

PARTICIPATORY APPROACHES TOWARDS THE CO-MANAGEMENT OF NATURAL RESOURCES IN COASTAL AND MARINE AREAS

By the MED Biodiversity Protection Community
Working Group “on the sustainable management of natural resources”

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Introduction

Natural resource management refers to the way biodiversity is handled by its users, putting particular focus on stewardship, accounting for the ways in which management affects the quality of life and environment for both present and future generations. It recognises that sustainable socio-economic aspects need to be supported to better protect natural resources: People and their livelihoods rely on the health and productivity of landscapes, and their actions as stewards of the ecosystems and the life they contain play a critical role in maintaining this health and productivity,ⁱ and at the same time play a critical role in the maintenance of their quality. Biodiversity conservation is regarded as an important element in this type of user involvement in management.

Fisheries and aquaculture make use of marine natural resources and provide direct and indirect employment to over 500 million people worldwide. It is the world's only major food source harvested from the wild.ⁱⁱ This food source is dependent on the naturally renewable aquatic biodiversity in oceans and inland waters.

Natural resource management issues are inherently complex, as they "define" the way in which people and natural ecosystems interact. Such management relies on a scientific and technical understanding of resources and ecology, and the life-supporting capacity of those resources.

As a consequence, natural resource management aims to bring together a number of disciplines (such as land use and maritime planning, biodiversity conservation, and social sciences), sectors (such as the economy, tourism, and fisheries) and stakeholders (such as local authorities, MPA managers, and small-scale fishermen).

A growing recognition of the interdependence between local communities and natural resources has given rise to a number of alternative approaches. Natural resource management offers an opportunity for an integrated approach, which recognises the intertwined social, cultural, economic and political aspects of resource management,ⁱⁱⁱ unlike preservationist conservation strategies.

The focus of this paper is on co-management, a form of community or user-based natural resource management which seeks to combine conservation objectives with the generation of economic benefits for communities. It works under the understanding that when the local people's quality of life is enhanced, their efforts and commitment to ensure the future well-being of the resource are also enhanced.^{iv} Community-led management of marine areas has become a popular approach because of its adaptability to different contexts and focus on locally identified objectives, which are negotiated and implemented by local stakeholders.

It operates under three key assumptions:

- Locals are ideally placed to conserve natural resources (although locals cannot always conserve them if external stakeholders can have a strong impact (i.e. tourists, businesses, etc.)).
- People will conserve a resource only if benefits exceed the costs of conservation.
- People will conserve a resource that is linked directly to their quality of life.^v

The implementation of this concept in practice has found some difficulties in reconciling and harmonising the objectives of socioeconomic development, biodiversity protection and sustainable resource utilisation.^{vi} This paper aims to share the experiences and Best Practices resulting from the implementation of projects from the Interreg MED Biodiversity Protection Community involving the participation of local communities in natural resource management in the Mediterranean concerning small-scale fisheries and wetlands.

A. Complementarity of a bottom-up approach to the more generally applied top-down approach for natural resource management

Globally, the management of natural resources has traditionally been top-down, and enforced by rulers to ensure supply of whichever natural resource was deemed as most appropriate.

The traditional and widely used (top-down) state-led model of decision making, known as command and control, saw a change of policy away from the State to local communities, following the United Nations Conference for the Environment and Development (UNCED) held in Rio de Janeiro (Brazil) in 1992, under which most nations subscribed to new principles for the integrated management of natural resources.

These alternative, and generally bottom-up approaches provide opportunities not only for the engagement of local communities, by devising measures with a direct effect on their food security and other economic and non-cash benefits, but also for the integration of the cultural identity and heritage (including local traditional ecological knowledge) of these communities in the management of natural resources, creating a win-win scenario and consequently gaining their buy-in.

When local communities are given shared governance and legal rights to protect their own resources, a valuable sense of ownership provides the incentive to sustainably govern and manage the surrounding natural resources, allowing for the goals of biodiversity conservation to be reconciled with the needs of local communities. In the case of coastal and marine areas, this is particularly relevant for sustainable small-scale fisheries management, which is part of the scope of Aichi Target 6 (sustainable, legal and ecosystem-based fisheries management).

