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PRACTICE REVIEW



Marine spatial planning in Greece: issues raised from the preparation of the Marine Spatial Framework for the North Aegean region

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ABSTRACT

Marine spatial planning in Greece has only recently been put on the public policy agenda, although it was formally adopted in 2018. The paper overviews critical aspects of marine spatial planning in Greece focusing on the drafting of the first Marine Spatial Framework (MSF) for the North Aegean Marine Spatial Unit (MSU1). We elaborate on the methodology followed for drafting the MSF for MSU1 and present key elements of its fields of action, spatial guidelines and regulations. The potential and limitations of the MSF as a tool that expands spatial planning from land to sea are discussed.

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1. Introduction

Marine Spatial Planning (MSP) is increasingly recognized as a pivotal framework to link environmental protection with the fast-growing 'blue economy'. The Marine Spatial Planning Directive 2014/89/EU (MSPD) approaches MSP essentially as a practical way to organize the sustainable use of the marine space in order to minimize conflicts and promote compatibility between human activities, i.e. fishing, offshore aquaculture, renewable energy, oil and gas exploration and exploitation, extraction of raw materials, tourism, and shipping, as well as between these activities and the environment (Ehler & Douvère, 2009; Agardy, 2010; EC, 2014; Ehler *et al.*, 2019; Harris *et al.*, 2019).

A key objective of MSP is the management of ongoing activities and future development of a marine area to regulate the uses at a four-dimensional scale – sea surface, water column, seabed or airspace, and time (EC, 2008; Ehler & Douvère, 2009). MSP and, accordingly, Marine Spatial Plans (MSPlans), are in many respects different from 'zoning' or 'marine conservation planning' or 'coastal zone management', as they extend to offshore areas incorporating multi-objectives (Ehler, 2012; ECIEEA *et al.*, 2022). Therefore, it is important to avoid treating the marine space in the same way as terrestrial space, due to their significantly different uses and activities, the lack of private ownership in the marine space and the different institutional and administrative structures (Wassenhoven, 2017; Zaucha, 2019; Asprogerakas *et al.*, 2020; Gourgiotis *et al.*, 2023).

It has also been argued that to be effective, MSP should adopt an ecosystem-based approach and should be integrative, place-based, adaptive, strategic and anticipatory, with a focus on the long-term and active stakeholder involvement (Ehler & Douvère, 2009; Coccossis *et al.*, 2020; Papageorgiou *et al.*, 2020).

Despite the fact that Greece is a coastal State with a remarkably extensive coastline, the country has only recently introduced relevant legislation to formulate a National Marine Spatial Strategy (NMSS) and a first MSPlan, which are currently undergoing the adoption process. The objective of this practice review paper is to provide an overview of Greece's initial pilot Marine Spatial Framework (MSF) that covers the marine area of North Aegean Sea (Marine Spatial Unit 1 – MSU1). After a concise summary of the institutional framework of MSP in Greece focusing on its role within the spatial planning system, the paper presents the methodology followed for the preparation of the first MSF, the overall planning approach and the main actions proposed. The discussion highlights the main differences between marine and terrestrial spatial planning and the difficulties to zone and plan uses in individual areas due to geopolitical conditions.

2. A brief review of the Greek institutional framework for MSP

MSP was incorporated into the Greek spatial planning system with the enactment of Law 4546/2018, as amended by Law 4759/2020, based on the MSPD. Law 4546/2018 provides two tools for the implementation of the MSP: (a) the NMSS, considered a part of the national spatial strategy, and (b) the MSPlans, which were renamed MSFs after Law 4685/2020. MSFs correspond to the regional strategic level of spatial planning (Figure 1) and refer to marine spatial units which may be sub-regional, regional or inter-regional in scale, as defined by the NMSS. Currently, there is a draft NMSS as well as a draft MSF, which covers the wider area of the North Aegean and is presented in this paper. A division of the national marine space into four MSUs has been proposed, that essentially concern the North Aegean, the South Aegean, the Cretan sea, and the Ionian Sea respectively (DPRD-Uth, 2021).

MSP, as defined by Law 4546/2018, specifies the distribution of existing and future activities and uses in marine areas and coastal zones, the interactions between activities/uses, including the production of energy from renewable and conventional sources, and the routing of submarine cables and pipelines. Thus, this Law seems to adopt an approach that integrates the coastal and the marine area into a single MSF. It was considered that this approach might lead to conflicts with the already enacted Regional Spatial Frameworks (RSFs), which include guidelines and/or regulations for the terrestrial part of the coastal area, while some RSFs include guidelines also for the marine space of their respective Regions. Law 4759/2020 amended this provision of Law 4546/2018, decoupling the planning for the onshore coastal area from that for the offshore one. Thus, MSP in Greece applies to the marine space, i.e. the marine waters and the marine part of the coastal zone.

The decoupling of the terrestrial coastal area from the provisions on MSP by Law 4759/2020, along with the latter's requirement to take into consideration land-sea interactions in the preparation, assessment and implementation of MSP based on an ecosystem approach, demonstrate the need for establishing a comprehensive framework of

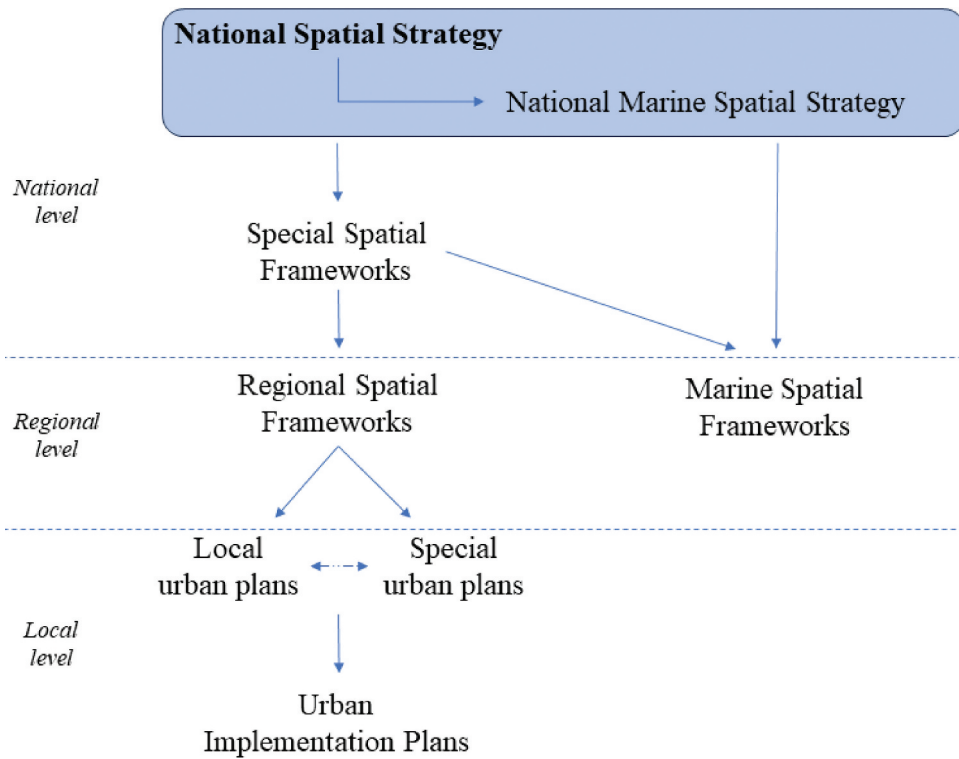


Figure 1. Structure of the Greek planning system.

compliance and compatibility with existing spatial planning, as well as with the obligations arising from international conventions.

