



On the Road to Participative Governance of Marine Resources

Lessons from the co-management and improved governance schemes for fisheries & marine ecosystems in the Mediterranean Sea



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Credits

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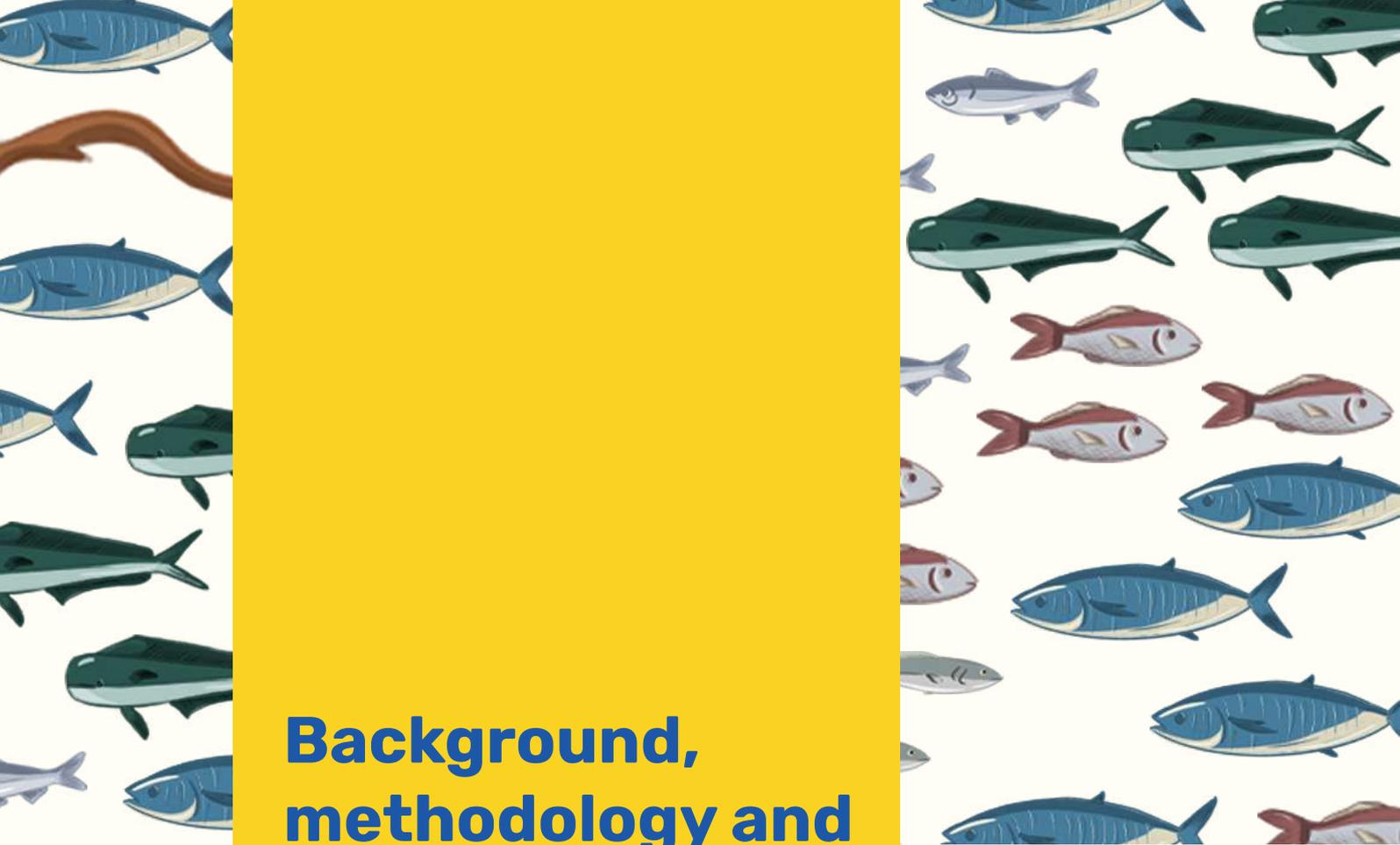
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Background, methodology and objectives of the report

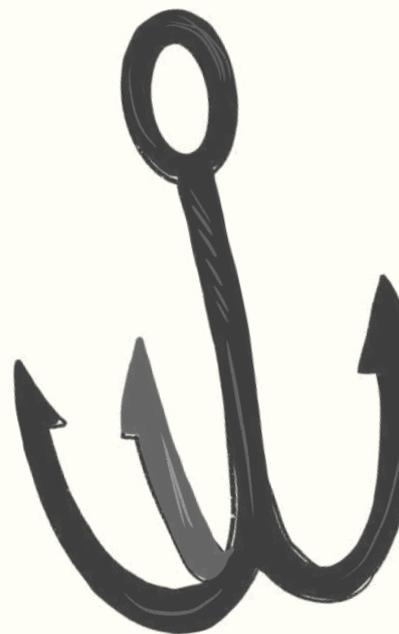
This short report was commissioned by the Low Impact Fishers of Europe (LIFE) within the Co-management/MPA project implemented by several partners as an integral part of the MAVA Mediterranean Basin Programme. It aims to capitalize on lessons learned and to enable co-management of fisheries/maritime areas to become a reality across European countries and the Mediterranean Sea basin. The project includes 8 partners working to boost the resilience of fisheries and to strengthen conservation efforts in the Mediterranean Sea through scaling up co-managed and financially sustainable No-Take Zones (NTZs) and MPAs.

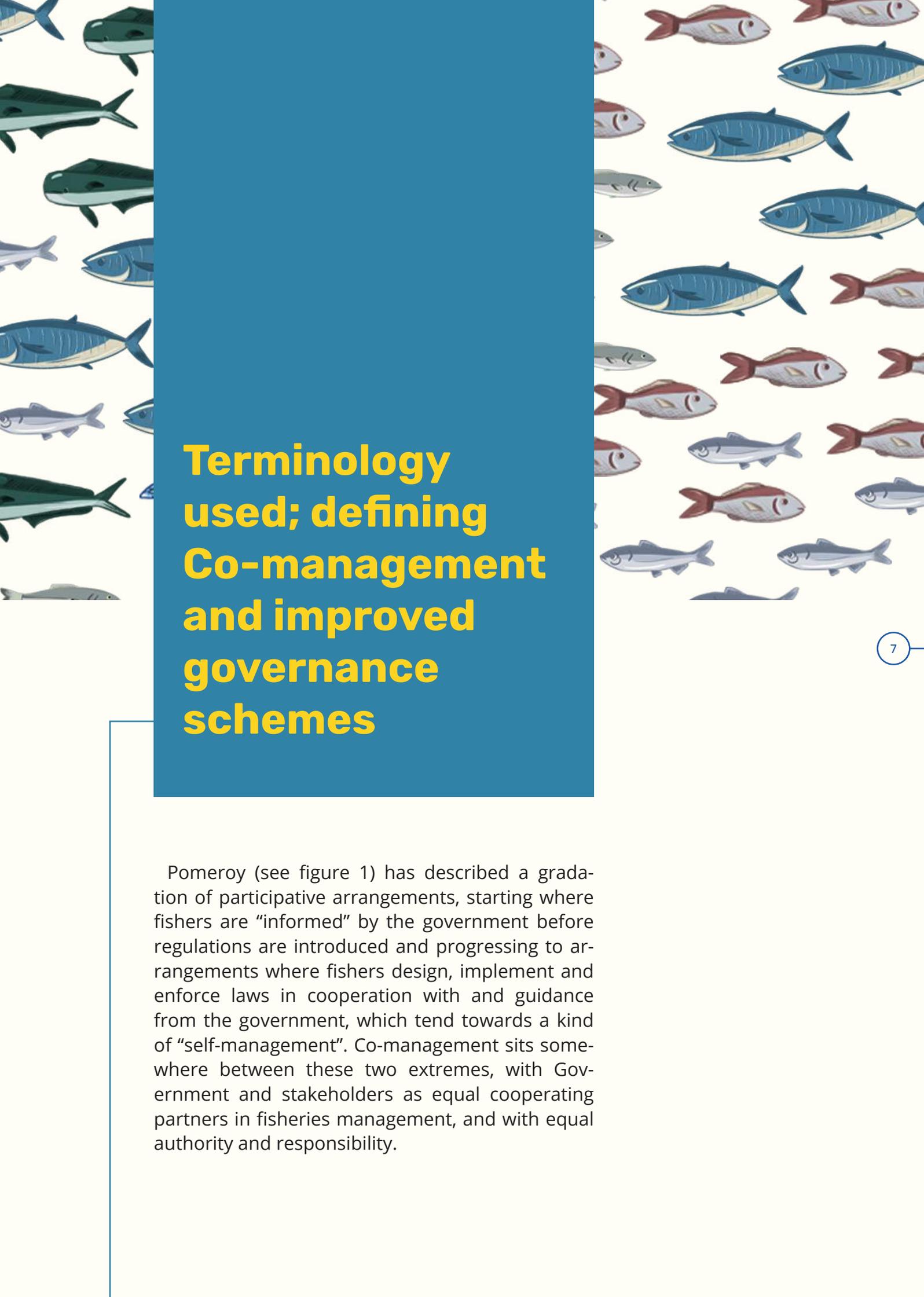
It is a contribution from LIFE to the overall project. The objectives set out for this report are the following:

- Build a preliminary map of key sites in the European and Mediterranean countries where participative management schemes are being developed or are in place;
- Agree on a common definition for co-management;
- Identify the key drivers of change towards co-management;
- Identify the main factors that have led to success, the challenges going forward and key lessons learned;
- Assess to what extent the various sites are implementing Ostrom's 8 basic principles.