B. Different participatory approaches to different types of Ecosystems

In practice, there are three other types of natural resource governance models recognised (by the International Union for the Conservation of Nature, IUCN,^{vii} and by the UN Convention on Biological Diversity (CBD)^{viii}):

- shared governance by various right holders and stakeholders together;
- governance by private individuals and organisations;
- governance by indigenous peoples and/or local communities.

In 2004, the CBD Programme of Work on Protected Areas^{ix} called for the recognition of “a broad set of protected area governance types related to their potential for achieving biodiversity conservation goals in accordance with the Convention, which may include areas conserved by indigenous and local communities and private nature reserves”.

Furthermore, the Strategic Plan for Biodiversity 2011-2020's Aichi Target 11^x makes provision for the recognition of areas that qualify as protected areas, but also for the recognition of “other effective area-based conservation measures (OECMs)”. OECM is defined as “A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values”.

Marine Protected Areas (MPAs) are a globally recognised tool for managing and enhancing marine ecosystems in a way which enhances the preservation of biodiversity. The EU has specific legislation in place that calls for MPA designation and management. The major driver is the EU Natura 2000 network, the largest coordinated network of protected areas in the world, which requires targeted conservation action to tackle threats to habitats and species, and which by the end of 2016, extended to 11.7% of the sea surface area of the Mediterranean. By the end of 2018, the percentage of the sea surface area of the Mediterranean protected by MPAs was 6.7%.^{xi} This is complemented by MPAs designated nationally, under the Marine Strategy Framework Directive,^{xii} under the regional seas' conventions or international conventions.

Marine reserves form a subset of MPAs in which human activities such as resource extraction and fisheries are not permitted.

Overall, there is a recognition that more MPA coverage is required, particularly in the Macaronesia region and the Mediterranean Sea, and especially when considering that approximately 50% of EU MPAs measure less than 30 km², and a high proportion of them are below 5 km².^{xiii}

In the context of the co-management of natural resources for fisheries in MPAs in the Mediterranean, co-management means the sharing of powers and a balanced responsibility between fishermen and MPA managing bodies. A high level of participation is the key in order to build trust between fishermen and MPA managers.

Successful experiences to date show co-management practices where fishermen take their share of responsibility for the sound management of protected areas, in some cases leading to enlarging part of the Natura 2000 area outside the MPA and decreasing their fishing activity. Through concrete cooperation such as monitoring or patrolling, the fishing community can take ownership and responsibility for the protection and conservation aspects of a designated area.

Moreover, co-management models oriented to small-scale fisheries have also to take into consideration recreational fishing, which is a strong pressure on resources within MPAs. Specific rights given to local fishermen vs recreational ones can ease the process by favouring local and artisanal fisheries. As a last ingredient, the representation and leadership of local fishers is also an important aspect to consider in the development of co-management models.

There are, however, a number of pre-requisites for the co-management model to be successful, and although the principles are generally valid, not all practices are equally transferable across the Mediterranean.

C. Situation and experiences from the field: Case studies of participation by local communities in natural capital management

I. The Catalan model

Case study	Co-management in the new governance model for commercial fisheries in Catalonia
Timeframe	The first ever Maritime Strategy of Catalonia was adopted in May 2018. In June 2018, a decree on the governance model for professional fishing in Catalonia was issued, becoming the first time in the EU that fisheries co-management is formally regulated, and the central policy of an administration.
Location	Catalonia, Spain
Methods	<ul style="list-style-type: none"> • Based on co-management committees (CCs) operating at fishery level and at the geographical scale that matters (though highly flexible in scope). • CCs operating at two levels: plenum and technical committee. • Stakeholders structured around 5 areas, each with the same voting power (but focus on consensus). • Technical committee mandated to develop management plan within 18 months (and accompanying socioeconomic programme), to be • validated by plenum then legally issued as an order. • Technical committee to make adaptive adjustments of the plan, which will be legally binding as such. • Focus on effort management. • Conservation incentives
Goals	<ul style="list-style-type: none"> • Make management process more efficient. • Increase co-responsibility & trust, which leads to increased compliance. • Adaptive management. • A more intelligent bioeconomic management of the fishery. • Dialogue between scientists-fisher(wo)men. • Overall credibility of the management system. • Participatory management to empower a variety of stakeholders resulting in better fisheries management

