Assessing Integration Performance in Coastal and Marine Protected Areas. A Document-Based Approach

Sabrina Lai(✉) and Federica Leone(✉)

Dipartimento di Ingegneria Civile, Ambientale e Architettura (DICAAR), University of Cagliari, Cagliari, Italy
{sabrinalai, federicaleone}@unica.it

Abstract. Multiple pressures generated by inappropriate uses impact worldwide on coastal areas, the ever-evolving and intrinsically fragile interface where land and sea meet. To contrast such pressures, protected coastal and marine areas have been promoted and established. This adds a further layer of complexity in areas where multiple (often competing and conflicting) uses coexist, each planned and regulated on its own. Hence, integration between planning tools in coastal areas represents a key issue, in particular in the Mediterranean basin, where (in principle) it has been addressed by both legally binding acts and voluntary agreements and charters concerning coastal zone management as well as marine spatial planning. This short contribution aims at proposing a framework that brings together principles from the current legal framework and can be applied to assess the level of integration in relation to planning and management of areas characterized by the coexistence of various nature protection regimes. In other words, this framework, which can easily applied in marine protected areas, allows for evaluating their performance in addressing a key aspect of sustainability.

Keywords: Environmental planning · Marine protected areas · Performance assessment

1 Introduction

Coastal areas, transitional spaces where land and sea meet, interact and impact on each other in ways that are not fully understood yet [20], are affected by environmental degradation due to both the intrinsic fragility of transition areas and conflicting and inadequate uses. In the Mediterranean Sea, around 40 percent of the population lives close to the sea [6]; consequently, high levels of urbanization have posed additional burdens [4] and have increased potential risks deriving from climate change and sea level rise. At the international level, various typologies of protected areas (the most popular of which are Marine Protected Areas (MPAs), covering 4 percent of the Mediterranean Sea [7]) have been established in order to deal with pressures that threaten coastal areas. Moreover, for countries belonging to the European Union (EU), the Habitats Directive (92/43/EEC) mandates that both inland and marine Natura 2000 sites must be established to protect habitats and species that are rare, or threatened with extinction in a given area, or representative of the biogeographic characteristics of that

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area. Hence, by the end of 2018, marine Natura 2000 sites concerned 9.5 percent of EU seas [5]. If all of the different spatial mechanism through which nature protection is pursued are taken into account, a mere 7.14 percent of the Mediterranean Sea [11] is to be considered as protected.

However, planning and management of coastal and marine protected areas are currently affected by silo mentality and approaches, which often leads to coexistence of several regulatory and planning tools, each pursuing its own objectives, to govern interlinked and interdependent issues in a single territory. Conventional systems of government fail to integrate and coordinate different knowledge, values and interests [2]. It is therefore not surprising that coordination and integration have repeatedly and increasingly been advocated as necessary (among many: [9, 14, 15, 17]) in planning and management of coastal areas. While integrated management-based approaches are regarded as effective tools to mitigate conflicts and to protect ecosystems (e.g., [3, 8]), their implementation in practice is problematic [21]. As a consequence, various frameworks have been proposed in the literature to assess integration levels and extent in coastal areas planning and management. For instance, Portman [13] proposes a two-dimensional framework based on physical characteristics and anthropic uses of environmental systems; others [10, 12] also propose two-dimensional frameworks to evaluate horizontal (across sectors) and vertical (across tiers of government) integration. Smythe and McCann's three-dimensional framework [18] focuses on governance aspects only and comprises interagency integration, stakeholder integration, and knowledge integration. A more complex five-dimension analytical framework is that by Saunders et al. [16], which includes cross-border, policy/sector, knowledge, stakeholder and temporal integration.

It is therefore evident that the various frameworks generally assess integration through the lens of governance (e.g. actors, both stakeholders and institutions, and their roles), and some of them also look at physical or temporal aspects. However, what seems to be missing is the consideration of issues arising due to concurrent compulsory planning tools stemming from different laws and regulations in force that coexist in the same coastal area, in the absence of a comprehensive and integrated planning tool that fulfils the various obligations. Integration in planning in order to solve common problems is strongly advocated by the 2030 Agenda for Sustainable Development, adopted by United Nations Member States in 2015, especially within goal 11 "Make cities and human settlements inclusive, safe, resilient and sustainable" [19]. In particular, target 11A advocates supporting "positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning", while, according to target 11B, "by 2020, [Nations should] substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters […]".

