



Maritime spatial planning and spatial planning: Synergy issues and incompatibilities. Evidence from Crete island, Greece



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ABSTRACT

The Directive of the European Parliament and the Council of July 2014 established a Guideline Framework for maritime spatial planning. Within this context, Greece has to proceed and incorporate it in the national legislation framework within two years; it has also to determine a competent authority (or authorities) for its implementation so that maritime spatial plans can be enacted at the latest by March 2021. The Directive aims to promote sustainable development of marine areas and equitable use of marine resources. This paper attempts to discuss key issues anticipated to emerge from the incorporation of an integrated framework for maritime spatial planning on the national spatial planning framework as it is currently organized. Crete island is here chosen as a case study area so that priority issues that are expected to come up at regional and local level can be examined in more detail.

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1. Introduction

1.1. Sea uses and conflicts

Prosperity and economic growth of a coastal area are directly linked with sustainable use of maritime space. Greek geography is characterized by its coastal and insular character; that is, it has a coastline of more than 15,000 km, more than 3000 islands and 12 regions that intersect with coastal zone (all apart from Western Macedonia). The total surface of the islands corresponds to the 19% of the country, while the equivalent population corresponds to about 15% of the total population (EL-STAT, 2011). It is remarkable that each square kilometer corresponds approximately to 113 m of coastal area, while the corresponding EU (27) average is 6.5 m and the global average is 4.3 m (Alexandrakis et al., 2013). Coastal socio-spatial systems and landscapes in Greece are often under pressure due to exceeded carrying capacity due to population concentration activities as well as due to natural causes, e.g. climate change, desertification process, natural hazards.

A large number of activities that take place at sea and are always interrelated to coastal zones, they could be grouped into three major categories: (a) maritime transports and connections and all

the use of marine space for military purposes; (b) mining and resources export from the sea, such as extraction of hydrocarbons, renewable energy, fishing, aquaculture, etc; and, (c) uses that are linked with the usability of the natural environment, such as marine research and education, marine recreation, etc. (Douve, 2008; Smith et al., 2011). If it is considered that the sea consists of three “dimensions”: (a) the seabed, (b) the water column, and (c) the surface, and that the same marine area can be used simultaneously for more than one uses, there may emerge possible use conflicts (Douve, 2010). To these three dimensions time should be added as a parameter explicitly connected with established activities on the basis of at least two approaches: (a) Periodic activities that occur in different seasons of the year, that is, different activities with high seasonality compete for the same space, e.g. fishing, diving, sailing, and general maritime hobbies; and (b) Activities performed in large time scales; that is, different activities are delocalized and, are occasionally replaced by others, because they have lost their competitiveness, e.g. mining from some coastal zones and islands has ceased since it is no longer economically competitive; instead, tourist activities usually occur in the area (CEC, 2008).

It is shown that increasing and very often uncontrolled uses that are developed in coastal and maritime areas create intensive competition and very often drive to an inefficient and unsustainable use of maritime and coastal resources (EP&C 2013). Two major types of use conflicts should be mentioned here (Ehler and Douve, 2009): (a) Conflicts between human activities (user-user

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conflicts); and (b) conflicts between human activities and the marine environment (user-environment conflicts). The determination of compatible and incompatible uses as well as the uses that are under conditions compatible is a first attempt to maritime management.

Europe's seas are on track of rapid development of new economic activities. The EU's Blue Growth strategy provides further development of sectors that have the potential to create sustainable jobs and generate growth, such as: blue energy, aquaculture, maritime coastal and cruise tourism, marine mineral resources and blue biotechnology. The development of these activities implies increasing competition for space with existing "traditional" sea uses, such as: shipping, fisheries, military purposes, etc, which already occupy large sea areas (Van den Burg et al., 2016). The sea area has specificities because of its multidimensional nature as well as the intensity and character of the activities that take place. The absence of an integrated Maritime Spatial Planning (MSP) makes both the management of these specificities and the rational sea use in an efficient way impossible.

The maritime area, as already mentioned, is not an autonomous space. Instead, it is in direct interdependence with the coastal zones, which are commonly a vital part of human activities (EP&C, 2013). Therefore, the increase of maritime activities drives to the amplification of interdependence between sea and land, since all human activities at the sea depend on land space, mostly coastal zones. In coast areas special socio-spatial formations are developed, often in fragile balance, with highly competitive social and economic relations, whereas rich ecosystems that are created are frequently degraded due to significant pressures (Tsilimigkas and Gourliotis, 2015). Increasing pressures from concentration of population and human-induced activities very often exceed the current capacity of the local socio-spatial systems, thus threatening sustainable management of the natural and cultural environment and degrading terrestrial and sea landscape. Additionally, the impact of climate change, risks of natural disasters and erosion put pressure on coastal and marine resources. From all the aforementioned emerges the need for the introduction of common rules at EU level for an integrated MSP, which together with the Integrated Coastal Zone Management (ICZM) (EP&C 2013), could determine the framework for an Integrated Maritime Policy.