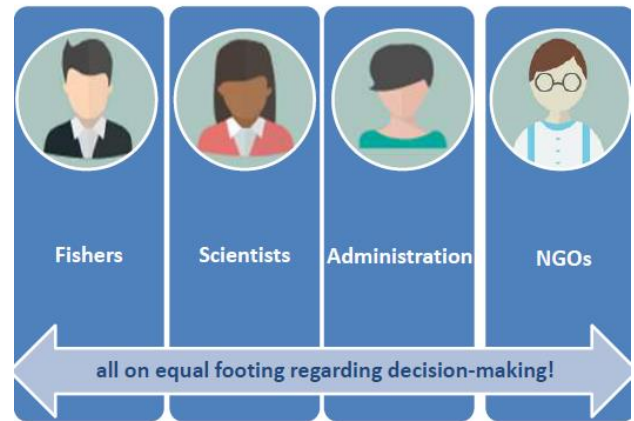
Current and prospective CCs – work in progress



1. Sand-eel fishery, boat seines
2. Octopus fishery, Terres de l'Ebre
3. Blue crab fishery, Terres de l'Ebre
4. Towed dredges – "rastell" fishery
5. Octopus fishery, central coast
6. Cuttlefish SSF, Gulf of Roses and Pals
7. Purse seine fishery, Gulf of Roses

In the pipeline:

- SSF in Cap de Creus Natural Park
- Deep-water trawl fishery in Cap de Creus canyon



Co-managing = co-governing

Results:

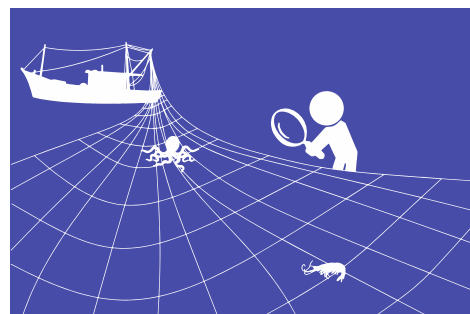
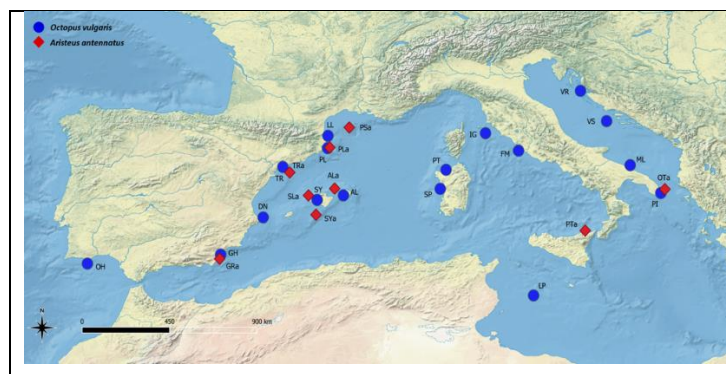
A policy to ensure the place of the fisheries industry as a central pillar of the national Blue Economy sector. It provides rights and responsibilities to the different actors identified, contributing in this way to the sustainable use of fisheries.

Challenges and opportunities:

- Gradual transition towards the new model to wisely manage limited resources and capacity.
- Mismatch in scope and scale of local and supra-local co-managed plans with respect to EU Data Collection Framework: need for more specific, tailor-made data collection schemes. New EMFF-funded "Data Collection Programme in Support of Fisheries Management" was established in Catalonia to inform fisheries co-management.
- New decree on fish commercialisation will provide for a specific "fish from locally co-managed fisheries" label – a stepping stone toward consumers' recognition of sustainability.
- Potential role of community-led local development schemes (through FLAGs) to support co-management committees' socioeconomic programmes (such as commercialisation actions).
- Important that formal CCs are eligible to receive EMFF funding to cover operational costs.

II. Bringing science and local communities together (ConFish)

Case study	ConFish
Partners	<ul style="list-style-type: none"> • Faculty of Science, University of Zagreb, Croatia • ISPRA, Italy • CSIC, Spain • Sunce, Croatia • IST, Portugal
Location	Croatia, Italy, Spain, Portugal
Timeframe	October 2016 - July 2018
Methods	<ul style="list-style-type: none"> • Social-Ecological Systems approach • Evolutionary genomics • SWOT analysis • Comparing and integrating genomics, fishery biology data and experience-based knowledge to assess the status of fishery resources and support their management
Goals	<ul style="list-style-type: none"> • The overall goal of ConFish is to promote capacity building and knowledge transfer between fishermen and scientists through a bottom-up participatory approach to contribute to the sustainability of Mediterranean fisheries. • Study the implementation of a Social-Ecological Systems approach in Mediterranean fisheries. • Joint creation of interdisciplinary scientific and local ecological knowledge on the stocks of two target species, involving social, fishery and evolutionary scientists, and many local stakeholders, fishermen in particularly.