The current spatial planning legislation provides for the harmonisation, specification and complementarity between the different levels of spatial frameworks. Thus, the drafted NMSS specifically states that the MSFs are bound by the guidelines and the regulations of the national-level Special Spatial Framework, regardless of their spatial reference (terrestrial or marine). It also suggests that the MSFs should take into account the guidelines of the RSFs for the marine area of their respective Regions (marine waters and the marine part of the coastal area), in order to achieve coherence between the Marine and Terrestrial Regional Spatial Frameworks (YPEN, 2022).

It is worth mentioning that the marine zones in Greece are defined by the provisions of the 1982 United Nations Convention on the Law of the Sea. These zones are the territorial sea (or coastal zone), the continental shelf, and the EEZ. However, there is not yet a specific demarcation of the continental shelf and the EEZ. In the absence of this demarcation, the width of Greek maritime zones for MSP in the Aegean sea adheres to the principle of average distance, using it as a provisional guide for defining external boundaries vis-à-vis Turkey. It is important to note that this solution is contingent upon the understanding that the final demarcation of maritime zone boundaries will be accomplished through subsequent delimitation agreements with all pertinent coastal states.

Demarcation problems are generally problems in the Eastern Mediterranean region which is characterized by an extreme diversity with almost 20 States of very different social and economic features. Greece has its own share of difficulties with only one delimitation agreement in place with Italy signed in 1977 and it faces challenges to enforce an existing agreement with Albania and conclude an agreement with Turkey (Gavouneli, 2015). In relation to the Aegean Sea, the reason behind the reluctance of Greece to declare maritime zones is, arguably, the pending Greek-Turkish maritime dispute(s) (Papastavridis, 2020).

3. Methodological approach of the MSF for MSU1

Appropriate technical specifications to guide the preparation process are a critical parameter for the preparation of any spatial plan. In the Greek planning system, at the regional level, formal specifications are in place for the RSFs but not for the marine areas. It is worth noting that the Ministry of Environment and Energy (YPEN) had drafted technical specifications for the preparation of MSFs, in full alignment with those of the RSFs. However, the unique characteristics of the marine environment and its significant differences from the terrestrial environment, showed that these specifications were largely oriented towards the terrestrial spatial characteristics and activities. Thus, it was understood that for the preparation of the MSF for MSU1, a different approach should be developed, adapted to the Greek planning system.

The MSF of MSU1 was prepared as a pilot project and as part of the project ‘Cross-border Cooperation for the Implementation of Marine Spatial Planning’ (‘THAL-HOR2’), so that its methodology can be followed by all MSFs that will be assigned. The preparation of the MSF was divided in two phases: Phase A included an extensive analysis and assessment of the spatial and development context of the MSU1; Phase B, which is the subject of this paper, concerns the drafting of the MSF proposal. The methodological approach for the preparation of the MSF followed the steps illustrated in Figure 2.

Crucial inputs for the identification of opportunities and prospects were primarily derived from Phase A of the research project ‘THAL-HOR2’. Additional inputs were also based on the results of the project ‘Cross-border Cooperation for the Development of Marine Spatial Planning’ (‘THAL-HOR1’) and, in particular, of Deliverable 3.4.3: ‘Report on conflicts and compatibility of the Aegean Study Area’ (University of the Aegean, 2015). Furthermore, the legislative framework for the country’s protected areas was also taken into consideration (Figure 3).

According to the findings of Phase A (DPRD-Uth, 2022), fishing and marine aquaculture sectors are particularly important for MSU1, as they contribute both to the local and the national economy. Regarding the fishing sector, which is actually complementary to other sectors, approximately 70% of the country’s total catches are harvested in MSU1. The aquaculture sector shows a dynamic development and strengthens the economy of region. Aquaculture, particularly in floating systems, is more dynamic due to the exports of aquaculture products.

Tourism, which is mainly developed in the coastal zone of MSU1, is the most profitable sector. Marine tourism is not particularly developed, except for yachting, which is mainly developed in the marine zone of the Region of Central Macedonia, due to its infrastructure. The marine natural and cultural wealth of MSU1 offers new perspectives

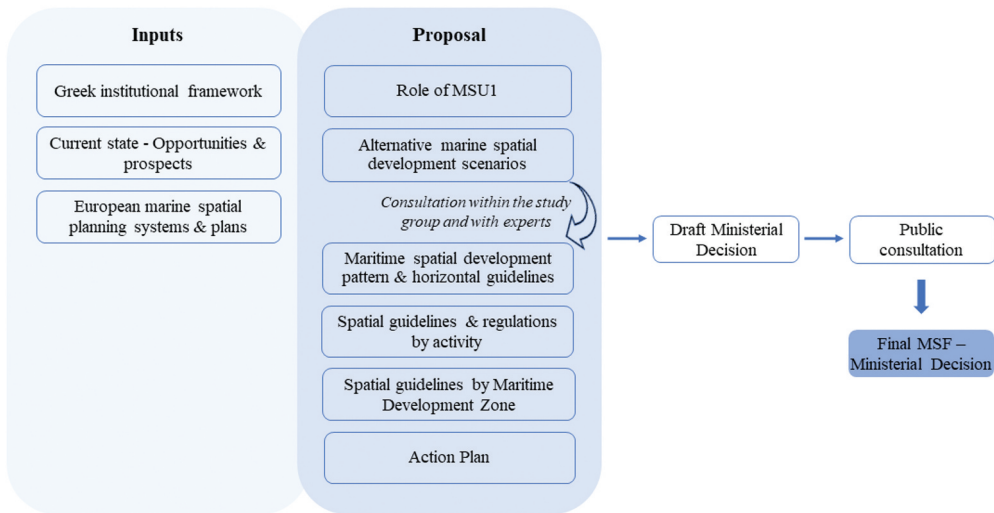


Figure 2. Steps for the preparation of the MSF for MSU1.

for the development of alternative tourism products and experiences, especially for the isolated islands.

In the energy sector, the significant wind potential of the Aegean Sea seems to favor the installation of offshore wind farms, while there is also strong investment interest in the sector. In general, the energy networks of MSU1 are particularly important and are expected to be further developed, regarding both the development of offshore wind farms and electrical interconnections of the island area.

The exploitation of subsea oil fields is important in the northern part of MSU1. The planned Independent Natural Gas Systems (INGs) are also expected to be crucial, as they are considered to provide the opportunity for Greece to become an energy hub for the transit of natural gas across the sea to the rest of Europe.

The transport network of MSU1 consists of ports and airports that serve regional, national and international freight and passenger transport and, in addition, contribute to the tourism sector. MSU1 is considered as a gateway to the Aegean Sea and, more broadly, to the northeastern part of the Mediterranean Sea and the eastern part of Europe, as well as from/to the Sea of Marmara and the Black Sea. There are also significant prospects for further development of marine transport, especially for combined transport networks with the northern Greek road axis of the Egnatia Motorway and its vertical axis and the three ports of Thessaloniki, Alexandroupolis and Kavala.