1.2. Key principles of maritime spatial planning

There are many definitions of MSP, highlighting the complexity and multi-dimensional character of the issue. According to the Directive for the "Maritime Spatial Planning", (EP&C, 2014) MSP is defined 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". Ehler and Douvere (2007) define MSP as the procedure of "...analyzing and allocating parts of three-dimensional marine spaces to specific uses or non-use, to achieve ecological, economic, and social objectives that are usually specified through a political process". In 2009, Ehler and Douvere define MSP as "... 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 are usually specified through a political process". All the aforementioned definitions are complementary in nature and simply emphasize different dimensions of planning. Key principles of MSP were defined in the: (1) "Roadmap for Maritime Spatial Planning: Achieving Common Principles in the EU" (CEC, 2008); (2) "Marine Strategy Framework Directive", (EP&C, 2008); and in (3) the Directive for the "Maritime Spatial Planning", (EP&C, 2014). The definition of MSP will become clearer when a synthesis of key principles is attempted below.

1.2.1. Principles related to definitions and conceptual clarifications

The strategic or statutory character of MSP is determined by the needs of each region and the working scale. Generally, for the character of planning to be determined, there must be taken into account: (i) the nature of activities; (ii) the intensity of activities; (iii) the extent of activities; (iv) the interconnection of activities, and (v) the impact of activities on the environment (CEC, 2008). The delineation of MSP application zones does not need to ensure topological continuity, namely to cover in continuous and systematic way (of strategic or statutory character) the total of the national maritime space, but may be defined *ad-hoc*, according to the specific needs of a region, when the country's obligations and rights are taken into consideration, under the International Law of the Sea. For the implementation of MSP the three dimensions of maritime space (sea bed; water column and surface) must be taken into consideration, because the same sea area can have simultaneously more than one uses. To these three dimensions, time should also be added, because it affects the ability to locate certain activities e.g. tourism, fishing etc.

Within this framework, it is important to notice that MSP should be implemented so that current and future uses in a sea area are to be managed (CEC, 2008). At large spatial scales MSP should set directions for the overall management of the sea environment, ensuring the compatibility with: (i) national spatial policies, such as those enacted by the relevant planning frameworks; (ii) regional spatial policies, such as those enacted by the relevant planning frameworks; (iii) development policies at national and regional level; (iv) sectoral policies at national and regional level; and with (v) European and International conventions. At smaller scales at local level, MSP should: (i) specify choices that are adopted to the local conditions at higher levels of spatial planning; (ii) wave conflicts between sectoral priorities as well as sectoral priorities and environment current capacity, and (iii) promote synergies between sectoral priorities in respect of environment capacity. (Tsilimigkas and Gourliotis, 2015).

1.2.2. Principles related to planning structure and character

For the implementation of MSP to be accepted by the society it is essential that there will be transparency and active involvement of local communities at all levels of planning; this can occur when participatory processes are adopted and implemented (CEC, 2008; Ehler and Douvere, 2009). It should also be noted here that MSP operates in an increasingly changing environment. The data and information that MSP is based on change over time, a fact that creates a need to incorporate monitoring and flexible evaluation mechanisms (CEC, 2008). The establishment of an observatory for MSP could be an appropriate solution towards this direction. The aforementioned principles (for participatory planning procedures and flexible planning mechanisms and tools) demand a strong reliable data base for their implementation that should be able to: (i) provide objective information and knowledge from different disciplines; (ii) ensure flexible mechanisms; and (iii) to integrate the new data according to the principle of adaptive management (CEC, 2008; Tsilimigkas and Gourliotis, 2015). According to the Directive for "Maritime Spatial Planning", (EP&C, 2014), all member states are required to organize the use of available geo-spatial datasets in an optimal way and promote the exchange of information wherever and whenever it is required for the establishment of maritime spatial plans.

1.2.3. Principles related to planning institutional integration

In order for MSP to be effective, it should be supported with adequate institutional tools and ensured by political will (CEC, 2008). To that end, terrestrial spatial planning should be coordinated with MSP, principally for coastal zones that are the link

between maritime and terrestrial space. The ICZM is of particular importance for attaining this principle. (CEC, 2008; EP&C, 2014).

Cross-border cooperation is also a requirement so that planning is ensured across marine ecosystems through the development of common standards and procedures (CEC, 2008). Member states which share marine waters should cooperate in order to ensure that MSP is coordinated and consistent across their marine region (EP&C, 2014).

2. Maritime spatial planning and spatial planning

In Greece, the steps that have been made to regulate and sustainably manage coastal and maritime space are characterized by fragmented efforts that are not integrated in a comprehensive policy framework. In general, spatial planning framework in Greece, on the one hand, has numerous tools and institutional provisions that could be used for sustainable management of coastal and insular areas, with important effects on maritime space (Diagram 1) and, on the other hand, the policies adopted and planning studies are very often characterized by inconsistency and

the absence of strong bonds between: (a) different planning levels (i.e. at national, regional and local level); (b) sectoral policies (i.e. policy on tourism, transport and on energy); and development policies (i.e. Partnership Agreement for the Development Framework, 2014–2020, Sectoral Programmes, Regional Operational Programmes).