The report relies on four main sources of information:

- An on-line questionnaire which was circulated to about 100 selected respondents – individual fishers, fishers' associations, NGOs, MPA managers - over the period June to July- to which 17 answered (See Annex 1);
- Semi-structured interviews that have been held between mid-July and mid-August with a limited list of persons in order to further identify, clarify and rank the factors that triggered a move to a more participative approach to management (see Annex 2);
- A short literature review (see Bibliography);
- Conclusions of a workshop on co-management at 4th World Small-scale Fisheries Congress (4WSFC) in Malta (13th of October 2022);
- The experience and views of the Consultant, a former NGO policy officer, Secretary of an EC Regional Advisory Council, fishers' representative and fisherman, and its co-author, who supported the settling and actively participates in many co-management committees in the Mediterranean.





Terminology used; defining Co-management and improved governance schemes

Pomeroy (see figure 1) has described a gradation of participative arrangements, starting where fishers are “informed” by the government before regulations are introduced and progressing to arrangements where fishers design, implement and enforce laws in cooperation with and guidance from the government, which tend towards a kind of “self-management”. Co-management sits somewhere between these two extremes, with Government and stakeholders as equal cooperating partners in fisheries management, and with equal authority and responsibility.

For the purpose of this report and exercise we considered “improved governance schemes” those schemes where fishers have important levels of participation and engagement, including where fishers have advisory roles, or where they take part in joint actions. The definition proposed in the on-line questionnaire was unanimously approved by the respondents and we consider it an appropriate definition of fisheries co-management.

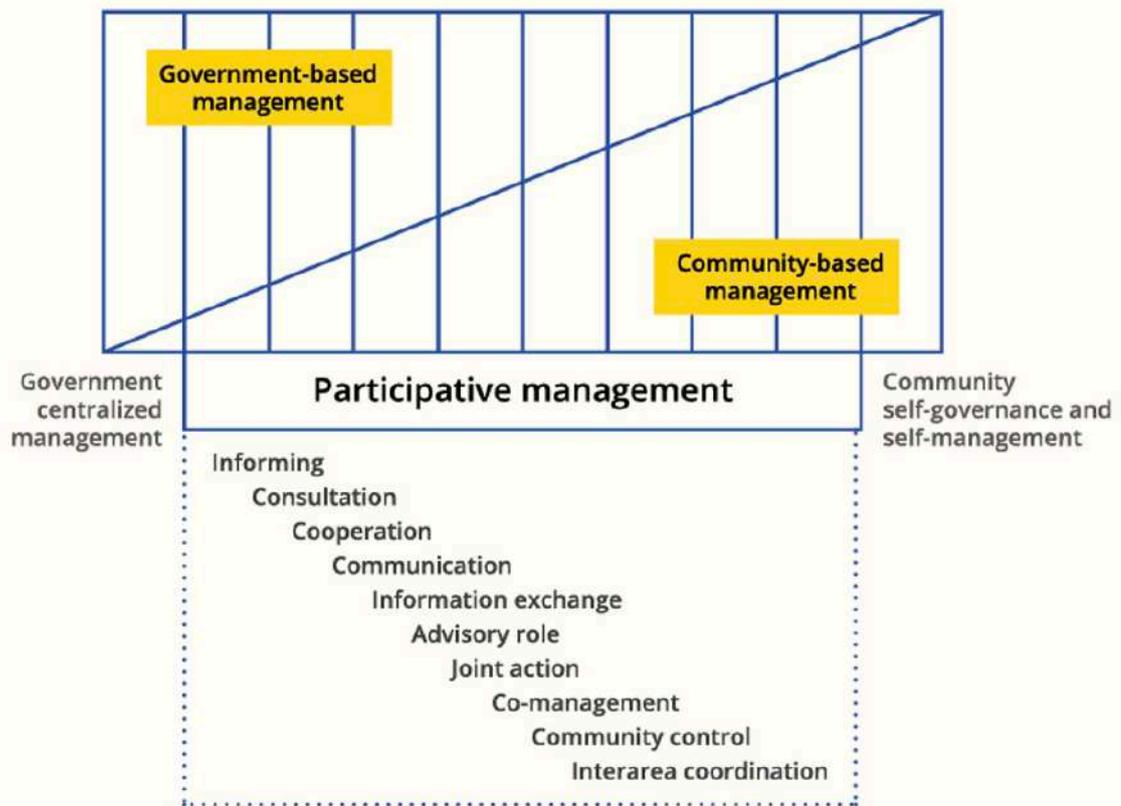


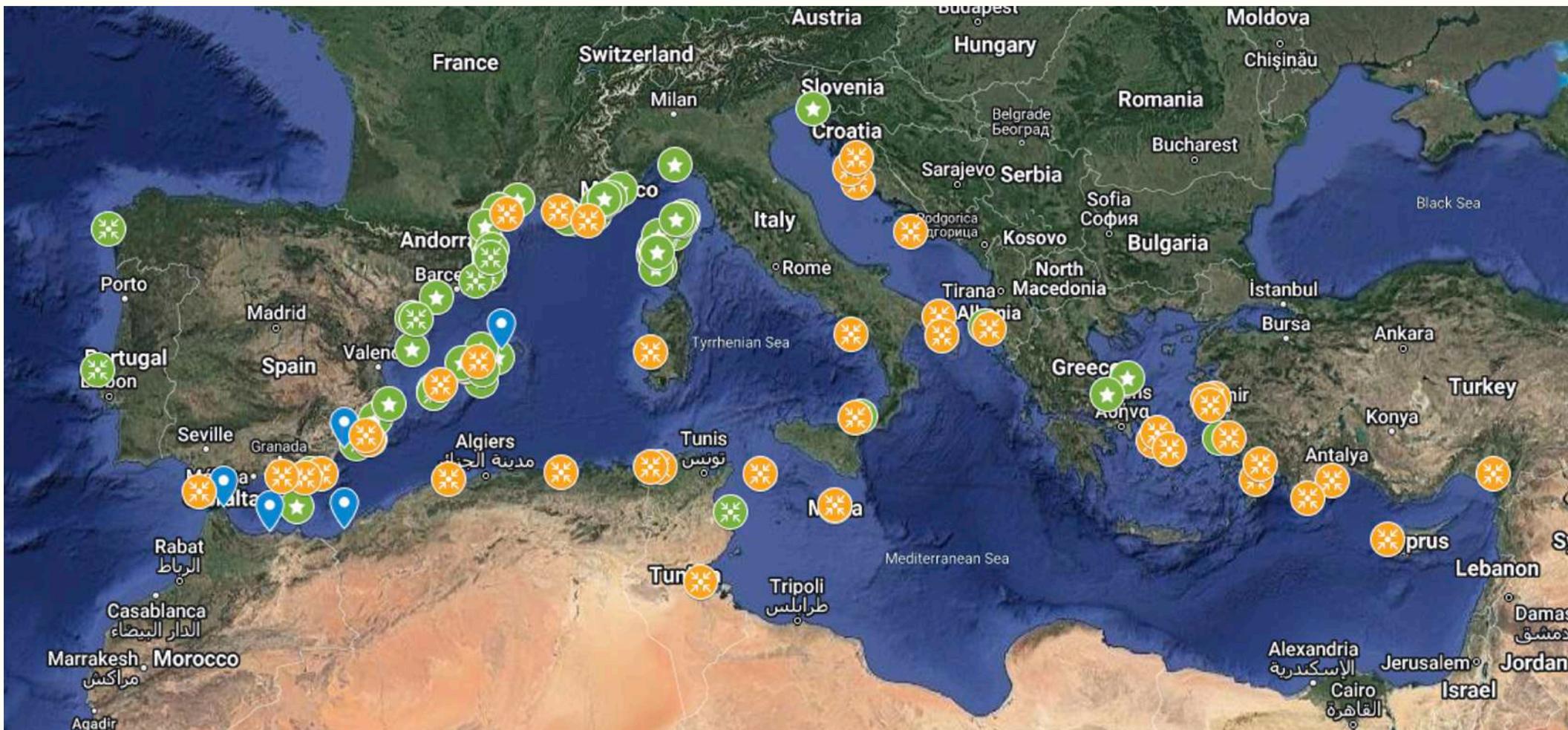
Figure 1. Gradation of participative arrangements (Based on Pomeroy’s hierarchy, 1994) in Cavallé.