From an environmental perspective, multiple natural environment areas are recorded in MSU1, with the National Marine Park of Alonissos in Northern Sporades (the largest protected marine area in Europe) being the most important. Furthermore, there is an extensive network of marine archaeology sites, particularly on the coast of Lesbos. Significant marine archaeological sites are also recorded in the marine area of Magnesia and Sporades.

In regards to the structure and content of the MSF, critical inputs derived from a thorough study of MSPlans from 5 different European countries, namely Belgium,

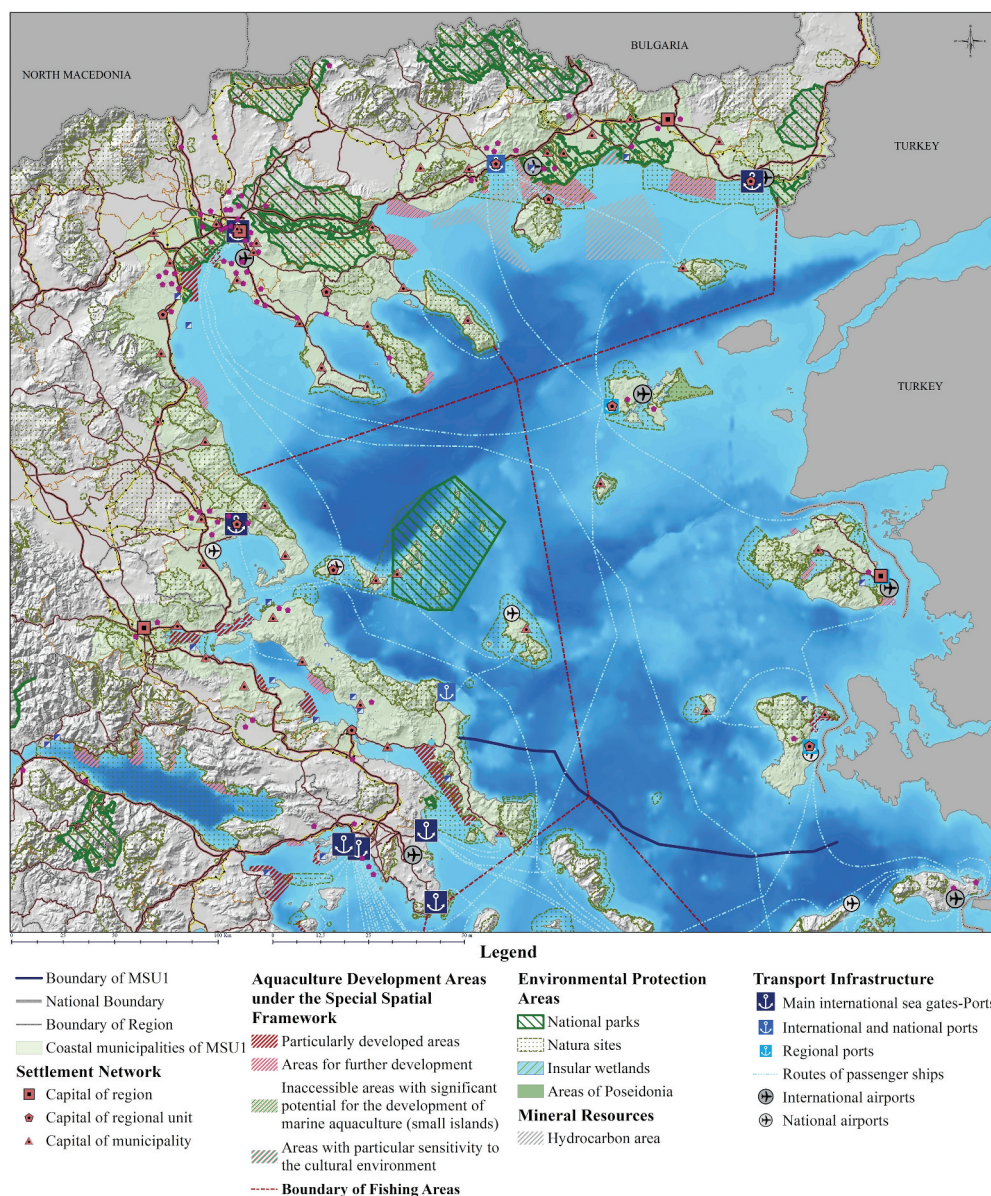


Figure 3. Current situation in the MSU1. *Source:* DPRD-Uth (2023).

France, Estonia, Cyprus (Member State with MSPlans already enacted), and England (as part of the UK). This analysis indicates that the drawing up of the MSPlans follows a similar approach, not very different from that followed in drawing up a regional spatial plan, and includes an analysis of the current situation, existing activities/uses and challenges, the setting an overall vision, together with general objectives/principles specified by a number of policies, while, in general, they include the same fields of actions. Yet several differences were also identified, regarding primarily the categorization of marine uses and fields of action as well as the emphasis and level of detail used in

the various fields of action. Table 1 presents the key elements of the selected MSPlans, in chronological order of their adoption.

4. The main elements of the planning approach

4.1. Determining the role of MSU1 in an international, European and national context

MSU1 includes the marine waters under the sovereignty of the Hellenic Republic or within which the Hellenic Republic exercises sovereign rights or jurisdiction, and is included in the subdivision ‘Aegean Sea – Eastern Mediterranean (Levantine Sea)’ (Law 3983/2011). MSU1 is an area of important geopolitical position on the eastern border of both Greece and Europe, which forms part of the international marine axis connecting the continents of Europe, Asia and Africa. Despite the considerably different positions between Greece and Turkey regarding both the existing disputes between them and the legal framework governing their substance (Papastavridis, 2020), the MSU1 as indeed the

Table 1. A review of selected European MSPlans.

MSPlan	adoption/ amendment	structure	fields of action
Belgian Marine Spatial Plan	2019/every 6 years	<ul style="list-style-type: none"> • Brief reference on the current situation • Long-term vision (2050) • Long-term objectives (3) • Specific objectives (4 + 1) • Spatial policy choices (11) 	<ul style="list-style-type: none"> • Good environmental status and nature protection areas • Energy, cables and pipelines • Shipping, port development and dredging deposits • Fishery and aquaculture • Sand and gravel extraction • Coastal defences • Scientific research, radars and measuring posts • Military use • Tourism and recreation • Cultural heritage and seascape • Commercial and industrial activities • Operation of marine and coastal ecosystems • Marine and coastal biodiversity • Professional fishing • Aquaculture • Marine renewable energy • Marine aggregates extraction • Maritime traffic and port areas, dredging • Shipbuilding and nautical industries • Agriculture • State intervention at sea and on the coastline (security and safety) • Maritime and coastal tourism and leisure • Research, innovation, training • Maritime and coastal heritage • Land-based pollution • Management of the coastline and its artificialisation, prevention of natural risks
France/ Eastern Channel – North Sea Basin Strategy	2019/every 6 years	<ul style="list-style-type: none"> • Current situation and challenges • Vision (2030) • General strategic objectives (15) • Specific environmental (52) and socio-economic (49) objectives 	<ul style="list-style-type: none"> • Operation of marine and coastal ecosystems • Marine and coastal biodiversity • Professional fishing • Aquaculture • Marine renewable energy • Marine aggregates extraction • Maritime traffic and port areas, dredging • Shipbuilding and nautical industries • Agriculture • State intervention at sea and on the coastline (security and safety) • Maritime and coastal tourism and leisure • Research, innovation, training • Maritime and coastal heritage • Land-based pollution • Management of the coastline and its artificialisation, prevention of natural risks

(Continued)

Table 1. (Continued).