Law 4269/2014 (OGG, 2014) for spatial and urban reform and sustainable development, which was enacted on 2014, provided that strategic directions for spatial development and organization should be defined in national spatial plans. The national level planning is organized by the General Framework of Spatial Planning and Sustainable Development (GFSPSD) [“Geniko plaisio xorotaxikou sxediasmoy kai aiforou anaptiksi”, in Greek] (OGG, 2008); and the Special Frameworks on Spatial Planning and Sustainable Development (SFSPSD) [“Eidika plaisia Chorotaxikou Schediasmou kai Aefiforoy Anaptixis”, in Greek], which are more specifically refer to: Tourism, (OGG, 2009; 2013), Renewable Energy (OGG, 2008), Aquaculture (OGG, 2011) and to Industry (OGG, 2009). These SFSPSD contain important sectoral arrangements of strategic and statutory in cases character for the maritime area, coastal zones and

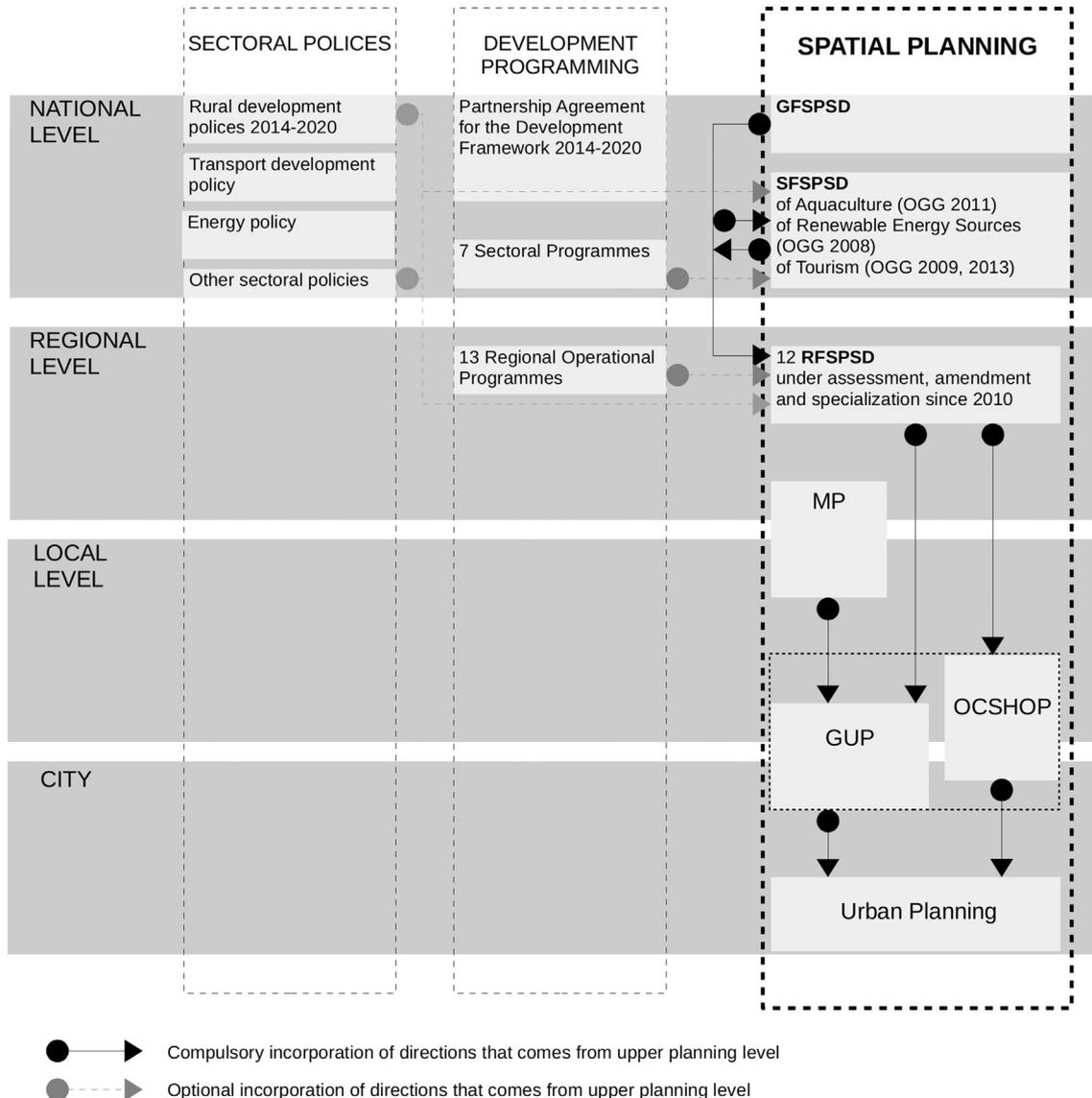


Diagram 1. Spatial planning framework and principal sectoral and development polities with territorial impact.

islands, without being part of an integrated policy for these particular areas. More specifically:

(a) The GFSPSD (OGG, 2008). Sustainable use and management of maritime space and spatial organization and development of coastal zones and insular areas are part of strategic options for the national space organization. The GFSPSD includes guidelines that directly or indirectly affect these particular areas. More particularly, MSP elements are incorporated in key priorities and strategic guidelines proposed by the GFSPSD for spatial development and organization of the national territory on issues such as: (i) ports of the cities, as spatial development poles; (ii) the specification of the role of ports and guidelines for their infrastructure upgrading; (iii) aquaculture activities and coastal fisheries; (iv) specific guidelines of development for coastal and island territories; (v) sustainable management of marine resources and protection priorities of marine environment; and (vi) guidelines adopted for mitigating the impact of climate change and desertification process (Stefani and Tsilimigkas, 2015).