Results:

ConFish is a study project whose results refer to three study communities (Patty in Italy, Komiža in Croatia, and Palamos in Spain), and two targeted fishery species, common octopus and blue and red shrimp.

For the three study sites, the main results are:


- 1) definition of strategic options and strategic paths for the sustainable management of marine ecosystems;
- 2) definition and identification of a common vision for a sustainable community and successful management of the marine ecosystem;
- 3) identification of key integrated themes seen as success factors for the sustainable development of fisheries and marine ecosystems;
- 4) preliminary pathways for key stakeholders with strategic relationships with marine ecosystems;
- 5) creation of overall Road Map for the sustainable management of marine ecosystems, based on the Social-Ecological Systems approach.

For the two target species, the main results are:

- 1) creation of genomic markers;
- 2) map of connectivity and adaptation of studied populations across western and mid Mediterranean;
- 3) interdisciplinary local and scientific knowledge base on the biology, status, and perspective of the stocks

These results are very important for the fishery management plans and have been communicated and discussed within each of the three fishing communities in question.

III. A toolkit for small-scale fisheries management (FishMPABlue2)

Case study	The FishMPABlue2 "Governance toolkit for small-scale fisheries" ^{xiv} (https://fishmpablue-2.interreg-med.eu/)	
Partners	<p>Lead Partner:</p> <ul style="list-style-type: none"> Federparchi – Europarc Italy (IT) <p>Partners :</p> <ul style="list-style-type: none"> IUCN Med (Spain), ECOMERS (France), WWF Med (Italy), CONISMA (Italy), MedPAN (France), APAM (France), WWF Adria (Croatia) 	
Location	11 MPAs in 6 Med countries	
Timeframe	November 2016 – October 2019	
Methods	"Governance toolkit for small-scale fisheries (SSF)"	
Goals	<ul style="list-style-type: none"> Goal 1: to propose a model for establishing a formal and permanent cooperation platform between small-scale fishers and MPA managing body. Goal 2: to provide MPA managing bodies with tested management measures in relation with main issues related to SSF management within an MPA. 	

Results

- Eleven LGCs established: in each pilot MPA, a formal SSF "Local Governance Cluster - LGC" has been established, consisting of an MPA managing body and SSF-related fishermen.
- Eleven PPIPs (Pilot Project Implementation Plan, one per MPA), including a selection of tools from the "SSF Governance toolkit", have been adopted by LGCs and implemented in each MPA
- "Before" and "after" monitoring campaigns: a huge monitoring campaign of environmental-socio-economic features of SSF in each pilot MPA has been carried out before and after the PPIP implementation, and a scientific comparison of the results has been done to assess the impacts of the measures tested⁵) creation of overall Road Map for the sustainable management of marine ecosystems, based on the Social-Ecological Systems approach.
- "Upgraded SSF Governance Toolkit": the more than 20 management measures tested are described in detail, with the lessons learned from their implementation; they are subdivided into 5 "enabling conditions" for a successful governance system of SSF: MPA enforcement (surveillance and monitoring), fishermen engagement in MPA decision making, knowledge and ownership, sustainable fishing, and profitable fishing.

IV. Participatory tools to involve local stakeholders in the conservation, management and sustainable development of ecosystems: the experiences of WETNET