MSPlan	adoption/ amendment	structure	fields of action
England, UK/ North East Marine Plan	2021/every 3 years	<ul style="list-style-type: none"> • Summary of current situation • Long-term vision (2041) • Objectives (13) • Policies (57) 	<ul style="list-style-type: none"> • Infrastructure • Co-existence • Aggregates • Aquaculture • Cables • Dredging and disposal • Oil and gas • Ports, harbours and shipping • Renewables • Heritage assets • Seascape and landscape • Fisheries • Employment • Climate change • Carbon capture usage and storage • Air quality and emissions • Marine litter • Water quality • Access • Tourism and recreation • Social benefits • defence • Marine protected areas • Biodiversity • Invasive non-native species • Disturbance • Underwater noise • Cumulative effects • Cross-border co-operation
Estonian Maritime Spatial Plan	2022/every 5 years	<ul style="list-style-type: none"> • Long-term vision (2035) • Spatial development principles (5) • Planning solution (guidelines and conditions)* 	<ul style="list-style-type: none"> • Principles of combined use of the marine area • Fisheries • Aquaculture • Maritime transport • Maritime rescue, pollution response and guarding the state border • Renewable energy production • Seabed infrastructure • Sea tourism and recreation • Protected natural objects • Marine culture • Cultural monuments • National defense • Mineral resources • Dumping • Permanent connections • Land-sea interactions • Refinement of the national plan 'Estonia 2030+'
Cyprus' Maritime Spatial Plan	2023/every 5 years	<ul style="list-style-type: none"> • Current situation per development sector • Goals per development sector (total 24) • Priorities per development sector (total 15) • Planning proposals per development sector** 	<ul style="list-style-type: none"> • Fisheries and aquaculture • energy • Marine and coastal tourism • Shipping – ports • Environmental dimension • Cultural dimension • Marine scientific research • Defence and national security

*The MSPlan was based, among others, on the analysis of the current use and regional portraits of Estonian marine area, but is not presented in the final plan.

**Vision, strategic guidelines and strategic goals are set by the PS.

entire marine space of the Aegean sea contributes decisively to the relations (economic and other) that Greece develops with Turkey and its potential. The geographical proximity of MSU1 to the Middle East has also consequences for the social and political events in the area. Its island character, combined with its inadequate interconnections with the country's main development axis, has – to some extent – caused conditions of isolation. In addition to its geographical importance, the role of MSU1 at national level is also determined by the productive activities that are being developed or planned to be established in it. These activities include fishing, aquaculture, oil and gas production, wind energy generation and tourism.

The general guidelines regarding the role of MSU1 in an international and European context relate to the exploitation of its geographical position, strengthening its role as a gateway to the Aegean Sea, a 'crossroads' of maritime transport in the Mediterranean, and an energy hub for the transit of natural gas to the rest of Europe, while also contributing to the strengthening of Europe's energy security through the diversification of supply sources. Furthermore, the general guidelines concern the enhancement of its role in international markets, by developing a strong and outward-looking local economy and strengthening its most resilient sectors. The development, networking, cooperation and spatial integration of a balanced cross-border space, the active participation in transnational projects, as well as environmental protection and tackling climate change on a cross-border and global scale, are also promoted.

These guidelines also enhance the role of MSU1 at national scale. In addition, guidelines for its national role relate to the promotion and strengthening of marine links between the islands, as well as between the islands and the mainland, to the upgrading of its role in the energy sector through the development of offshore RES installations and the rational and sustainable exploitation of hydrocarbon reserves, and to the balanced development of all productive sectors of MSU1, strengthening their export orientation.

The specific guidelines for the marine transport sector in MSU1 concern the improvement of its connectivity by securing and defining marine transport corridors and considering new coastal connections, alongside the improvement and expansion of existing port infrastructures. Improving the competitiveness of ports and developing transit centers in conjunction with land transport will also aid trade with other countries. Regarding the energy sector, the provision of spatial requirements is encouraged for the implementation of the planned INGSs and the siting of offshore RES plants. Strengthening hydrocarbon research and exploitation as an economic activity of national scale is also promoted.

Marine tourism is fostered primarily through actions that enhance its competitiveness, make the most of the rich marine natural and cultural heritage, and attract visitors from new tourist markets. The creation of tourist networks between Greek coastal areas and major cities in Turkey as well as its coast areas, also represents a potential for the development of marine tourism. The support of tourism networks and the creation of marine tourist routes are also encouraged, alongside with synergies between marine tourism and other forms of tourism, through the development and improvement of appropriate infrastructure.

Sustainable fisheries and aquaculture activities, as well as processing and marketing of fisheries/aquaculture products, are promoted as critical sectors that contribute to the country's food security.

Integrated cross-border and inter-regional spatial development, cooperation and integration plans are also encouraged, with priority given to transport, fisheries and aquaculture, energy, tourism, environment, and climate change. Finally, the use of good practices from various transnational projects and action plans is suggested in key sectors.

4.2. Alternative marine spatial development scenarios

The next important step for the preparation of the proposal was the identification of possible marine spatial development scenarios in the MSU1, considering the guidelines of the statutory planning framework, the assessment of the current situation, the emerging opportunities and prospects for the MSU1, as well as its envisaged future role. The alternative scenarios were essentially assumptions regarding the future development of MSU1 over the next 10–15 years. They focus on four key development sectors, namely fisheries/aquaculture, energy, tourism and transport. The parameters taken into account for selecting the best planning proposal (preferred scenario) relate to the observed and projected development potential of the four key sectors, the prospects and the desired degree of development of the individual productive and other activities, the avoidance of conflicts between activities/uses of the marine environment, the principles of sustainable development, as well as the guidelines and policies of the overlying planning framework, at European and national level. Four main criteria were used, as illustrated in Figure 4, to evaluate the scenarios and select the preferred one.

Three marine spatial development scenarios for MSU1 were formulated (Table 2). Through internal consultation within the wider THAL-HOR2 research team and using the four evaluation criteria, the third scenario was selected as the preferred one. This scenario is based on the balanced development of energy, tourism, fisheries, aquaculture and transport activities in the context of the blue economy, in combination with the protection of the natural and cultural environment, taking also into account the expected impacts of climate change, through appropriate spatial guidelines from the MSP. Thus, one-sector development is avoided and the effective use of marine and coastal space is promoted, to support existing and future development through the coexistence of activities, the mitigation of conflicts and the minimization of the ecological footprint of development activities. Such an approach does not only focus on individual areas of the MSU1 but also promotes the diversification of

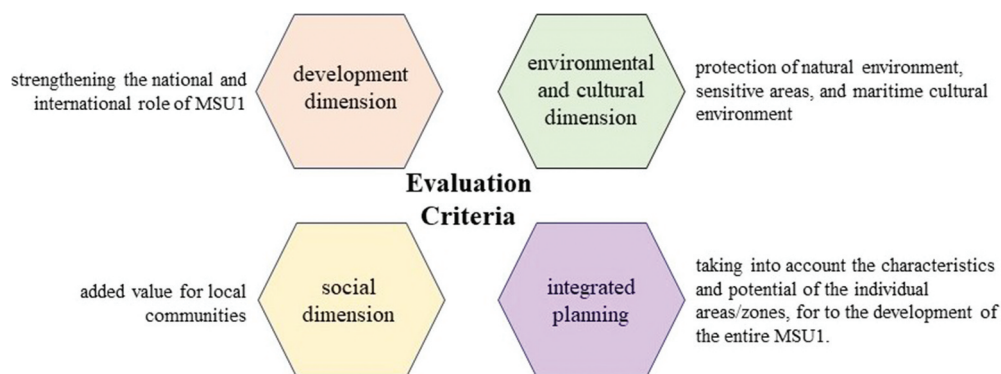


Figure 4. Evaluation criteria.