Co-management defined: **“A partnership arrangement between government and the local community of local fishers, sometimes also connected with agents such as NGOs and research institutions, and other resource stakeholders, to share the responsibility and authority for management of a resource or an area.”** In essence, co-management implies that the body (government, administration, agency, etc.) holding the

power has agreed to share it with other bodies, especially the local users who depend on its resources, through a dedicated and stable institutional arrangement. Proposals of nuancing the definition were made by some of the interviewees, to include **“the aspiration or seek for consensus in decision making”**.

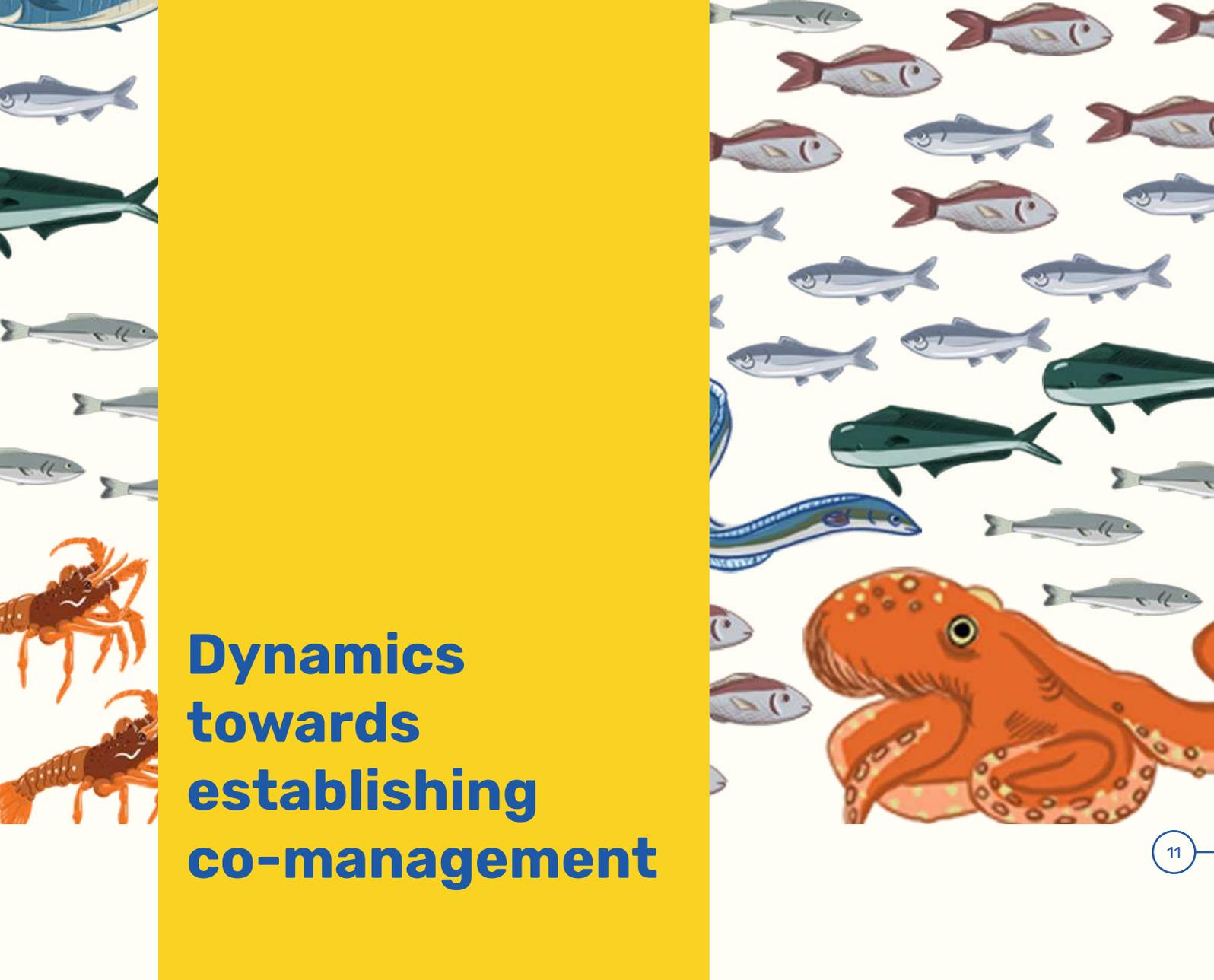


Identification of key sites in the European and Mediterranean countries



-  MPA with improved governance scheme in progress/in place
-  Fisheries areas with improved governance scheme in progress/place
-  Co-management in place
-  Co-management in progress

Figure 2. Co-management or improved governance schemes experiences in the Mediterranean Sea. Map available at the following [LINK](#)

A vibrant illustration of marine life. On the left, a vertical strip shows various fish and two crabs. The right side features a larger scene with many small fish, a large green fish, and a prominent orange octopus in the foreground. The background is a mix of white and yellow.

Dynamics towards establishing co-management

Starting point

Co-management has appeared in a world where fisheries have been in crisis in the last 2 to 3 decades. Boats have been scrapped, fishermen have lost their jobs, coastal communities have been transformed, the marine environment has been damaged and many marine resources are dwindling. It is highly dependent on local leadership, a certain degree of social cohesion and the adaptation of regulations to the local context. It has been widely considered as the “only realistic solution for the majority of the world’s fisheries” (Gutierrez N. et al., 2011).

Co-management is embedded in **local contexts and local specificities**, of a cultural, sociological, economic, and religious nature. Co-management is the opposite of a “one-size fits all” postulate, rather it is based on “tailor-made

arrangements". But co-management is above all a sociological process through which resource users and other stakeholders become engaged as participants in the decision-making process, moving from a top-down approach to a bottom-up one.

"To involve the fishermen, we went to the café, we used word of mouth. We gave them guarantees. For each union we turned to the elders, the wise men. We managed to deal with the problems with the unions by discussing and explaining."

(Ahmed BENHMIDA, com. Pers.)

In the online questionnaire, the majority of respondents (11 out of 17) refer to a marine protected area where the boundary is being established at the creation, while 4 refer to specific fisheries management plans. The implementation is therefore specific to each local situation.

Triggering factors

It has been noticed through the interviews and on a few occasions that co-management arrangements have been triggered by a situation of crisis forcing the resource users to come forward with a solution that the managers can agree on, which necessarily implies a scientific support, and increasingly often a back-up from the NGOS.

"In the EU regulation 1967/2006, a list of fisheries was identified as temporary until July 2010. We were supposed to propose a management plan but the administration was only used to draft documents at that time. The proposal we made was rejected and the fishery was ordered to be closed, about 25 fishing boats. At that time, a local fisherman came together with WWF, Greenpeace and scientists to organise a meeting and convince Brussels that this fishery could be sustainable. The fishermen paid for the first scientific survey themselves. The boats were allowed to go back to sea, the quotas were reduced and the prices increased."

(Jordi Rodon, com. Pers.)

In other cases, it's been the general discontentment of the status quo and failure of the system in place which triggered the change. In this regard, the establishment of

protected areas has offered the opportunity for establishing a differentiated legal framework that could help, through the local participation of resource users, to improve the situation (mitigating illegal fishing activities or reducing fishing pressure, and increasing yield as in the cases of Lira or Torre Guaceto, for example).

As suggested by the results to the online questionnaire (Annex 1), **the willingness to move towards co-management** is primarily coming from the fishing community but almost equally from NGOs and scientists. At a later stage, the change is also shared by an important number of managers (administration and MPA managers).