Hence, in this study, both legally binding and voluntary tools concerning costal and marine areas in the EU are analyzed in order to define a framework aiming at assessing what elements of integration each of them requires and pursues, and how. The framework is next tested on two Mediterranean (Italian) case studies. The methodology, case studies and materials are presented in Sect. 2. After briefly summarizing the main outcomes of this test (Sect. 3), the study concludes by providing some possible

explanations for the results, and by addressing the issue of usability of the framework outside EU coastal and marine areas (Sect. 4).

2 Materials and Methods

2.1 Methodology

Six documents concerning management of coastal and marine areas in the Mediterranean, listed in Table 1, have been analyzed.

From the analysis of the above listed documents, the following six types of integration, which constitute as many dimensions of the framework developed in this study, were identified.

Table 1. Legally binding and voluntary agreements ("soft law") concerning marine and coastal areas in the Mediterranean.

Document	Aim	Character
EU Directive 2008/56/EC	To establish a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)	Legally binding
EU Directive 2014/89/EU	To establish a framework for maritime spatial planning	Legally binding
ICZM protocol	To promote an Integrated Coastal Zone Management in the Mediterranean area	Legally binding
Bologna charter	To ensure coastal protection and to promote a network of observatories for coastal defense	Voluntary agreement
Barcelona convention	To protect the marine environment, as well as Mediterranean coastal regions	Voluntary agreement
Livorno charter	To promote a marine strategy and blue growth	Voluntary agreement

- Spatial integration (**SI**): are marine and terrestrial areas need regarded as a single, unified system, with special reference to?
- Institutional and administrative integration (**IAI**): do the various tiers of government (local, regional, national) that share competences on coastal and marine areas cooperate and coordinate their actions?
- Functional integration (**FI**): are the various functions performed on (or by) the land-sea interface regarded holistically?
- Socio-economic integration (**SEI**): are different economic activities and social interests, including local communities, NGOs, and the wider civil society involved?
- Environmental integration (**EI**): are environmental effects from terrestrial and maritime activities accounted for?
- Planning integration (**PI**): are other planning tools and policies in force in the coastal zone acknowledged and considered?

The documents listed in Table 1 were scrutinized and sentences in which references (either explicit or implicit) to the above-listed six types of integration were looked for, so as to elicit the understanding of each type of integration emerging from the documents. Table 2 synthesizes the elements of each type of integration that were elicited from each analyzed document.

2.2 Case Studies

To test the framework, two Italian case studies where various natural protected areas have been established under different legal frameworks, and in which a number of compulsory and legally binding regulatory and planning tools are in force, which results in a high level of complexity of their respective governance frameworks. Therefore, the two selected case studies represent a critical case [1] because they represent the most complex Italian examples in terms of overlapping protected areas.

The first case study (in Sardinia) comprises Asinara National Park, the Asinara Island MPA, as well as three Natura 2000 sites (two special protections areas (SPAs), ITB010001 and ITB013011, and one special area of conservation (SAC), ITB010082). The second (in Liguria) comprises Portofino Natural Regional Park, the Portofino MPA, and four Natura 2000 sites (IT1332603, IT1332614, IT1332622, and IT1332674).

2.3 Materials

The following planning and management tools in force in the two selected case studies were analyzed against the framework synthesized in Table 2, to find out evidences of the six integration elements:

- the Plans of the two natural Parks and their Implementation Codes, stemming from, and compliant with, the national law on protected areas. Legally binding and prevailing over any other land use plan or sectoral plan, they aim at preserving natural resources and environmental values by controlling land uses;
- the national Decrees that establish the two MPAs, together with the corresponding regulatory tools; the latter stem from the national law on protected areas, and regulate human activities through a zoning scheme;
- the Natura 2000 Management Plans, together with the general and site-specific conservation measures, compliant with the Habitats Directive and ultimately aimed at guaranteeing that a favorable conservation status is achieved for protected habitats and species.

3 Results

In this section, the main outcomes of the analyses of the documents listed in Sect. 2.3 against the framework presented in Table 2 are summarized.