Table 2. Assumptions and evaluation of scenarios.

Scenario	Assumptions	Evaluation
Scenario 1: trend scenario	<ul style="list-style-type: none"> • current dynamics will continue in both marine and coastal areas • marine spatial development will be based on the existing spatial frameworks and land-use/terrestrial plans 	<ul style="list-style-type: none"> • spatial planning is essentially fragmented across different legislative instruments, lacking unified and integrated planning
Scenario 2: emergence of MSU1 as an energy hub	<ul style="list-style-type: none"> • installation of offshore wind farms and floating photovoltaics • exploitation of the oil and gas production facilities in Kavala and the floating LNG platforms in Alexandroupolis and Volos • enhancement of energy-related port facilities and energy transmission networks • other activities/sectors follow the priorities and commitments resulting from strengthening the energy sector 	<ul style="list-style-type: none"> • decline in the growth and/or potential of the other sectors • sensitive ecosystems may come under severe pressure • one-sector economy, therefore an unsustainable economic base
Scenario 3: Balanced and sustainable blue growth	<ul style="list-style-type: none"> • enhancement of the energy sector • balanced development of energy, tourism, fisheries, aquaculture and transport activities • guidelines and rules for balanced spatial development of all sectors/activities 	<ul style="list-style-type: none"> • efficient use of marine and coastal space • diversification of activities that improve socio-economic conditions in coastal communities • increase in the resilience of the economy • protection of natural marine environment and cultural heritage

activities that improve socio-economic conditions in coastal communities and contribute to the resilience of their economies.

4.3. Marine spatial pattern and horizontal spatial development guidelines

Based on the preferred scenario, a marine spatial pattern of MSU1 was formulated based on a general objective in the form of a long-term vision, which is further specified by key horizontal guidelines. The general objective of the MSF is the sustainable and rational organization of the marine space and the interactions between the multiple uses developed in MSU1, in a way that balances the requirements for the development of the blue economy with the protection of marine ecosystems and the achievement of social objectives. The MSF identifies key planning principles and guidelines, considering the potential and opportunities of MSU1 for sustainable and resilient development (Figure 5).

The proposed horizontal guidelines encourage the efficient use of marine space by promoting coexistence and synergy among the different activities/uses, considering the four-dimensional nature of marine space. Sustainable marine economy is also encouraged, in order to support existing and future economic activity, along with the sustainable use of natural resources. In addition, the guidelines promote the development of marine economy and the use of the marine environment in a way that contributes to prosperous, resilient and cohesive communities. Development within environmental limits, by protecting marine biodiversity and habitats, preserving and improving the quality of the marine environment and landscape, is also promoted. Protection and conservation of local cultural heritage,

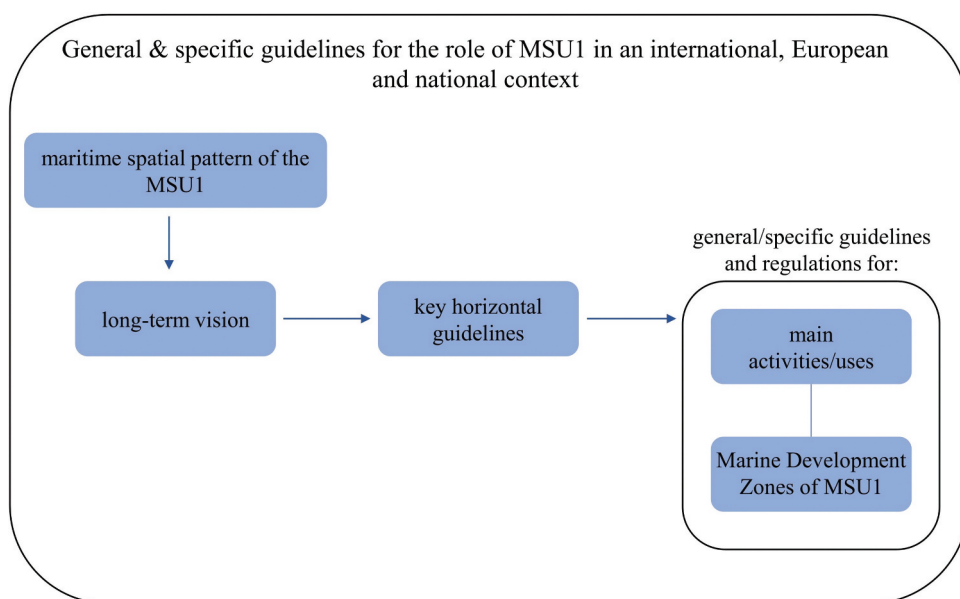


Figure 5. Marine spatial pattern of the MSU1.

alongside the association of cultural resources economic activities of a compatible nature, is encouraged. Finally, spatial organization should contribute to the adaptation to and mitigation of climate change.

This spatial pattern, which is crucial for economic, social, environmental and safety objectives, translates into policy decisions for the uses and activities that take place in MSU1 and for the Marine Development Zones (MDZ) discussed below.

4.4. Main activities/uses and spatial planning guidelines and regulations by activity/use

The MSF proposal considers the main uses/activities already being developed or proposed to be developed in MSU1 (Figure 6), occurring in the marine waters and the marine part of the coastal zone of MSU1. In addition, it also identifies two additional sectors of interest that are important, in terms of their spatial planning requirements: risk management issues, and marine scientific research and innovation.

For each of the activities/uses and sectors of interest, the MSF proposal first gives a definition and then identifies the opportunities and prospects which, in combination with the provisions of the institutional framework, form a spatial development framework. This framework consists of the main objective for the sector, the general and specific guidelines and, where necessary and feasible, specific regulations (Figure 7).