(b) SFSPSD of Aquaculture (OGG, 2011). Aquaculture is the only marine use that has an enacted framework focused on spatial plan at national level. Aquaculture is a dynamic sector of the Greek economy, with significant growth prospects. This Framework sets guidelines for the location of marine aquaculture that is oriented towards the use of Greek seas and environmental protection. It establishes the national Model of Spatial Organization of Aquaculture Activity, by setting guidelines to promote a spatial development model that ensures the strengthening of the sector and the exploitation of the comparative advantage of the Greek seas, consisting mainly of: (i) the extensive insular and mainland coastline, with a variety natural protected areas; (ii) purity of coastal waters; and (iii) the ideal oceanographic conditions (temperature, salinity, water renewal, etc.). According to the particular characteristics, aquaculture is divided into: (i) aquaculture of marine species (shellfish excluded); (ii) shellfish farming; (iii) freshwater species aquaculture; and (iv) crops of aquatic organisms in natural brackish ecosystems.

(c) SFSPSD of Renewable Energy Sources (OGG, 2008). The Framework set the guidelines and criteria for the location of Renewable Energy Sources installations. Special distinction is enacted for the offshore marine area, inhabited islands and uninhabited islets. For these areas specific criteria for wind farms locations are defined. In accordance with article 10, the location of wind infrastructures is authorized in all sea areas of the country that have wind capacity requirements, since they are not part of regulatory prohibitions (e.g. underwater parks, attested passenger shipping lines, etc.). In the Framework, as a minimum requirement, the following are forbidden: (i) the installation of wind turbines less than 1500 m from the coast, which are included in the quality monitoring program of bathing waters; (ii) The installation of wind turbines in enclosed bays with opening width < 1500 m. The depth of the foundation or anchoring of the turbine base is determined by capabilities of current technology and the relevant static and dynamic behavior studies. A sufficient interconnection and transportation of electricity either to the mainland system or to the network of non-interconnected islands must be ensured with the construction of the wind farm. The maximum distance of terrestrial road from interconnection substation is defined to 20 km. Location criteria of new forms of Renewable Energy Sources installations, such as the use of sea power, is not provided in this Framework.

(d) SFSPSD of Tourism (OGG, 2009; 2013). The Framework aims to enhance tourism development and reduce tourism seasonality. Towards those objectives, the Framework provides guidelines for spatial organization and development of marine tourism and, more specifically, of cruise tourism, yachting, fishing tourism and recreational diving tourism.

At the regional level, until today the integration of maritime priorities in the regional planning studies concerns principally: (a) maritime transport and the connectivity between ports; (b) enhancement of fishing activities and aquaculture; (c) protection of marine resources and management of coastal areas. Furthermore, it should be noted that the first attempt to implement MSP was made in Greece in 1992, because of the institutionalization of the two major marine protected areas; that is, those of National Marine Park of Alonnisos and National Marine Park of Zakynthos. More specifications about the RFSPSD (Regional Frameworks for Spatial Planning and Sustainable Development) of Crete (OGG 2003) are listed in Section 3 of the present paper so that the principal decision on MSP regarding Crete island is illustrated.

A Special Framework for Spatial Planning and Sustainable Development of coastal zones and islands pertinent to specialize and complement the guidelines of the General Framework of Spatial Planning and Sustainable Development (GFSPSD) [“Geniko plaisio xorotaxikou sxediasmoy kai aiforou anaptiksi”, in Greek] was brought forth and was related to development and organization of the national territory, the maritime area, coastal zones and islands including, which could contribute to their sustainable management. It is important to highlight here that despite: (a) the importance of coastal zones and islands for the Greek state; (b) the fact that Law 2742/1999 (OGG 1999) recognizes the need for spatial planning of coastal zones and islands; and (c) the efforts made towards this direction in the early 2000s, which were aiming to implement and institutionalize the “Special framework on spatial planning and sustainable development of coastal zones and islands and strategy study of environmental impact of this” (MEPPPW, 2003) - nothing of the aforementioned led to the enactment of an integrated spatial planning framework and a policy focusing on these particular areas.

The institutional vacuum of coastal and maritime areas have been covered in a fragmented manner from: (a) other spatial planning studies (GFSPSD, SFSPSD and RFSPSD, which have been analyzed above); (b) numerous sectoral policies such as, policy on tourism, transport and on energy etc.; and (c) from the development programming framework, as organized by the Partnership Agreement for the Development Framework 2014–2020, the main strategic plan for growth in Greece, the 7 Sectoral Programmes and the Regional Operational Programmes (Diagram 1). It is crucial to underline here that physical planning tools also have important direct or indirect effects on coastal zones and maritime areas at local level. Studies such as: the Master Plan (MP), the General Urban Plan (GUP), the Open City Spatial and Housing Organization Plan (OCSHOP) cover numerous issues for coastal zones and maritime areas, without specializing and incorporating a framework of a comprehensive policy for these particular areas though.

Within this context, maritime spatial management was embodied in the 2011 Greek spatial planning legislation by the enactment of the National strategy for protection and management of the marine environment - Harmonization with the Framework Directive for Marine Strategy, (OGG, 2011). More particularly, under Law 4030/2011 (OGG, 2011), new principles and priorities emerged in spatial planning framework that focuses on: (a) the need for integrated management of marine space and coastal zones; (b) the priority for coordination and harmonization of various policies, programs and investment plans of spatial and sectoral nature; and (c) the development of synergies as well as waving conflicting policies that have been adopted and studies that have been enacted by different actors (in some cases these conflicting policies have been adopted even by the same bodies) for the same region.