Indeed, fishers have a direct interest in having a say in the management rules applying to their daily activity and taking part in decision-making processes that affect them. Scientists may have access to more reliable, acceptable and up-to-date data, while their collaboration may also facilitate the presence of observers on-board (to provide a direct real-time source of information on the fisheries), and pave the way to include fishers' experiential and traditional ecological knowledge in management advice. NGOs have a recognized role in the system and can be part of the solution and can fully assume their role as sea's custodians bringing other voices to the debate around fisheries' management. The situation of administration/MPA managers is different because they are the ones who lose the power that only they had before. However, they benefit from a more reliable working environment helping them to resolve conflicts and the implementation of the regulation is more effective thanks to a stronger buy-in from fishers.

As listed in the recent FAO technical paper (Vasconcellos M. and Ünal V., 2022) **various triggering factors could be quoted:**

- Changes in laws and regulation (the move to a precautionary management system triggering the development of fisheries' management plans);
- Ecological and socioeconomic risks and impacts associated with weak fisheries management (the decline of fish stocks and loss of jobs);
- Conflicts among sectors/countries sharing resources and areas (not really relevant for small-scale except in transboundary areas);

- Impacts of multiple stressors in the coastal zone affecting habitat, resources, and livelihoods;
- Enhanced availability of information and awareness among fishery managers;
- Changes in national governance systems.

Rationale and benefits embedded within the co-management principles

We are using the United Nations Development Group guidance on the theory of change (See Bibliography) as a methodological guidance to identify the rationale and solutions towards shifting towards co-management. Indeed, the shift towards co-management is a dynamic and gradual process where a system evolves from a local context toward co-management through various degrees of improved governance schemes. This is the reason why the conceptual approach proposed by the United Nations in the Theory of Change seems very much appropriate. However, we should stress that the following exercise would normally require wider participation and various workshops.

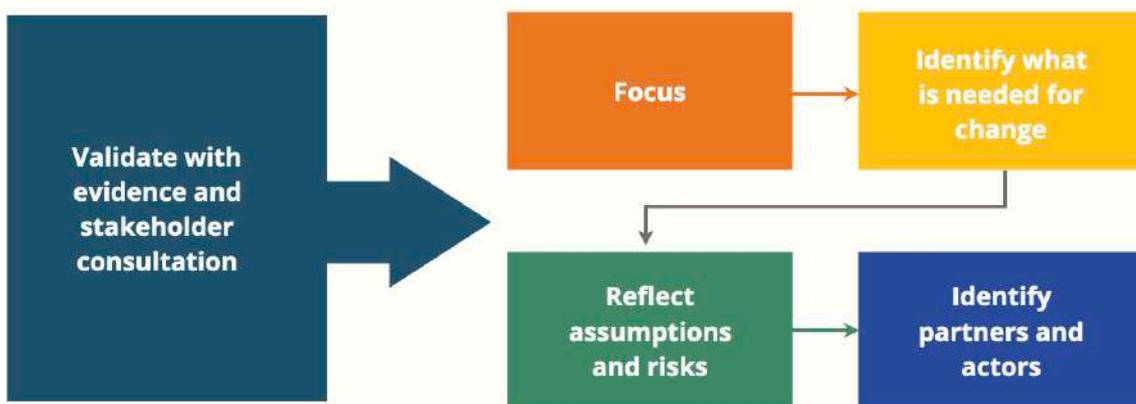


Figure 3. UNDAF theory of change steps (United Nations Development Group)

We consider the focus to be defined as the change towards co-management institutional arrangements. Yet some further reflection would need to be brought to the definition of fisheries'/maritime space's boundaries.

In order to identify the needed changes, we pointed out the main problems encountered with traditional fisheries' management systems in order to build a solutions' tree. The development of these tables is based on the various sources of information that have been recalled in the methodology e.g. answers to the on-line questionnaire, semi-directed interviews, bibliography and own experience and knowledge.

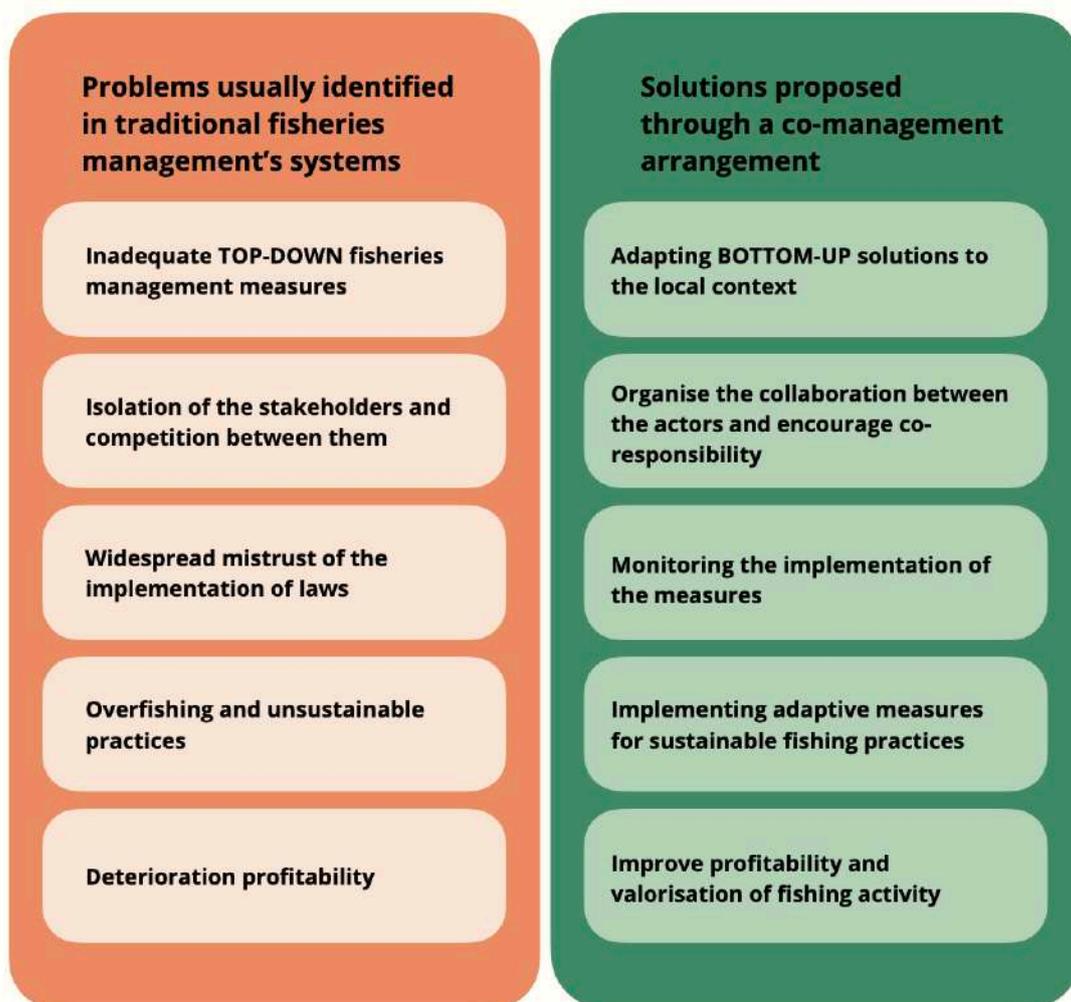


Figure 4. Simplified solution tree to implement fisheries co-management (our elaboration)

