning instruments. The State may adopt a binding sectoral planning decision as a basis for exercising each of its sovereign rights.

It needs to be clarified whether the coastal State also has the regulatory competence for comprehensive supra-sectoral spatial planning—which is qualitatively more than just the sum of the single sovereign rights and their exercise in the mode of sectoral planning. Of course, the State may not claim sovereign rights which are not expressly granted to him by international law. This leads to the question whether UNCLOS provides an unwritten competence to coordinate the functionally limited rights as well as the different sectoral plans. Such a competence can be derived from the doctrine of implied powers: in international law, implied powers are those powers authorized by a legal document which, while not stated, are deemed to be implied by powers expressly stated. In fact, there is an urgent necessity to balance the numerous conflicting forms of use and the duty to protect the environment which are all covered by the sovereign rights and duties set by UNCLOS. The overall objectives of UNCLOS are laid down in its preamble which states, that the problems of ocean space are closely interrelated and need to be considered as a whole. Thus, the convention shall establish a legal order for the seas and oceans which will promote the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment. It is quite obvious, that these objectives could never be achieved if UNCLOS merely approved an uncoordinated, planless utilization. In the interest of a well-balanced and future-oriented exercise of sovereign rights and jurisdiction granted to the coastal States, the implied powers doctrine allows to derive a regulatory competence for comprehensive spatial planning from the convention (Erbguth and Müller 2003; Schubert 2015).

As a result, in the EEZ the coastal State has the regulatory competence for sectoral as well as supra-sectoral spatial planning, both within the scope of the limited sovereign rights and jurisdiction and in consideration of the rights and duties of other States (European Commission 2008), or as Soininen et al. (2015: 221) have put it: “UNCLOS provides coastal States with legitimate ways of exercising their competence over planning and utilizing marine areas [...] International law is on the one hand making MSP possible and on the other placing certain restrictions on it.”

54.4.2 European Union Law: Directive 2014/89/EU

In 2014, the EU adopted the *Directive 2014/89/EU establishing a framework for maritime spatial planning* (MSPD), aiming to promote the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources (Art. 1(1) MSPD). With this legal act, which can be considered a milestone in the ongoing process of the Union’s Integrated Maritime Policy, the legislator basically seeks to coordinate and harmonize national approaches to MSP (Soininen et al. 2015: 223).

The Directive defines MSP as a process by which the relevant Member State’s authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives (Art. 3(2) MSPD). The role of the EU is limited to providing a basic, mainly procedural framework while “Member States remain responsible and competent for designing and determining, within their marine waters, the format and content of such plans, including institutional arrangements and, where applicable, any apportionment of maritime space to different activities and uses respectively” (Recital 11; see also Art. 4(3) MSPD).

Art. 4(1) MSPD stipulates that each Member State shall establish and implement a marine spatial plan. According to Art. 4(3), the resulting plan or plans shall be developed and produced in accordance with the institutional and governance levels determined by Member States. The *objectives* of MSP are laid down in Art. 5 MSPD and encompass

- considering economic, social and environmental aspects to support sustainable development and growth in the maritime sector, applying an ecosystem-based approach, and to promote the coexistence of relevant activities and uses;
- contributing to the sustainable development of energy sectors at sea, of maritime transport, and of the fisheries and aquaculture sectors, and to the preservation, protection and improvement of the environment, including resilience to climate change impacts.

When it comes to the *content* of the maritime spatial plans, the Directive is rather restrained. Art. 8(1) MSPD obligates the Member States to set up maritime spatial plans which identify the spatial and temporal distribution of relevant existing and future activities and uses in their marine waters, in order to contribute to the objectives

set out in Article 5. Art. 8(2) MSPD provides a catalogue of possible activities and uses and interests that *may* be covered by the maritime spatial plans.

One of the central issues that the MSP-Directive tries to tackle is *transboundary cooperation* in drafting and implementing marine spatial plans (Soininen 2015: 195). The European Commission has always emphasized *communication, consultation and cooperation* with neighbouring States as key elements of the MSP procedure that need to take place at an early stage in the planning process (COM(2010) 771 final: 5.). Consistently, Art. 11(1) MSPD obliges Member States bordering marine waters to cooperate with the aim of ensuring that maritime spatial plans are coherent and coordinated across the marine region concerned. The cooperation shall be pursued through existing regional institutional cooperation structures such as Regional Sea Conventions, networks or structures of Member States' competent authorities and/or other methods, for example in the context of sea-basin strategies (Art. 11(2) MSPD). In the case of Member States bordering third States, Member States "shall endeavour, where possible, to cooperate with third countries on their actions with regard to maritime spatial planning in the relevant marine regions and in accordance with international law and conventions, such as by using existing international forums or regional institutional cooperation" (Art. 12 MSPD).

In order to promote sustainable development in an effective manner (see Recital 21 of MSPD), the MSPD also provides for the *involvement of the public* in the planning process (Zervaki 2015). Member States shall establish means of public participation by informing all interested parties and by consulting the relevant stakeholders and authorities, and the public concerned, at an early stage in the development of maritime spatial plans, in accordance with relevant provisions established in Union legislation (Art. 9(1) MSPD). Further, Member States shall ensure that the relevant stakeholders and authorities, and the public concerned, have access to the plans once they are finalized (Art. 9(2) MSPD). As a good example of public consultation provisions, the MSP-Directive points out Art. 2(2) of Directive 2003/35/EC providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment.

Even though the substantive requirements for national MSP legislation and national MSPs might be considered "normatively weak" (Soininen 2015: 193), the MSP-Directive marks an important initial step towards an EU-wide harmonized and consistent comprehensive spatial planning approach for the European maritime waters (Schubert 2015).

54.5 Perspective

According to Charles Ehler "the future of MSP and its ecological and economic outcomes looks bright" (Ehler 2013). This perspective is mainly based on the projection that until 2025, almost 60 countries in the world will have government-approved marine spatial plans, and by the same time, around 43% of the area of the world's exclusive economic zones will be covered by government-approved marine

spatial plans (Ehler 2015). The EU MSP Framework Directive can be considered one of the main drivers of this development, since the 22 EU Coastal States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by September 2016, and the maritime spatial plans shall be established at the latest by March 2021 (Art. 15(1), (3) MSPD).

However, the mere quantitative expansion is not the single most important indicator to measure the worldwide success of the concept of MSP. It is even more important to keep filling the concept with substance which can only be achieved on the basis of further practical experience. Soininen et al. (2015: 221) rightly point out that “[d]espite the recent popularity, MSP still needs to prove its worth and added value compared to or in combination with existing instruments. [...] MSP does not hold intrinsic value on its own but provides a framework for a more integrated multi-level approach to ocean governance.”

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