3. Maritime spatial planning and spatial planning evidence from Crete island

3.1. Crete island and case study areas

Crete is one of the four exclusive insular Regions of Greece, the largest Greek island and the fifth largest in the Mediterranean Sea. It has a total area of 8335.88 km² that represents 6.3% of the territory of Greece (EL-STAT, 2011). It is a mountainous island, 49.4% of which is characterised by mountainous zones and 28.1% by semi-mountainous zones (EL-STAT, 2011). There are significant differentiations and inequalities between the northern and the southern part of the island, both in development and in human and natural environment. Crete has 1593 settlements, and its real population is 682,928 people (EL-STAT, 2011). Crete's maritime and coastal area receives strong pressures, mainly due to the expansion of human activities (e.g. intensive coastal erosion, massive tourism, and land use conflicts). Five areas are chosen in order to illustrate the complexity of socio-spatial systems and the numerous issues of maritime areas that have already been monitored by the institutionalized terrestrial spatial planning frameworks (Fig. 1).

(a) Chania is a highly urbanized region, with intensive concentration of human activities located in coastal zones (e.g. residential areas, tourist accommodation and restaurants) as well as port infrastructures and remarkable cultural and natural heritage sites. The local economy is based on the tertiary sector, while the primary and secondary sectors are of restricted dynamics. Tourism is the dominant economic activity, and has positive effects on local economy. Both the port of Souda and the Chania airport have notable passenger traffic. In most of the coastal areas there are no land uses plans. Instead, there are a significant number of *declared archaeological sites* and military areas, which restrict various activities from certain areas. The regional planning study (OGG 2003) provides the guidelines as how to restrict the urban expansion on coastal areas, but with limited results (Fig. 1-a).

(b) Rethymno is the most important residential centre, since the most intensive urban sprawl takes place in the city's peri-urban zone, while the rest of the coastal area are mainly tourist infrastructures. There are port infrastructures. In the region there are nature protected areas and declared archaeological sites. The local economy is based on the tertiary sector, while the presence of the primary sector is important. Tourism is the dominant economic activity and has a positive impact on the local economy. In most of the coastal areas there are land uses plans which set restrictions on the further expansion of built-up areas in coastal zones (Fig. 1-b).

(c) In Heraklion area the urbanization is very intensive and directed principally along the eastern coast. Tourist infrastructures and residential areas development for permanent and secondary housing are principally in the coastal area. The local economy is based mainly on the tertiary sector, while the presence of the secondary sector in the city is also important. Tourism is the dominant economic activity. The port of Heraklion has the largest passenger traffic after Piraeus and Rafina, and very important commercial activities occur there. There is also the airport of Heraklion. In most coastal areas there are no land uses plans, except for the peri-urban area of Heraklion. Instead, there are many declared archaeological sites and military areas restricting various activities in their delegation. The regional planning study (OGG 2003) provides guidelines as how to restrict the urban expansion on coastal areas with disputable results (Fig. 1-c).

(d) Agios Nikolaos – Siteia. There is large urban concentration on the area of Agios Nikolaos and Elounda (mainly tourist infrastructures) and on the city of Siteia (mainly residential areas). The local economy is mainly based on the tertiary sector, while important is the presence of the secondary sector in Agios Nikolaos

and of the primary sector in Siteia. In the region there are the ports: (1) of Agios Nikolaos that has extensive cruise tourist traffic, and (2) of Siteia that has a significant commercial activity. There is also the airport of Siteia. In most coastal zones there are land uses plans which set restrictions on the further expansion of the built-up areas in coastal zones. Furthermore, there are nature protection areas and declared archaeological sites in the region (Fig. 2-d).

(e) Mesara. The presence of built-up areas is not particularly extended in the region. The agricultural cultivation has significant presence, while greenhouses occupy a large area. The local economy is mainly based on the primary sector where most of the population is employed. The tertiary sector has low presence because tourism is not very developed in the region. In the region there is not a significant port infrastructure, but there is provision for the creation of the port in the south of Tymbaki. Tymbaki is the largest residential area. In most coastal areas there are no land use plans (only the wider area of Tymbaki has). Instead, there are many declared archaeological sites and natural environment protection areas. Moreover, the wider maritime area is a hydrocarbon exploration region (Fig. 2-e).

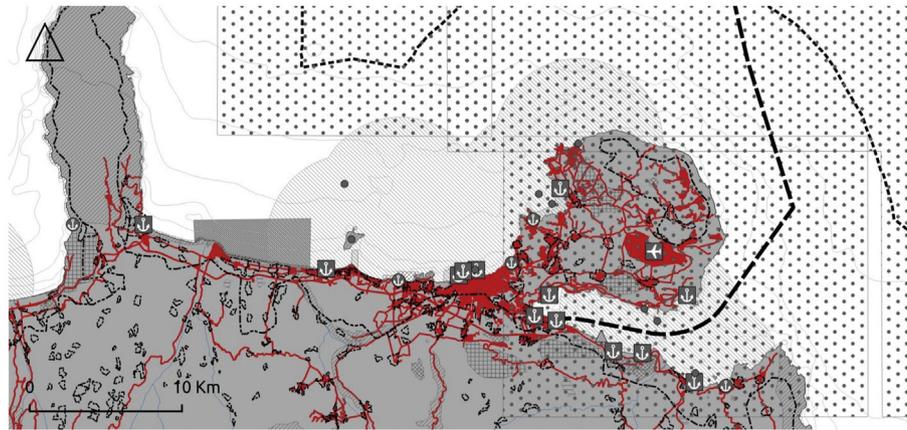
For these areas the general development guidelines are proposed at national level by the GFSPSD (OGG, 2008) and by the SFSPSD of Aquaculture (OGG, 2011), Renewable Energy Sources, (OGG, 2008) and Tourism (OGG, 2009; 2013), thus establishing a spatial development framework that takes into consideration the lower level planning studies (at regional and local level), since the upper planning level of strategic character has provided the spatial framework and the guidelines for the lower planning level so that regulations of statutory nature are adopted.