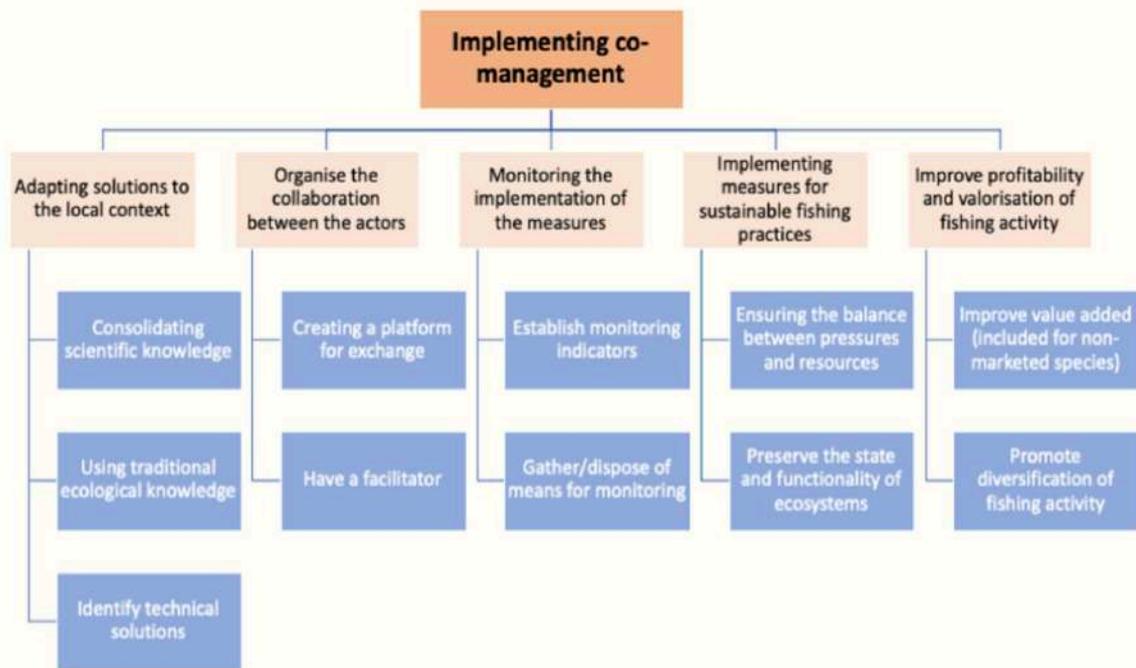


Figure 5. Turning a branch of a problem tree into a solution tree: from traditional fisheries management systems' weaknesses to solutions proposed through co-management schemes (our elaboration)

From the various sources of information, we are proposing different activities that feed the specific objectives enabling the implementation of fisheries' co-management.

"It is absolutely key to have someone in the field who is committed in the process, who sees the fishers in the coffee-shops and keeps them interested. You need to impulse a dynamic process where there is a component of faith."
 (Antoni Font Gelabert, com. Pers.)

"For Lira's reserve, scientists give their opinion on the basis of the little data that fishermen can provide. In absence of scientific monitoring, we need to rely on the perception of fishers."
 (Antonio Garcia Allut, com. Pers.)

Co-management arrangements, therefore, appear to provide a meaningful answer to the failures of traditional fisheries' management. From the answers to the online questionnaire (Annex 1), most respondents do consider that co-management is instrumental in **"improving relationships", "strengthening the capacity to co-decide", "enhancing co-responsibility" and "responsible fisheries is encouraged"**

as the main actors are no longer alienated from management. It clearly appears that, above all, co-management schemes cause a shift within the relationships that existed between the stakeholders before and, most importantly, the sense of responsibility on the use and sharing of resources. In that respect, it is important that other stakeholders put their feet in fishers' shoes. The first and essential condition is to get the fishers on-board and get guarantees that their voices are being properly heard. Also, the capacity of the co-management scheme to adapt management measures to the local context should also be emphasized as fisheries' management is taking place in a constantly changing "environment" (socio-economics, nature, ...).

Hypothesis, risks and challenges to move towards co-management

The previous solution tree is relying on a number of hypotheses we assume to be realistic but that need to be checked. They are presented in the figure below. It also faces external risks that could limit or challenge the feasibility and efficiency of a co-management system.

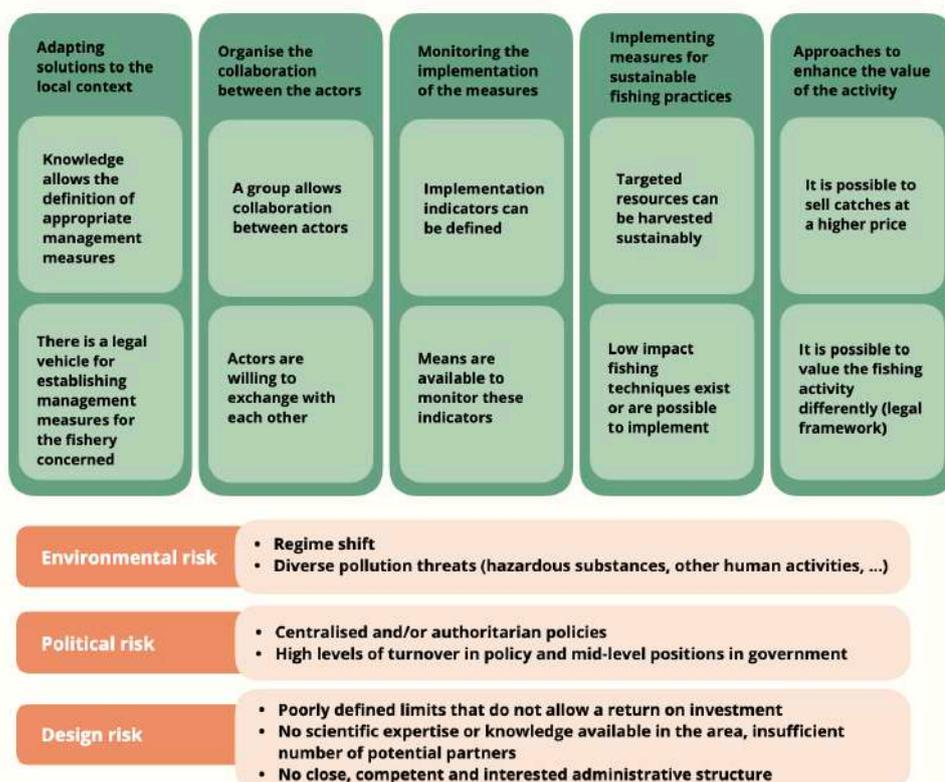


Figure 6. Hypotheses and risks associated with the solutions' tree (our elaboration).

The online questionnaire (Annex 1) pointed **various key resistance factors** towards co-management including the increased workload involved in co-management arrangements, internal conflicts within the fisheries sector that make it difficult for them to come together, the law framework, the changing habits of both fishermen and managers and the associated reluctance of management authorities to delegate power.

“We brought everyone together and every category of stakeholder - scientists, NGOs, fishermen’s cooperatives - agreed to move to co-management of the fishery, all except the Directorate-General, which still supports centralised management.”

(Vahdet Unal, com. Pers.)

Various actions are being reported as helping to move towards improved governance schemes such as controlling IUU fishing, funding facilities, building on a facilitation process, capacity building, collecting traditional ecological knowledge from fishers, field visits to successfully managed fisheries or MPAs. The issue of full inclusion of fishers has been quoted several times while the process may be driven rather by managers and scientists. In that respect it is necessary that the fishers develop ownership over the process. **More widely the process relies on transparency and dialog. Control and enforcement of the agreed rules is needed to build trust in the process.** It is also important to have a specific and clear objective to encourage participation (such as developing a management plan).