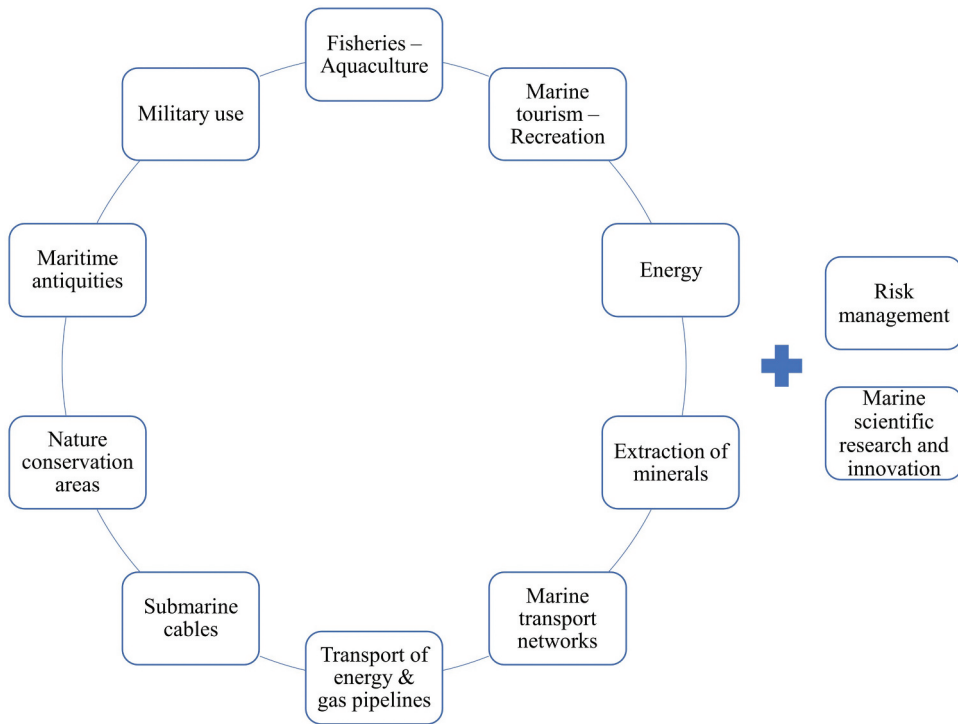


Figure 6. Main activities/uses developed or proposed in MSU1.

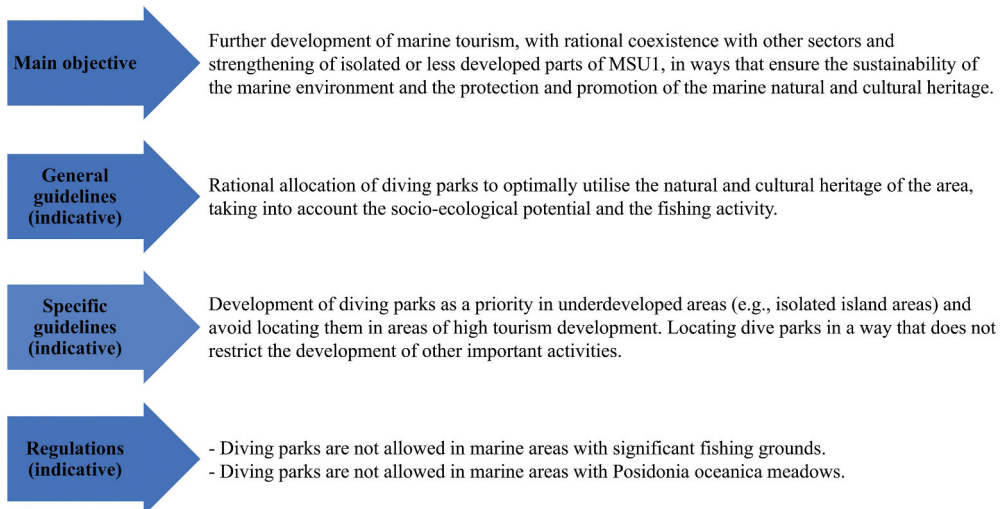


Figure 7. Example of spatial planning guidelines and regulations for recreational/diving tourism.

4.5. Marine development zones and action plan

A critical dimension of the maritime spatial development pattern is the zoning of the MSU1. The MDZs were determined based on the development dynamics and future prospects of each zone, the functional relationships developing within MSU1 and with the wider national and international area, as well as the alignment – as far as possible – with administrative units such as Regional Units (RU). Thus, 4 MDZs have been determined, as shown in Figure 8.

For each MDZ, the key elements – derived from the assessment of the current situation – are first set out: the Zone's role in the national and/or European area, its productive activities, major port facilities, and natural and cultural environment. The main objective is then defined, and guidelines are provided for each activity/use. These guidelines enhance and complete the role of each zone in the marine space of MSU1, while also contributing to the sustainable and balanced spatial development of both the relevant MDZ and MSU1. Figure 9 shows an example regarding MDZ1.

Finally, the Action Plan identifies, for the medium (5 years) and long (15 years) terms the required measures and implementation agencies. The proposed actions were grouped into the following categories: completion of spatial planning, fisheries and aquaculture, marine tourism – recreation, energy, marine transport networks, and environment.

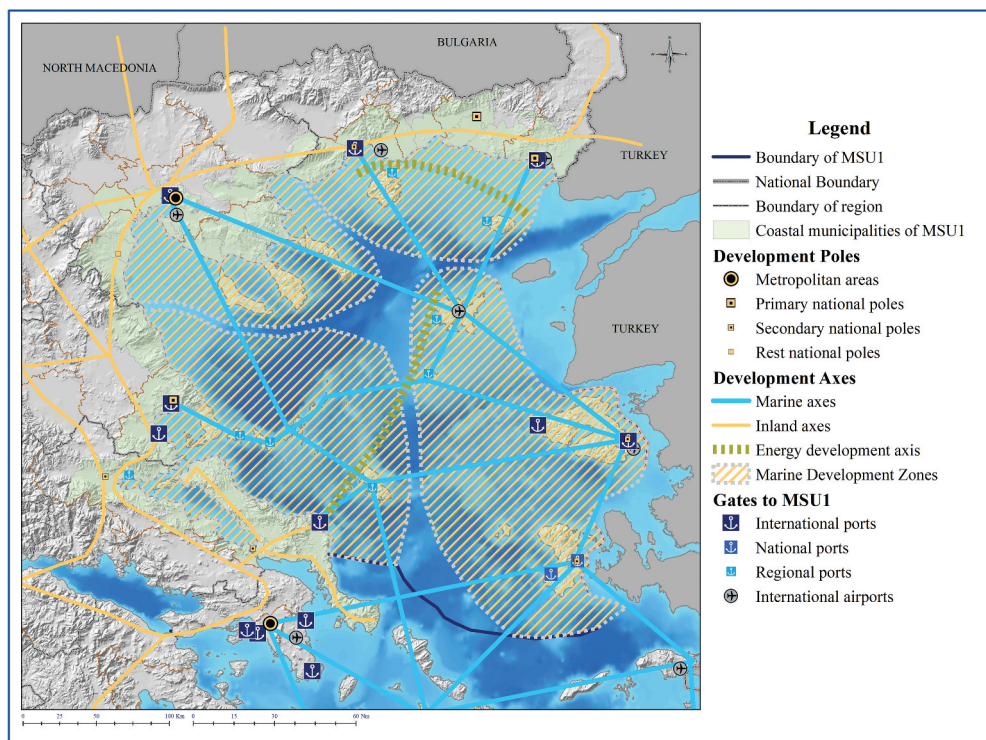


Figure 8. Marine Development Zones in MSU1. Source: DPRD-Uth (2023).