Important guidelines on maritime areas have already been institutionalized at national level and adopted at the lower level of planning. Their adaptation to the new context is undoubtedly a necessity, but the establishment of a new independent, parallel framework at national, regional and local level, for the maritime space could lead to more incoherence and conflicts the national spatial planning system that has already got important compatibility problems between (a) the national, regional and local level spatial planning and (b) between spatial and sectoral policies. In order for the argument to be illustrated in a more appropriate way the principal guidelines on study areas proposed by national and regional level frameworks are presented below.

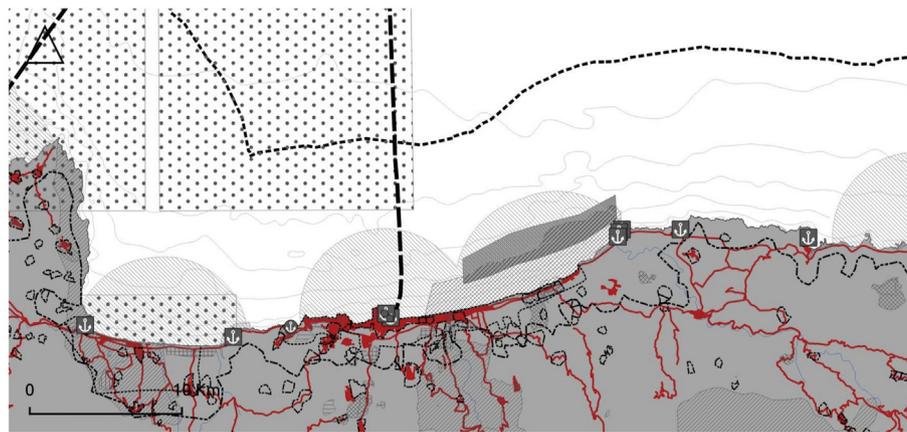
3.2. Spatial planning guidelines: at national and regional level

Within the context of the GFSPSD (OGG, 2008) it is recognized that coastal and insular areas are under high socio-economical and environmental pressure. For sustainable management and proper spatial organization of these particular areas, the implementation of an integrated spatial planning framework is a minimum requirement so that multidimensional policies and actions are coordinated and implemented. The principal priorities are: (a) Enhancement of coherence in, accessibility to and communication of remote coastal and insular areas; (b) Sustainable management of natural resources, the marine and the terrestrial part of the coastal zone, with special caution to water resources; (c) Promotion of comparative advantages of coastal and insular areas and support of alternative forms of development; (d) Improvement of the coordination of actions in the sea and on the land promoted by the authorities at national, regional and local level so that the necessary compatibility, complementarity and synergy of development activities are to be ensured.

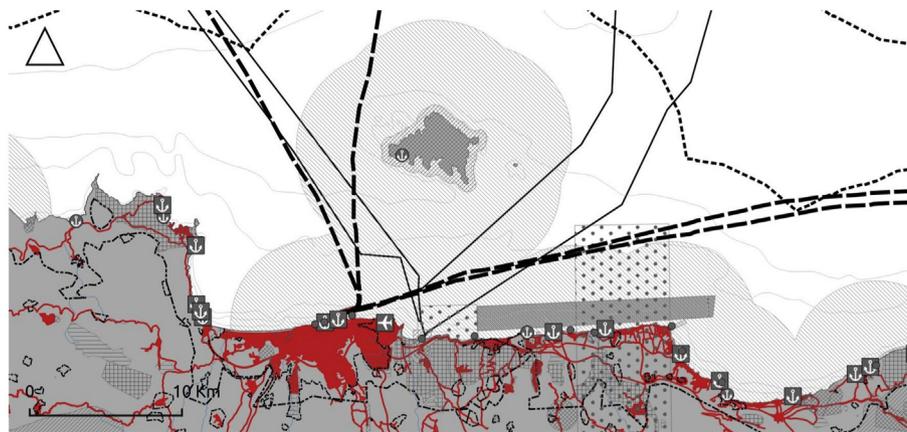
Regarding the SFSPSD of Aquaculture (OGG, 2011), Crete belongs to category "E" of aquaculture development areas. These regions have appropriate characteristics, favoring the development of aquaculture, but they have restrictions which do not allow large



(a)



(b)

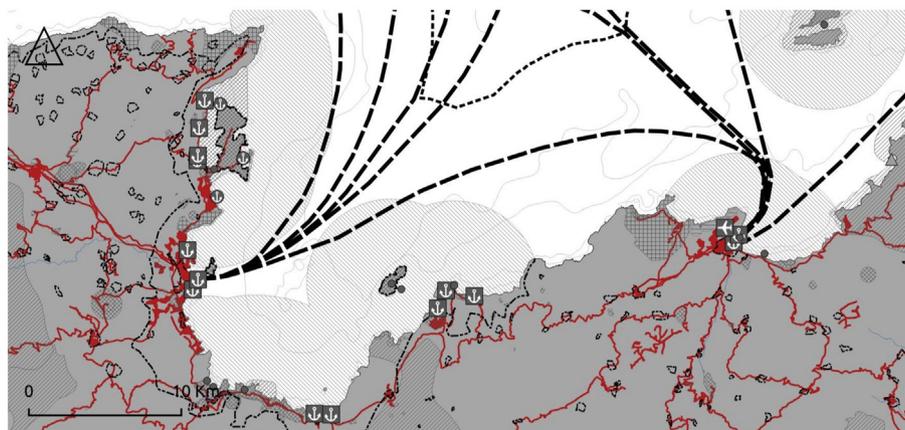


(c)