Ostrom's 8 basic principles and key activities to implement

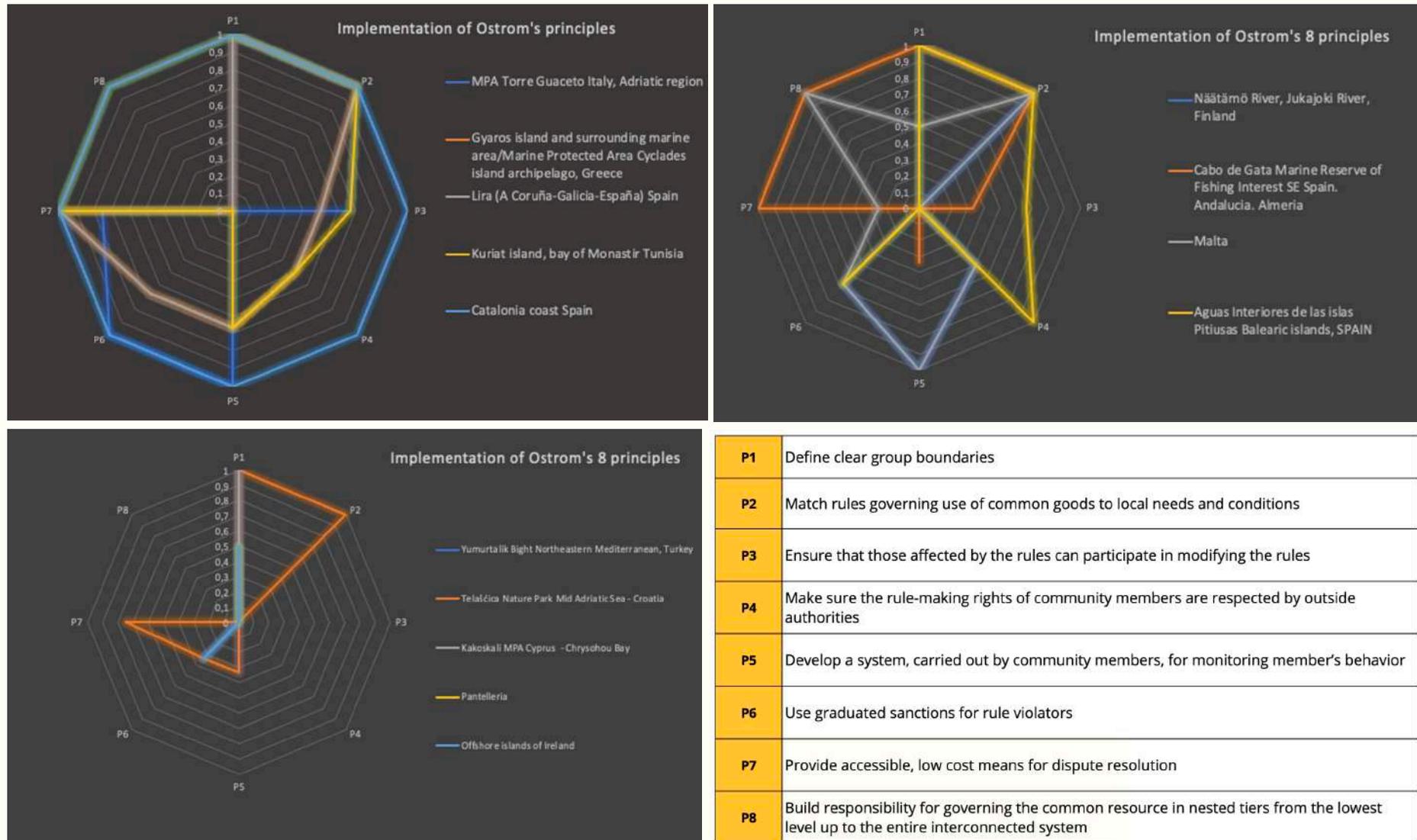


Figure 7. Radar plots of case studies' scores of the Ostrom's 8 principles. On the upper left best scores' cases studies: Catalanian coast (Spain), Torre Guaceto MPA (Italy), Lira (Spain), Kuriat MPA (Tunisia), Gyaros MPA (Greece). On the lower left, medium scores' case studies: Finland, Gabo de Gata (Spain), Malta, Islas Pitiusas (Spain). On the upper right, low scores' case studies: Pantelleria (Italy), Ireland, Turkey, Telašćica (Croatia), Cyprus, Ghanouch (Tunisia)

One of the objectives of the on-line questionnaire was to check how far the case studies were following Elinor Ostrom's 8 principles for managing the commons that do not lead to conflicts, but rather to cooperation. We scored the answers in order to get a quantitative overview of the level of implementation of the different principles (see scoring system in Annex 1).

The above figures demonstrate a high variety of cases among the respondents, with Catalonia really standing out from all the other cases. In general Principle 1 (define boundaries) gets a good score whereas Principle 8 (interconnected system) gets the lowest. Indeed, except for Spain, and in particular Catalonia where co-management is being implemented within a legal framework for the entire autonomous region, co-management still remains an isolated experience being tested or implemented in limited areas. However, it is interesting to note that for both Turkey and Greece, it has been reported that there is a wide willingness from the fishing sector at grass roots level to adopt a global and legal co-management system.

Reflections on synergies between marine conservation and fisheries management and avenues for scaling-up the co-management schemes

Through the various case studies, we have been able to briefly review, we could schematically distinguish 3 categories:

- **Enhanced co-management schemes** as in the cases of Catalonia and Lira, where some formal arrangements have been agreed and are leading to concrete fisheries' management measures at field level, supported by strong participation from fishers, and already benefitting from several years of experience;
- **Places where structures have been put in place but are not yet functional** as in Gokova (Turkey) or Gyaros (Greece), Pitiuses islands (Spain) and Malta. Field work has been carried out, stakeholders have been engaged in a formal collaborative arrangement but measures are

not being implemented yet because of its very recent establishment, some delay or even reluctance from national governments;

- **Informal arrangements relying on active participation from a limited number of stakeholders** as in the cases of Torre Guaceto (Italy), Banyuls (France) where some improved governance arrangements are in place but without formal recognition of a co-management committee.

Strong key factors have been underlined as the dedication of facilitator with local legitimacy, in order to keep the dynamic alive. In some cases, it has been seen that a local scientist, in close contact with the fishing community, could play this role. Leadership within the fishing community is also absolutely key as someone needs to assume and carry the voice of fishers in order to keep the necessary anchor with the reality of at sea fishing practices. We should not forget also that setting and running co-management is time-consuming as participative decision making always takes more time than decision taking by a single manager. Funding should also be made available to run and facilitate meetings and collect the scientific data and fishers' experiential knowledge needed for sound management.

Primary resistance, as is to be expected, is coming from the managers' reluctance of losing their power and sharing the decision-making process. Also, the links between co-management and environmental conservation – though out of this study's scope – do not seem obvious. Various reasons could be evoked, including the limited duration of the co-management arrangement, the actual implementation of management measures but also the relevancy of the area in terms of biological conservation.

If designed over key biological areas, the local management could have a positive impact on the health status of marine resources and ecosystems. By contrast, if failing to cover significant parts of the life-cycle of the marine resources, management systems will not lead to conservation improvements. However even in such cases (e.g. Lira), some improvements in terms of marketing and increased value for seafood has also been noted.

This issue highlights the necessary link between small protected areas and the generally larger fishing areas. In terms of institutional arrangements, it also raises the question of how far the local arrangements are well embedded within the wider managing system (see Ostrom's principle 8).

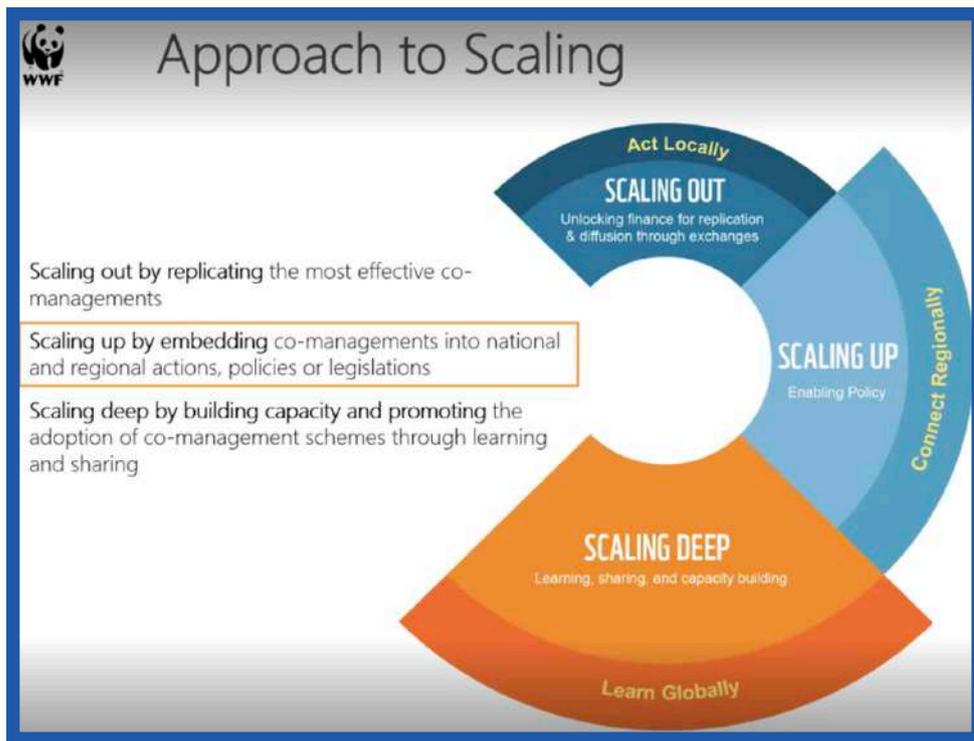


Figure 8. WWF proposed approach to scaling-up co-management

Success hinges on scaling up from small marine protected areas to wider fisheries' management up to national or regional management systems. In order for co-management to make the difference and bring measurable and meaningful answers to the traditional fishing and marine management failures it is probably necessary to scale up local experiences through national and international regulations. As one can see from the initial map, a significant part of the Mediterranean Sea is experiencing local co-management schemes. But we need to move beyond the replicating phase and get co-management embedded in national and regional policies.