Case study	Project WETNET – Summer schools
Partners	<ul style="list-style-type: none"> • Regione Del Veneto, Area Tutela e Sviluppo del Territorio, Direzione Pianificazione Territoriale (Italy) • Province of Vercelli (Italy) • ZRC-SAZU-Research Centre of the Slovenian Academy of Sciences and Arts (Slovenia) • FAMP-Andalusian Federation of Towns and Provinces (Spain) • SEO/BirdLife-Spanish Ornithological Society (Spain) • SARGA-Government of Aragon (Spain) • RCDI-Development and Innovation Network (Portugal) • GDA-GRC-Gozo Development Agency - Gozo Regional Committee (Malta) • TDV-Tour du Valat (France) • CIRF-Italian Centre for River Restoration (Italy)
Location	Italy (Lead Partner), Portugal, Spain, France, Malta and Slovenia
Timeframe	11/2016 - 10/2019
Methods	<ul style="list-style-type: none"> • Organisation of Summer schools to promote Wetlands Contracts as voluntary agreements for stakeholder engagement and empowerment. <p>Target participants</p> <ul style="list-style-type: none"> • national and regional decision makers and technical officers on wetland management; • managing directors and technical officers of Med wetlands; • NGO members active in wetland management at Med scale; • practitioners and researchers on wetland governance issues; • graduate students (PhD and/or MD) in wetland governance related topics.
Goals	<ul style="list-style-type: none"> • To build capacity in the sustainable governance of protected wetlands by addressing target groups involved in wetland management. • To facilitate the uptake of the Wetland Contract model by wetland Managing Authorities at the Mediterranean scale. • To foster the coordination and networking of Mediterranean protected wetlands. • To set up and make available a training format replicable within the Mediterranean community.



Results

- Wetlands in Europe are vulnerable interconnected environments, with important contributions to biodiversity. Their protection intertwines scientific-environmental aspects and governance concerns. WETNET tackles the issue of implementing multilevel governance for Mediterranean wetlands in order to improve wetland ecosystems and their surrounding local systems.
- The project aims to ensure greater coordination between different levels of spatial planning and authorities in charge of their management, whilst limiting conflicts between conservation issues and economic activities. By defining common priorities for Mediterranean wetlands conservation, WETNET builds a common territorial strategy for their integrated management. Building on previous EU experiences (River Contracts), WETNET seeks to test and transfer 'Wetlands Contracts', acting through broad participatory processes where users, private and public entities are committed to mainstreaming wetland conservation into their daily activities.
- This project aims to increase the knowledge of Wetlands Contract effectiveness and strengthen existing transnational networks for sharing and disseminating information and good practices on wetlands conservation.
- The summer schools aim to build capacity in sustainable governance by addressing target groups involved in wetlands management to facilitate the uptake of the Wetlands Contract model at the Mediterranean scale. This high-level training event will provide an opportunity to foster the coordination and networking of Mediterranean wetlands, transferring the lessons learned in the project to the larger Mediterranean community.
- One summer school represents an average of 5 days of training with 8 hours of interactive classes, 6 hours of thematic seminars, 4 hours of living laboratories based on 9 case studies (WetNet Pilot Areas), 10 hours of field activities, 34 international experts invited to lecture and 60 international students from 6 MedCountries (Interreg MED Cooperation Area: France, Italy, Malta, Portugal, Slovenia, Spain).

D. Lessons learned

- Building trust, being completely transparent and clearly sharing the agendas around the table are key. In that sense, a good and neutral facilitator is also clearly needed and can support the achievement of a successful co-management model.
- The importance of a Participatory planning process: to foster an inclusive, on-going, community-led dialogue on resource management issues; to enhance awareness and engagement for more effective management planning, compliance and enforcement processes.
- Gender considerations: Consider the different roles of men and women as critical to the sustainable management of natural resources, as well as to the success of Natural Resource Management (NRM) policies and programmes; Practitioners and Policy Makers need to be aware and consider how NRM programmes may have a different impact on women and men.
- There is also the need to find win-win scenarios. This is a key point to bring together around the table the different stakeholders and solve and overcome a common challenge.
- The importance of research and data collection: sound, evidence-based insights into spatial and temporal patterns and functionality of the marine ecosystem, sharing findings to help familiarise people with the importance of protecting the fish stocks and key marine habitats, such as seagrass meadows and coralliferous formations for the future. Use research and data, not only to monitor the status of ecosystems and species, but also to enhance the capacities of local managers and communities. Furthermore, data which needs to be fit for purpose is of no use without the capacity for scientific interpretation.
- The need for adequate tools adapted to MPA managers and fishermen: Research needs to provide not only data, but also scientific advice tailored for quick and adapted decision-making. In that way, MPAs can play the role of laboratories to test and finetune tools and practices that work best for nature protection and management and that are adapted to local communities.
- It is essential to find the right language and translate the "scientific" language into one that is comprehensive, easy-to-understand and pedagogical.
- Securing sustainable financing for management: In terms of financial mechanisms, funding for small initiatives is needed as in the EMFF, rather than focusing mainly on big projects.