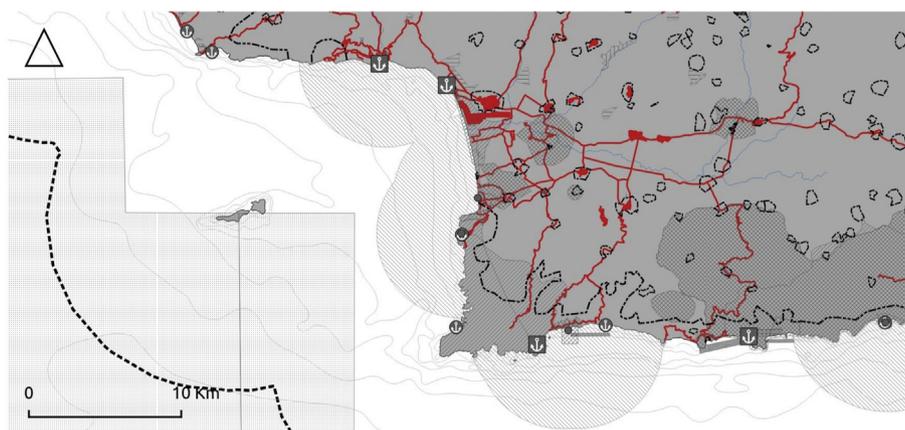
Fig. 1. (a) Chania; (b) Rethymno; (c) Heraklion.
Source: authors' own analysis

concentrations and organized massive zones of aquacultures. More specifically, this category includes: (a) inaccessible, border, island areas where aquaculture development is appropriate for geopolitical and development purposes; (b) areas with substantial absence of other development activities competing in the same space so that the population stays in the area; or (c) areas with appropriate characteristics that are close to areas on demand (cities, tourist areas, etc.), they have service infrastructures for the promotion of

products, but at the same time, due to the proximity to competitive uses or the sensitivity to the natural environment, a dispersed placement is preferable to a centralized one. According to the SFSPSD of Renewable Energy Sources (OGG, 2008), Crete is in category "C": inhabited islands, as regards to wind farms location. "C" category areas are not included in Wind Priority Areas. Moreover, the water district of Crete has a limited exploitable hydroelectric potential. Finally, no other specific guidelines are provided



(d)



(e)

Legend

Human and natural environment

- | | | | |
|---------------------|------------------------|---------------------|--------------------------------|
| Port infrastructure | Antiquities | Shipping | Posidonia oceanica |
| Anchorage | Depth curve | Archaeological site | Diving area |
| Airport | Natural fluvial system | Island wetlands | Military area |
| Aquaculture | Road network | Nature 2000 | Artificial surfaces (CLC 2012) |

Spatial planning

- | | | |
|------------------|------------------|---------------------------------|
| Territorial sea | Tourist areas | Diving Parks not permitted area |
| Settlement limit | PERPO | Hydrocarbon exploration area |
| ZOE | Industrial areas | |

Fig. 2. (d) Agios Nikolaos – Siteia; (e) Mesara. Source: authors' own analysis

for the study area regarding other forms of renewable energy.

At the regional level, the principal goals of spatial development model adopted by the RFSPSD of Crete (OGG 2003) propose to stimulate the functionality of mountainous and upland areas and to restrict the population movement towards coastal zones in order to avoid the excessive pressure that is put on many coastal zones and promote a balanced development model. To that end, the quality upgrade of the overdeveloped northern axis and the quality development of services in southern Crete are considered as priority. As far as the spatial structure and land uses are concerned, the Framework proposes concrete guidelines/directions so that both land use conflicts and excessive expansion of built-up areas on

coastal areas are avoided.

More particularly, the RFSPSD of Crete (OGG, 2003) focuses on the following four principal concerns about: (a) The development of residential areas, the RFSPSD propose guidelines to gradually wave the exceptions on general requirements and restrictions on building construction in areas without land use plans, throughout all the island, but the priority is given to coastal zones. The adoption of physical planning studies is also proposed so that the compact city concept is promoted. (b) The coastal area of Crete, the RFSPSD stress the need for its integrated management at the local level by enacting physical planning studies that are pertinent to improve synergy issues and wave land use conflicts. It is also underlined that

important parts of coastal zones are nominated as natural and cultural heritage sites. (c) The economic development, the RFSPSD propose the quality tourism be strengthened with a balanced distribution on the island and the development of special forms of tourism, such as marine tourism, conference tourism, winter tourism, mountain tourism, etc., so that the tourist season is extended, competitiveness is enhanced and pressures on the coastal area are reduced; and about (d) The maritime transport system. The RFSPSD proposes a framework of guidelines for functional and aesthetic improvement of both the main ports gateways of the island (Heraklion and Souda) and the secondary gateways ports (Kissamos, Rethymno, Agios Nikolaos, Sitia, Ierapetra, Paleochora). It is also proposed that actions for Heraklion and Souda ports should be taken so that their competitiveness in the area of SE Mediterranean is strengthened and the “South gate” is established and developed.