Table 2. Conceptual framework, synthetically matching types of integration with legally binding acts and voluntary agreements.

	Directive 2008/56/EC	Directive 2014/89/EU	ICZM protocol	Bologna charter	Barcelona convention	Livorno charter
SI	Marine and terrestrial protected areas are to be established	Land-sea interactions are to be accounted for	Marine and terrestrial areas form a single entity	Land, water and living resources must be managed together	–	–
IAI	States having sovereignty or jurisdiction over waters must act in a coordinate way	Trans-boundary cooperation between states bordering marine waters is required	Decisions by public authorities concerning the use of coastal zones must be coordinated	Modeling tools, monitoring systems, and decision support systems must be integrated	States must cooperate against marine pollution (monitoring, data exchange, damage compensation).	Sea and coast surveillance activities must be carried out following unitary standards
FI	–	Competing demands for maritime space require integrated planning and management	All functions relating to environmental, socioeconomic and cultural systems must be integrated	Conservation and use of biological diversity need to be taken into account an must be integrated in whichever tool	–	–
SEI	–	Environmental, economic and social aspects must be taken into account to promote sustainable development of maritime economies	Multiplicity and diversity of activities in coastal zones, as well as their relevant interactions, must be taken into account	Coordination between public and private initiatives which affect the use of the coastal zone is needed	All forms of relevant information (including local knowledge) must be considered, in transparent decision making	Coastal communities are empowered through participation of all involved actors in relation to the marine environment strategy
EI	Environmental considerations are integrated into policy areas and laws impacting on the sea	Healthy marine ecosystems and their multiple services are integrated within planning decisions	The ecosystems approach is applied to coastal planning and management	–	–	–
PI	–	Maritime spatial planning is promoted as a coordinated and integrated approach to achieve coherence between maritime spatial planning and other processes	Competent national, regional and local coastal zone authorities cooperate to strengthen the coherence and effectiveness of coastal strategies, plans and programs	–	–	–

With reference to spatial integration, in the Asinara case the Plan of the Natural Park regards its territory as single, unitary ecosystem where terrestrial and marine areas share common structural and socio-economic features. Some of the spatial conservation tools in force of the area do mention some others (for instance, as regards the zoning scheme, Management Plans refer to the provisions of both the Plan of the Natural Park and the MPA regulation), hence somewhat integrating their provisions, but this acknowledgement is not reciprocal.

In the Portofino case, MPA management tools do not explicitly address spatial integration; however, integrated management of SACs and the Regional Park is promoted by both the Plan of the Natural Park and the SACs conservation measures.

As regards institutional and administrative integration, in the Asinara case no international cooperation or coordination is foreseen, apart for one reference to the Pelagos Sanctuary, an international marine protected area established for the conservation of marine mammals and stretching over Italian, French, and Monaco's waters. However, if lowers tiers of government are considered, various references to inter-institutional coordination appear, for instance, between the regional government and the Porto Torres municipality (to which the island belongs) as regards the implementation of regeneration plans for the built-up areas within the park, or between other institutions in relation to areas bordering the Natural Park. Moreover, the need for institutional cooperation concerning surveillance and control of the area is explicitly acknowledged. To this end, collaboration with the regional government and with universities and research centers is promoted. In the Portofino case, coordination mechanisms to ensure cooperation between the institutions that share competences on the protected areas are foreseen in the various documents here analyzed, particularly in the MPA regulation. As for surveillance and control activities, they represent overarching themes across the management tools; notwithstanding, effective provisions concerning coordination between port authorities and regional administration are only provided in the Natura 2000 sites' conservation measures.

As for functional integration, which looks at how the various functions are regarded, in the Asinara case a vision is set where conservation and use of biodiversity are integrated (e.g. maintenance of fish stocks versus exploitation of nature-based tourism), with prominent importance given to conservation. Apart from that, the issue of co-occurring pressures stemming from users' demands appears to be overlooked. Similarly, in the Portofino case an integrated approach is promoted only in the Natura 2000 sites' conservation measures, whereas the MPA regulation and Plan of the Natural Park take a strictly regulatory approach towards anthropic uses, with the ultimate end of protecting biodiversity.