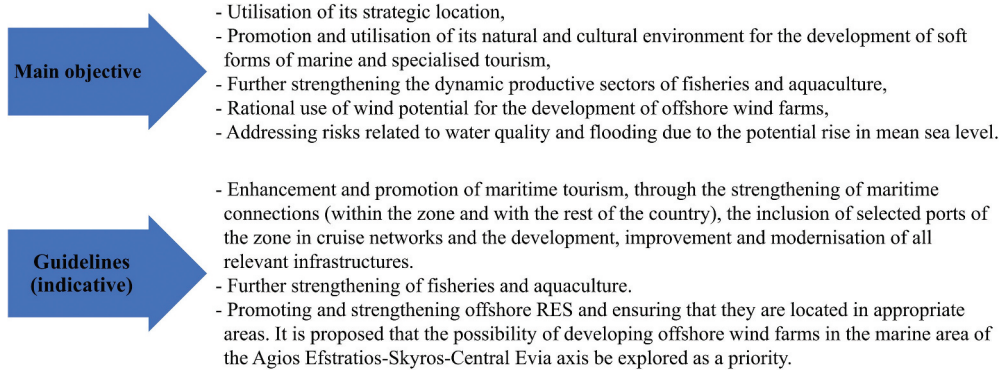


Figure 9. Example of spatial guidelines for MDZ1.

5. Discussion

MSP aims to ensure an integrated and coherent approach to the spatial and temporal distribution of human activities in the marine space. An MSPlan is a tool which, besides pursuing the sustainable development of marine resources and space, essentially integrates the use of marine space through a coherent planning process, as opposed to the current fragmented system of sectoral policies. A major issue for MSP is what Prevelakis (2023) has called ‘marine territoriality’, without which there is little scope for MSP. According to this view, in order to extend spatial planning from land to sea, a ‘technical territorialization’ must take place, i.e. the development of technologies that allow the utilization of the natural resources and other potentials of the sea. It is also necessary to achieve ‘political territorialization’, which defines the dominant political actor that takes over the management of each area of marine space, or at least those areas that are ‘technically territorialized’.

MSP concerns the organization, allocation, and regulation of activities in the marine space, with a transformative intent and with sustainable development as its ultimate goal. Regarding this basic function of spatial planning, marine and terrestrial spatial planning share common fundamental and critical principles and parameters. However, this study has identified four important issues, also indicated in the relevant literature (Wassenhoven, 2017; Zaucha, 2019; Asprogerakas *et al.*, 2020; Gourgiotis *et al.*, 2023), which need to be addressed and which differentiate marine from terrestrial spatial planning, without negating the core of the spatial planning approach.

The first issue concerns the spatial reference level of a MSPlan which is indeed ‘regional’; yet this regional dimension is not the same as the administrative terrestrial region. Specifically, MSU1 is administratively surrounded by no less than six Regions and its MSF involves, apart from the national government, six different Regional Administrations. Additionally, many other bodies are involved in this marine regional area, some of them international in character. This enhances the role of the central administration in the MSF, thus suggesting the need to explore forms of governance that will promote more collaborative forms and processes of planning.

The second issue relates to the geopolitical conditions since international conventions play an important role in marine space and its regulation. Compared to the MSP of other

countries, the MSF for MSU1 is decisively influenced by the lack of an EEZ, as well as by the geopolitical issue of the continental shelf. As a result, it is not easy to zone and plan uses in individual areas, regarding the physical geography and specific physical data such as wind potential in the case of offshore RES plants or hydrocarbon extraction, for which field surveys are required. This highlights the need for even more detailed planning, which may require special resolutions or decrees to be enacted. However, the major issue that is at stake here is how the MSP can operate as a field of cross-border cooperation in an area characterized by critical maritime disputes. Good practices regarding this issue have been adopted in countries with long standing good bilateral relations most of which are EU members, since EU requirements provide the basis for cross-border cooperation. Given the importance of a more transboundary approach to MSP (van Tatenhove, 2017; Gómez-Ballesteros *et al.*, 2021), it is crucial to identify fields of action, such as climate change, where synergies are required by its nature.

The third issue is the emphasis on spatial organization of economic activities and flows, and the absence of residential development. The present MSF deals with all three sectors of the economy and focuses on the spatial organization of the main economic activities with significant dynamics in MSU1. Critical economic sectors for which guidelines and regulations (where relevant) are set include fisheries and aquaculture, marine tourism and recreation, energy and the extraction of hydrocarbons and other minerals and solids. Transport, flows and connections in general, namely maritime transport networks, energy resources transport and gas pipelines, telecommunications, electricity and submarine cables, constitute the second major set of activities to be managed. Of particular importance is the international dimension of flows. The MSF under study has also focused on the nature conservation areas (most of which are close to land) and maritime archaeology sites, all of which are considered as exclusion zones.

The fourth issue concerns the relationship with terrestrial spatial planning at regional level, particularly at the coastal interface. Given the absence of residential development, a MSPlan does not have to manage residential pressures *per se*. However, it does have to manage anthropogenic pressures related to marine resources and marine economy. In the Greek spatial planning system, land-based coastal development and spatial organization falls under the jurisdiction of the RSFs, thus making their thorough study necessary. For the preparation of the MSF for MSU1, the RSFs of all Regions surrounding MSU1 were taken into account. This was done in such a way that the land-based targets remain the subject of the RSFs, while the MSF includes only targets for the marine area. For example, in the field of maritime transport, the MSF focuses on marine connections as the spatial structure, development and organization of ports (although a key element of marine transport) is regulated in detail by the adopted RSFs.

Finally, it should be pointed out that the pilot MSF presented in this paper, concerns the approach to the proposal from the point of view of the experts (scholars/researchers). It is essentially the framework plan that is proposed to be brought to consultation with stakeholders and the public. Bearing in mind that overall marine governance is highly complex, it will be interesting to study how such planning will be received by non-specialists and what issues will emerge from the consultation.

Concluding, the present MSF applies to an area characterized by a significant number of islands and often small size, as the entire Greek Island system, comprising a huge variety of islands and island clusters that often have tourism as their dominant if the only

economic activity. A planning tool such as an MSF in fact contributes to ensuring the sustainability of marine areas and the management of natural resources, encouraging the rational use of the multiple marine resources and reducing the impact on the environment. It also contributes to the efficient organization of maritime routes, especially in a region of major geopolitical importance. The promotion of cross-border cooperation and coordinated management of shared maritime resources, is of critical importance for such a spatial plan.