The RFSPSD of Region of Crete has been under assessment, amendment and specialization since 2010. This significant delay is due to objective questions related to the administrative inability to support the process but also, to the complexity of the task in a particularly unfavorable socially, economically, and politically conjuncture. It is certain that this delay will have a negative impact for studies application. During this process, principal priorities that have not been accomplished are stressed and mainly concern about: (a) compact city principles that have not been adopted in the urban development mode; (b) the priority for reorganizing saturated coastal areas that have yet to be implemented; (c) On the contrary, unregulated development of residential, commercial, industrial, hotels and other tourist facilities have been taking place in an excessive way and have created important pressures on local socio-spatial systems.

The principal priorities proposed by the amended Framework are to: (a) set coherence and compatibility in land uses; (b) ensure quality spaces for public uses mostly in coastal areas; (c) protect and promote properties of the natural and cultural heritage; (d) adopt compact city principles and implement actions that focus on limiting urban extensions in coastal zones; (e) adopt alternative forms of tourism so that its sustainable character is ensured; and (f) enhance economic, social and territorial cohesion on Crete by promoting a polycentric urban development by replacing the existing centralized model. The aforementioned objectives are supported by re-organizing infrastructure network and amplifying maritime routes that are based on the existing connections with Piraeus and Athens and the proposed maritime connection with Kalamata, Gytheio, Thessaloniki, Ermoupoli, Mytilini, Alexandroupolis and Rhodes.

After the submission of the revision proposal of the RFSPSD for public consultation, approximately 100 recommendations, objections and positive opinions were submitted. As a result of the analysis of all these submissions, it is clear that the local community perceives and shows the importance of coastal zone and maritime areas for the island development. This fact is reflected on many proposals in which more emphasis is required to be given on: (a) coastal protection and actions so that erosion phenomena are mitigated; (b) development of seaplane stations; (c) development and protection of fisheries and aquaculture sector; (d) strengthening diverse forms of tourism; (e) discouragement of mass tourism of low quality; (f) promotion of maritime, fishing and diving tourism; (g) all ports on Crete so to be considered as cruise tourist destinations; and (h) use of the sea area around Crete for development of renewable energy sources (wave energy principally), under the condition that they will neither result to the aesthetic degradation of the local landscape nor raise issues related to safety of navigation.

4. Conclusions

Undoubtedly, the object of MSP is the sea, but its substantial relation to the land area, especially to coastal zones and islands, and their strong interaction should also be considered (EP&C 2013). In coastal areas and islands, complex socio-spatial systems are developed, often in delicate balance, with highly competitive social and economic relations, while rich local ecosystems are often exposed to significant pressures of human-induced activities and/or natural character that often lead them to their degradation (MEPPPW, 2003). The five case studies presented above prove the strong interaction between the sea and the land area, especially in coastal zones. In all cases, the complex socio-spatial systems developed are exposed to significant pressures of both natural and human-induced activities, thus it becomes evident that there is the need for their sustainable management and an integrated terrestrial and maritime spatial planning framework that will connect sectoral and development policies adopted. The existence of two separate spatial planning systems (one for the land areas and one for the maritime ones) applied in “parallel” with numerous sectoral and development policies will eventually lead to patchy and fragmented approaches.

An integrated spatial planning framework for both the terrestrial and the sea area can help in their efficient management as a whole and mitigate competitive relationships and intense pressures developed. On the one hand, the complexity of the problems arising requires a global and multidisciplinary management approach, with a long-term vision. On the other hand, actions should be taken to respond to local circumstances in a direct and effective manner (CEC, 2008). The effective articulation of terrestrial spatial planning with MSP should drive significant political and organizational difficulties for both: (a) implementation scales (strategy - local) and (b) the implementation of specific frameworks whether they are of sectoral reference e.g. SFSPSD of Aquaculture (OGG, 2011), SFSPSD of Renewable Energy Sources (OGG, 2008) etc., or spatial direction e.g. SFSPSD of the coastal zones and islands (MEPPPW, 2003), which have not been institutionalized yet. The other issue is about managing relations of a comprehensive system of spatial planning with other sectoral policies that have spatial impact on tourism policy, energy policy, shipping policy, etc. Undisputedly, this is a significant challenge and a requirement for sustainable management of the sea, despite the serious organizational, managerial and political issues that are also anticipated.

We should also underline here that planning for maritime and coastal areas operates in an increasingly changing environment, for that reason more flexible management tools are needed so that one can respond to that volatile environment. Tools and mechanisms such as: participatory procedures, coordination mechanisms between administrations and institutions, collaboration between scientific bodies, educational institution and management bodies are considered as a prerequisite. The establishment of an observatory for MSP could be an appropriate solution to this direction so that these procedures can be coordinated in an efficient way.

Within this context, the present paper has attempted to highlight the need for the implementation of an integrated spatial planning framework of both the land and the sea area and the challenges involved in this synthesis. The challenges are even bigger if we take in consideration the need for an efficient osmosis between spatial planning policies for both land and the sea area and sectoral and development policies. To that end - apart from the political will, which is not obvious - an efficient and integrated administrative system is required. The objective and main difficulty that this implementation entails is: to find a solution compatible with the principal international, European and national frameworks, as applied in spatial, sectoral and development policies

suitable for national administrative particularities (fragmented administrative and institutional structure) and the territorial reality. In that way, complimentary policies can be adopted and synergies between uses and activities can be achieved.

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