Management Plans

- Include a Participatory planning process as part of any co-participatory approach for the management of natural resources.
- Develop a management plan: with clearly stated roles and responsibilities, and which has been approved by the different actors. Recognise the importance of community ownership for surveillance and enforcement.
- Flexibility and considering readjustments based on local experiences and following a feedback loop are also keys to successful co-management plans.
- The establishment of a good code of conduct as part of a Management Plan is essential.

E. Technical Recommendations and best practices

- Include a development plan with clearly stated roles and responsibilities, and which has been approved by the different actors for the management of natural resources.
- Engage the private sector as appropriate, including to identify alternative income generating enterprises.
- Successful, long-term management of natural resources requires an institutional framework capable of balancing the needs and wishes of the different stakeholders, with the carrying capacity of ecosystems. Attention should be given to strengthening the institutional framework at the appropriate level. Same applies to the legal framework.
- Consider the need for adequate (management, monitoring, negotiation, etc.) tools adapted to the needs and capacities of stakeholders.
- There are various governance types as well as management approaches. Understanding the competences, weight and strength of the different stakeholders and having a good governance system in place are crucial to the success of community-based management.
- Having a common vision for many countries sharing a limited space is an important framing for co-management. Experiences using top-down mechanisms could provide solutions for the transboundary management of natural resources. In some cases, however, top-down approaches for co-management could be a bottleneck, and bottom-up approaches can be a way forward. The challenge then is to change "old" habits and address systemic resistance.

- Replicability aspects— replication is not always directly possible and is strongly linked, especially in the Mediterranean, to local cultural and socio-economic models. Involving multi-stakeholders in co-management models is not a simple “cut & paste” recipe but has to be locally adapted.
- The issue of scale is not to be ignored. The problem is not only one of bridging knowledge. Connections across the ecological and administrative scales must also be considered.
- The efficiency of co-management has to be promoted and proven across every stakeholder layer in order to switch from a one-way top-down approach to a multilevel governance model that implements a transversal approach between top-down and bottom-up approaches. Complementary systems, rather than a single system, have been shown to work better. Following that line of thought, training and bringing to the table socio-economists to fisheries activities is also very important.
- Networking is also a key aspect to ease transferability. The Interreg MED Biodiversity Protection Community in the framework of PANACeA or other types of networks, such as FLAGS, are needed. They convey good practices to raise the awareness of consumers to promote local sustainable fisheries.

NOTES

ⁱ <https://web.archive.org/web/20120208173746/http://www.nrc.nsw.gov.au/content/documents/Brochure%20-%20Resilient%20landscapes.pdf>

ⁱⁱ www.fao.org

ⁱⁱⁱ Thakadu, O. T. (2005). "Success factors in community based natural resources management in northern Botswana: Lessons from practice". *Natural Resources Forum*. 29 (3): 199–212. doi:10.1111/j.1477-8947.2005.00130.x.

^{iv} Ostrom, E; Schroeder, L; Wynne, S. (1993). *Institutional incentives and sustainable development: infrastructure policies in perspective*. Westview Press. Oxford, UK. 266 pp.

^v <https://blog.wiomsa.net/2019/05/23/new-publication-on-local-management-of-marine-resources-is-out/>

^{vi} Kellert, S; Mehta, J; Ebbin, S; Litchtenfeld, L. (2000). "Community natural resource management: promise, rhetoric, and reality". *Society and Natural Resources*, 13:705-715.

^{vii} www.iucn.org

^{viii} www.cbd.int

^{ix} <https://www.cbd.int/protected/pow/learnmore/intro/>

^x <https://www.cbd.int/sp/targets/>

^{xi} <https://www.eea.europa.eu/publications/marine-protected-areas>

^{xii} http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm

^{xiii} <https://www.eea.europa.eu/publications/marine-protected-areas>

^{xiv} https://fishmpablue-2.interreg-med.eu/fileadmin/user_upload/Sites/Biodiversity_Protection/Projects/FishMPABlue_2/Del_3.5.2_upgraded_toolkit.pdf



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