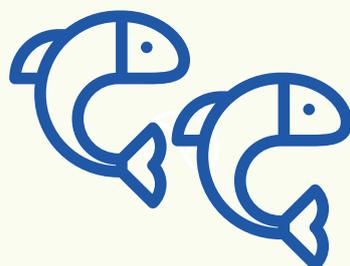
In this context, where there is a need to scale-up co-management, a focus group gathering the various stakeholders and practitioners from both the MPA and the fisheries worlds could be a game changer. Indeed, whereas these two worlds often progress on separate tracks and contribute to different forums and processes, much would be gained from merging their experiences in terms of managing human activity in coastal areas.

All respondents to the online questionnaire agree that the establishment of a specific focus group on co-management "would be interesting and could support enabling these new governance schemes to be a reality

across European countries and Mediterranean Sea basin". There is a strong appetite for such a group to act as a network to document and analyze fisheries co-management experiences. Such a focus group would be a resource center disseminating materials and catalyzing exchanges of experiences and cooperation. The possibility for such a focus group to "develop a shared advocacy strategy to promote the wider implementation of co-management across Europe" also receives strong support from respondents.

From sharing experiences and identifying best practices to developing strong and coherent advocacy efforts, such a Focus Group would most probably help in shifting the marine management paradigm and moving towards the ecosystem approach.





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Annexes

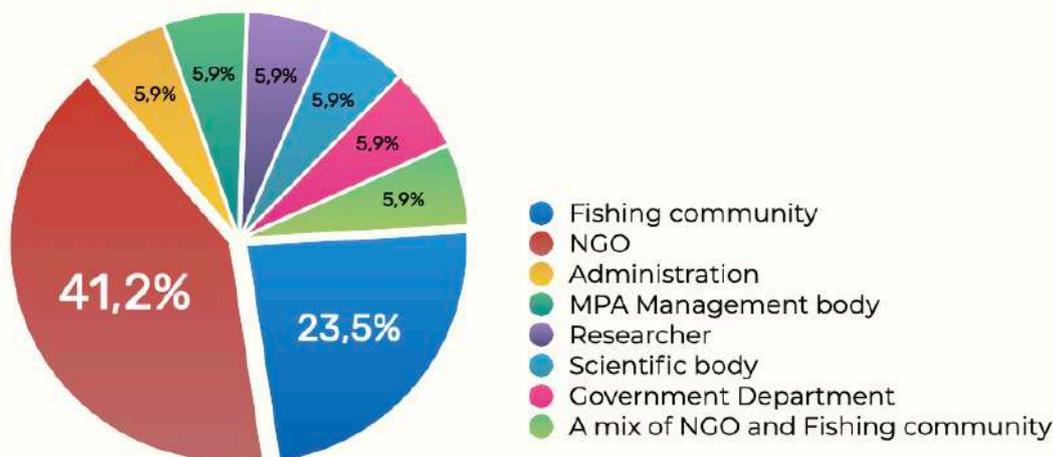
Annex 1: list of respondents and key features of answers to LIFE on-line questionnaire on co-management and improved governance schemes

List of respondents to the online questionnaire

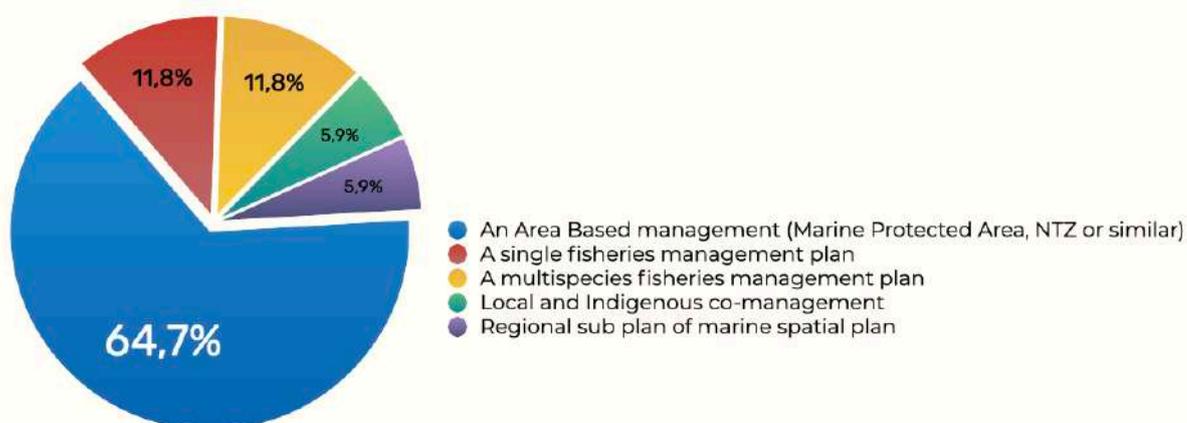
Organisation	Site name	Location
UNIVERSITY OF CATANIA - LIFE	Pantelleria	Pantelleria
Government of Catalonia (Spain)	Spain	Catalonia coast
Snowchange Cooperative	Näätämö River, Jukajoki River	Näätämö River, Jukajoki River, Finland
Hellenic Centre for Marine Research (HCMR)	Gyaros island-Greece /partial MPA	Gyaros MPA Greece (central Aegean sea)
Irish Islands Marine Resource Organisation	n/a	Offshore islands of Ireland
Low Impact Fishers of Europe (LIFE)	Cabo de Gata Marine Reserve of Fishing Interest	SE Spain. Andalucia. Almeria
MPA Torre Guaceto	MPA Torre Guaceto	Italy, Adriatic region
WWF-Turkey	Yumurtalik Bight	Northeastern Mediterranean, Turkey
WWF Adria	Telašćica Nature Park	Mid Adriatic Sea - Croatia
WWF Greece	Gyaros island and surrounding marine area/Marine Protected Area	Cyclades island archipelago, Greece
WWF Italy	Torre Guaceto MPA	Apulia, Italy
Fundacion Lonxanet para la Pesca Sostenible	España	Lira (A Coruña-Galicia-España)
Department of Fisheries and Aquaculture	Malta	Malta
Pancyriot Association Of Professional Fishers Cyprus	Kakoskali MPA	Cyprus - Chrysohou Bay
Low Impact Fishers of Europe	Aguas Interiores de las islas Pitiusas	Balearic islands, SPAIN
Notre Grand Bleu Association	Kuriat island, bay of Monastir	Tunisia
WWFNA	Ghannouch Gabes tunisia	Ghannouch inthe south of tunisia

17 respondents
 2 answers for Torre Guaceto
 2 answers for Gyaros Island

Categories of stakeholders answering the questionnaire



Type of case study site

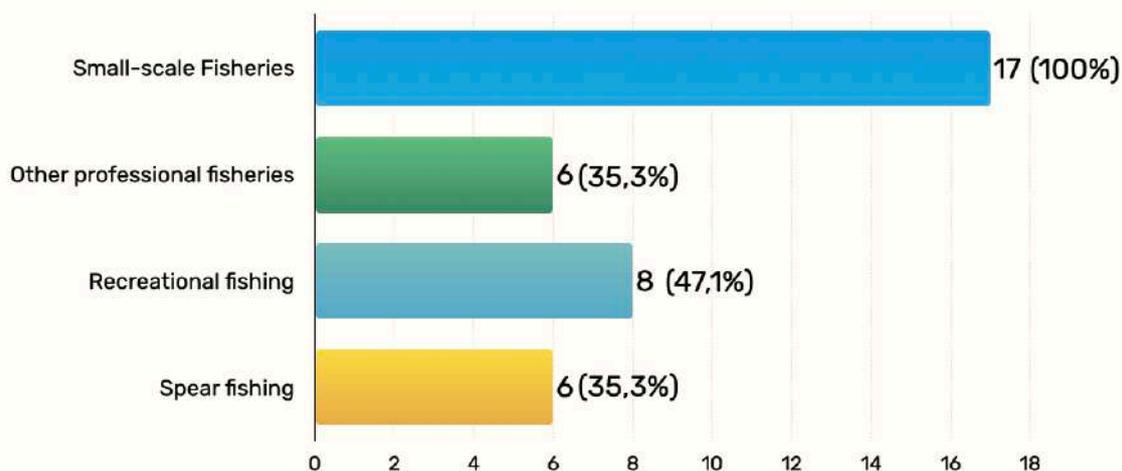


Type of co-management arrangement (following Pomeroy's hierarchy)

Due to the initial formulation of the question, it is not possible to consider all answers on an equal footing because it mixes the category of stakeholders participating and the institutional arrangement. From the last 10 answers we can notice that respondents correspond to different steps of the ladder: from consultation only to co-management.