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References

- Agardy, T. (2010) *Ocean Zoning: Making Marine Management More Effective* (Washington, DC: Earthscan).
- Asprogerakas, E., Lazoglou, M., & Manetos, P. (2020) Assessing land-sea interactions in the framework of maritime spatial planning: Lessons from an ecosystem approach, *Euro-Mediterranean Journal for Environmental Integration*, 5(1). doi:10.1007/s41207-020-00154-2.
- Coccossis, H., Stefani, F., Lagiou, E., Asprogerakas, E., & Lalou, E. (2020) Development of a governance scheme and monitoring mechanism in Greece, *MSP-MED Deliverable 13*. Available at <https://mस्पmed.eu/> (accessed 20 November 2023).
- Department of Planning and Regional Development University of Thessaly (DPRD-UTH) (2021) *National Marine Spatial Strategy - Study in the framework of the Cross-border Cooperation for the Implementation of Maritime Spatial Planning, (THAL-HOR2), of the Interreg V-A Cooperation Program “Greece-Cyprus 2014–2020*.
- Department of Planning and Regional Development University of Thessaly (DPRD-UTH) (2022) *Phase A: Evaluation of Spatial Processes and Planning Implementation in the Marine Spatial Unit 1 (MSU1), in the Framework of The Cross-Border cooperation for the Implementation of Maritime Spatial Planning (THAL-HOR2), of the Interreg V-A Cooperation Program “Greece-Cyprus 2014–2020*.
- Department of Planning and Regional Development University of Thessaly (DPRD-UTH) (2023) *Phase B: Proposed Marine Spatial Framework for Marine Spatial Unit 1 (MSU1), in the*

- Framework of the Cross-border Cooperation for the Implementation of Maritime Spatial Planning (THAL-HOR2), of the Interreg V-A Cooperation Program "Greece-Cyprus 2014–2020.*
- Ehler, C. (2012) Perspective: 13 myths of marine spatial planning, *Marine Ecosystems & Management*, 5(5), pp. 5–7.
- Ehler, C., & Douvère, F. (2009) *Marine Spatial Planning: A Step-by-Step Approach Toward Ecosystem-Based Management. Intergovernmental Oceanographic Commission and Man and the Biosphere Program* IOC Manual and Guides No. 53, ICAM Dossier No. 6, Paris: UNESCO. doi: [10.25607/OBP-43](https://doi.org/10.25607/OBP-43).
- Ehler, C., Zaucha, J., & Gee, K. (2019) Maritime/Marine spatial planning at the interface of research and practice, in: J. Zaucha & K. Gee (Eds) *Maritime Spatial Planning: Past, Present, Future*, pp. 1–22 (Cham: Palgrave Macmillan).
- European Climate, Infrastructure and Environment Executive Agency (ECIEEA), Burg, S., Chouchane, H., Kraan, M., Selnes, T., Roebeling, P., Bogers, M., Neumann, T., Finello, F., Pirlot, A., Giraud, L., Arora, G., Roestenberg, T., & καί Miranda, A. (2022) *Assessment of the Relevance and Effect of the Maritime Spatial Planning Directive in the Context of the European Green Deal: Final Report* (Luxembourg: Publications Office of the European Union). doi: [10.2926/911941](https://doi.org/10.2926/911941).
- European Commission (EC) (2008) *Directive 2008/56/EC, Establishing a Framework for Community Action in the Field of Marine Environmental Policy - Marine Strategy Framework Directive (Marine Strategy Framework Directive)* Official Journal of the European Union, L 164/19.
- European Commission (EC) (2014) *Directive 2014/89/EU of the European Parliament and of the Council Establishing a Framework for Maritime Spatial Planning* Official Journal of the European Union, L 257/135.
- Gavouneli, M. (2015) Offshore energy: Troubled waters in the Eastern Mediterranean Sea, in: H. Scheiber, J. Kraska, & M.-S. Kwon (Eds) *Science, Technology and New Challenges to Ocean Law*, pp. 253–279 (Netherlands: Brill Nijhoff).
- Gómez-Ballesteros, M., Cervera - Núñez, C., Campillos-Llanos, M., Quintela, A., Sousa, L., Marques, M., Alves, F. L., Murciano, C., Alloncle, N., Sala, P., Lloret, A., Simão, A. P., Costa, A. C., Carval, D., Bailly, D., Nys, C., Sybill, H., & Dilasser, J. (2021) Transboundary cooperation and mechanisms for Maritime Spatial Planning implementation. SIMNORAT project, *Marine Policy*, 127, pp. 104434. doi: [10.1016/j.marpol.2021.104434](https://doi.org/10.1016/j.marpol.2021.104434).
- Gourgiotis, A., Coccossis, H., & Tsilimigkas, G. (2023) Marine spatial planning in Greece: Methodological and implementation issues, in: H. Coccossis, A. Gourgiotis, & G. Tsilimigkas (Eds) *Marine Spatial Planning in the Mediterranean: Challenges, Perspectives and Priorities*, pp. 89–105 (Athens: Nomiki Bibliothiki).
- Harris, L. R., Holness, S., Finke, G., Kirkman, S., & Sink, K. (2019) Systematic conservation planning as a tool to advance ecologically or biologically significant area and marine spatial planning processes, in: J. Zaucha & K. Gee (Eds) *Maritime Spatial Planning: Past, Present, Future*, pp. 71–96 (Cham: Palgrave Macmillan).
- Law 3983/2011 *National Strategy for the Protection and Management of Marine Environment - Harmonisation with Directive 2008/56/EU of the European Parliament and European Council of 17th June 2008 and Other Provisions* (Official Government Gazette A' 144/17.06.2011).
- Law 4546/2018 *Incorporation into Greek Legislation of the Directive 2014/89/EU "Establishing a Framework for Marine Spatial Planning" and Other Provisions* (Official Government Gazette A' 101/12.06.2018).
- Law 4759/2020 *Modernization of Spatial and Urban Planning Legislation and Other Provisions* (Official Government Gazette A' 245/09.12.2020).
- Ministry of Environment and Energy (YPEN) (2022) *National Marine Spatial Strategy – Council of Ministers Act*. Available at <https://ypen.gov.gr/ethniki-choriki-stratigiki-gia-to-thalassio-choro/> (accessed 29 March 2023).
- Papageorgiou, M., Beriatos, E., Christopoulou, O., Duquenne, M.-N., Kallioras, D., Sakellariou, S., Kostopoulou, T., Sfougaris, A., Mente, E., Karapanagiotidis, I., Kyvelou, S. S., Tzannatos, E., Kanellopoulou, K., & Papachatz, A. (2020) Implementation challenges of Maritime Spatial

- Planning (MSP) in Greece under a place-based approach, *Euro-Mediterranean Journal for Environmental Integration*, 5(2). doi:10.1007/s41207-020-00172-0.
- Papastavridis, E. (2020) The Greek-Turkish maritime disputes: An international law perspective, *Policy Paper* 36. Athens: Hellenic Foundation for European & Foreign Policy (ELIAMEP). Available at <https://www.eliamep.gr/wp-content/uploads/2020/07/Policy-paper-36-Papastavridis-final-10.07.pdf> (accessed 10 April 2024).
- Prevelakis, G. (2023) The territorial sea: Geopolitical and spatial stakes, in: H. Coccossis, A. Gourgiotis, & G. Tsilimigkas (Eds) *Marine Spatial Planning in the Mediterranean: Challenges, Perspectives and Priorities*, pp. 7–9 (Athens: Nomiki Bibliothiki).
- University of the Aegean (2015) *Deliverable 3.4.3: Report on Conflicts & Compatibilities of the Aegean Study Area* Technical Report - Volume B.
- van Tatenhove, J. P. M. (2017) Transboundary marine spatial planning: A reflexive marine governance experiment?, *Journal of Environmental Policy & Planning*, 19(6), pp. 783–794. doi:10.1080/1523908X.2017.1292120.
- Wassenhoven, L. (2017) *Maritime Spatial Planning: Europe and Greece* (Heraklion: Crete University Press).
- Zaucha, J. (2019) Can classical location theory apply to sea space? in: J. Zaucha & K. Gee (Eds) *Maritime Spatial Planning: Past, Present, Future*, pp. 97–120 (Cham: Palgrave Macmillan).