In relation to socio-economic integration, in the Asinara case participation of local communities and relevant stakeholders is, in principle, promoted by both the Plan of the Natural Park and in the Management Plans of Natura 2000 sites; however, in reality, rather than real participation, consultation and mere information were implemented in the respective plan-making processes. In the Portofino case socio-economic development of the territory is promoted by all of its management tools, each foreseeing and promoting information campaigns in order to disseminate ecological awareness among local communities and interest groups.

Concerning environmental integration, in the Asinara case Management Plans of Natura 2000 sites do address the issue of removing factors that may negatively affect ecosystems, which are regarded as having intrinsic value, regardless of the services that they provide. In the same area, a different approach is taken by the Plan of the Natural Park, which makes use of the ecosystem approach to identify the so-called "landscape-environmental units", i.e., areas sharing common ecological and functional relations and for which the plan provides specific rules. In the Portofino case, all of the tools mention the need to integrate specific objectives and strategies stemming from higher-level laws and directives (e.g. on air and water pollution), with a narrow perspective if compared to Natura 2000 sites' conservation measures, which pursue a much broader normative consistency (in that they do not look only at environmental impacts, but also environmental risks and threats, as well as climate change). All of the Portofino tools refer to the ecosystem approach, and to ecosystem services.

Finally, as regards planning integration, in the Asinara case integration between the various tools in force is explicitly acknowledged in several parts of the Plan of the Natural Park, which also refers to other sectoral planning tools; to the contrary, both Management Plans of Natura 2000 sites and the MPA Regulation do not consider the any other planning tool. In the Portofino case, the Plan of the Natural Park promotes itself as integrating measures and rules established by regional, provincial and local planning, while Natura 2000 conservation measures only pursue integration with the Plan of the Natural Park.

4 Discussion and Conclusions

Integration in coastal areas represents a key aspect of sustainability. Following the 17 Sustainable Development Goals, sustainability should be implemented in practical applications and not only in theoretical global policies and strategies. Practical applications concern various activities such as management of natural resources, mitigation and adaptation to climate change, and so on. Marine and coastal areas are characterized by the coexistence of several regulatory and planning tools that govern a specific aspect concerning human activities. Therefore, coordination and integration have been advocated as necessary in order to deal with problems and practical aspects that should be managed in terms of sustainability.

In this study, we have proposed a six-dimensional framework to assess the level of integration emerging from planning documents in coastal and marine areas characterized by the coexistence of a number of compulsory planning tools. Such framework has been developed by eliciting the way integration is proposed in both legally binding and voluntary agreements in force in the Mediterranean area, and comprises spatial integration, institutional and administrative integration, functional integration, socio-economic integration, environmental integration, and planning integration.

As shown in the introductory section, a number of conceptual frameworks to assess integration have already been proposed. However, the assessment framework here put forward is novel: contrary to what happens in previous studies, whose frameworks develop on the basis of theoretical standpoints and are therefore grounded on a-priori assumptions concerning the ontology of the integration concept, in this work the

integration dimensions emerge from the wording of both legally binding documents and soft laws in force in the Mediterranean Sea Basin area, and are not predefined.

Moreover, in order to test the framework, we have examined through its lenses planning and regulatory tools in force in two Mediterranean protected areas where various nature protection regimes overlap. The results of this analysis show that each tool appear to be specifically focused on complying with its own normative framework; hence, all of them are far from contributing to building a truly integrated approach to coastal and marine area management. One possible reason for this has to do with the fact that various categories of protected areas coexist in the hierarchical and multitier Italian institutional arena, where each type of protected area pursues its own mission and needs to comply strictly with the legal act (e.g., a national law, a regional law, or a European directive) upon which its establishment is grounded. For this reason, separate management bodies are often established, which, in the absence of dialogue and of clear mandates for cooperation, may result in parallel, or even competing, managements of the territory.

Since the framework was built on the basis of legal acts, directives and voluntary agreements ratified by countries belonging to the EU concerning integrated management of coastal and marine areas, the method proposed and applied in this study can be replicated in other coastal and marine protected areas in the north Mediterranean area, while further research is needed to understand to what extent the framework can be useful in non-EU countries in the south Mediterranean region, and what amendments would be required due to the different legal frameworks concerning nature protection and management of coastal and marine protected areas.

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