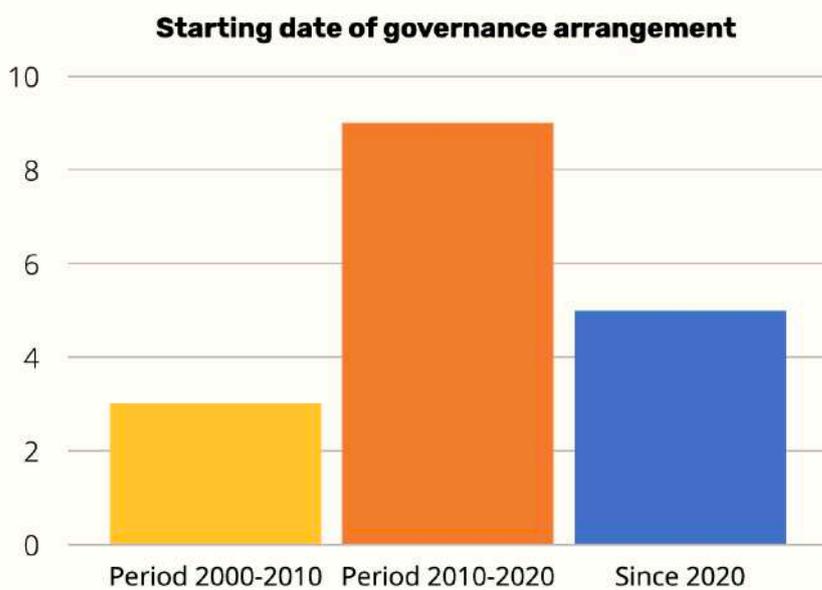
Fisheries regulated within the case study

Small-scale fisheries are being regulated throughout all the case studies, with a minority (8 among 17) also regulating recreational fishing. Other professional fisheries were never addressed in the management system.

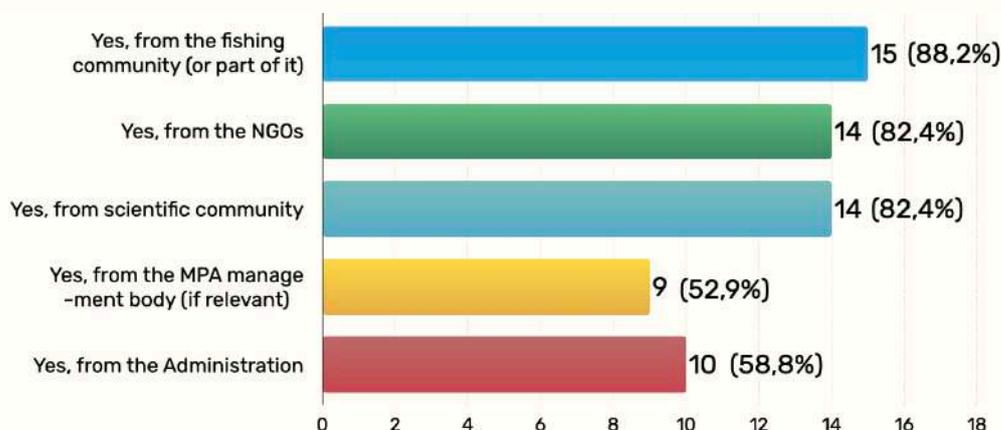


Starting date of the process

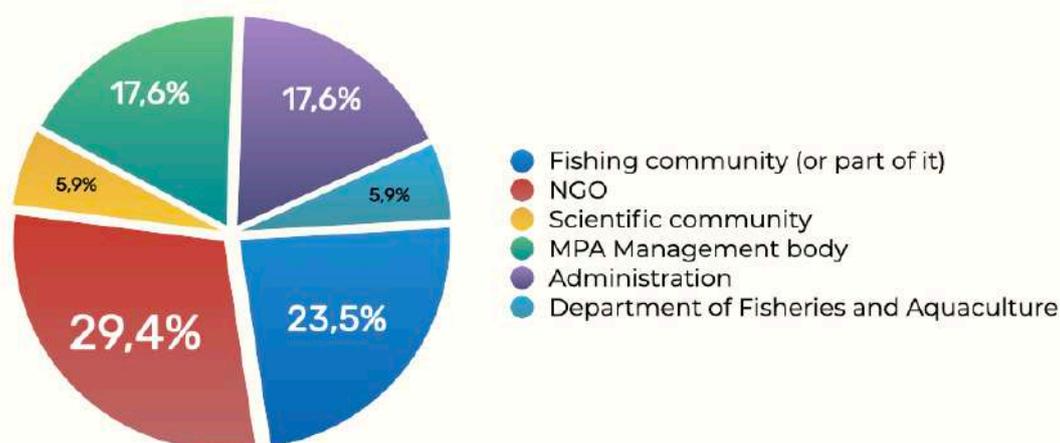
It could be noted that the process started relatively recently: 3 sites began over the period 2000-2010, 9 over the period 2010-2020, and 5 since 2020.



Willingness from the stakeholders to move towards a co-management arrangement



The willingness to move towards co-management is primarily coming from the fishing community but almost equally from NGOs and scientists. In a second phase, the change is also shared by an important number of managers (administration and MPA managers).



As we can see in the graph above, it quite clearly appears that 2 stakeholders' categories in particular (NGO first and the fishing community, 5 and 4 respondents respectively) are leading the process of establishing co-management. Administration and the scientific community comes afterward with 3 respondents for each case.

Main arguments and factors that MOTIVATE the stakeholders in favor a co-management scheme

Most respondents point out a strong willingness of the fishers to have a say and take part in the decision-making process. For the NGOs co-management is a way to be part of the solution and not to remain an outsider, and they are also able to bring other voices to the debate around fisheries' management. For the scientific community, it is also a way for them to be more clearly heard, get access to fishers' traditional ecological and experiential knowledge and get better and real data. For managers, co-management helps to resolve conflicts and to implement management measures more efficiently thanks to a stronger buy-in from fishers.

Key RESISTANCE ideas and factors to NOT move into a co-management scheme

Various **key resistance factors** towards co-management have been pointed out by respondents including the increased workload involved in co-management arrangements, internal conflicts within the fisheries sector that make it difficult for them to come together, the legal framework, the changing habits of both fishermen and managers and the associated reluctance of management authorities to delegate power.

Implemented or potential actions to address such resistance

In the answers to the questionnaire various actions are being reported as helping to move towards improved governance schemes such as controlling IUU fishing, funding facilities, building on a facilitation process, capacity building, field visits to successfully managed fisheries or MPAs. It is also noticed that co-management is a gradual process relying on trust-building and dialogue.

Most important lessons learned

The issue of full inclusion of fishers has been quoted several times while the process may be driven rather by managers and scientists. More widely the process relies on transparency and dialog. Control and enforcement of the agreed rules is

needed to build trust in the process. It is also important to have a specific and clear objective to encourage participation (such as developing a management plan).

Specific objective for the co-management scheme

Answers vary across the respondents with some calling for the establishment of an MPA or No Take Zones, while others refer to developing and implementing a management plan. Some also refer to wider environmental objectives such as rewilding or ensuring good environmental status.

Alignment to Elinor Ostrom’s 8 principles

The eight principles for governing common pool resources proposed by Elinor Ostrom are being used to assess to what extent the case studies are aligned with these principles.

P1	Define clear group boundaries
P2	Match rules governing use of common goods to local needs and conditions
P3	Ensure that those affected by the rules can participate in modifying the rules
P4	Make sure the rule-making rights of community members are respected by outside authorities
P5	Develop a system, carried out by community members, for monitoring member’s behavior
P6	Use graduated sanctions for rule violators
P7	Provide accessible, low cost means for dispute resolution
P8	Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system

Question 24 to 39 can therefore be related directly to these principles according to the following table.

Principle 1	24-Are the geographical and legal limits of the area/fisheries managed easily understood by all stakeholders? 25-Are the stakeholders to be engaged clearly identified?
Principle 2	26-In your case study, are the rules governing the use of common goods, adapted and specific to your local needs and conditions?
Principle 3	27-How do you ensure that those fishers directly affected by the rules participate in modifying the rules? Do you have a structured management body/ committee or such like? And if yes, how is it structured? How does it work? 28-Does the management scheme have full authority to decide on the issue once it has been settled? 29-What are the mechanisms established to ensure legitimacy of the decisions taken?
Principle 4	30-How do you make sure the rule-making rights of community members are respected by outside authorities? Do you have an informal or a formal legal framework that enables co-management? If yes, could you please tell us its law reference?
Principle 5	31-Have you established a system to monitor the evolution of the fishery and efficiency of management decisions? 32-Have you developed a system for monitoring the stakeholders' respect for the co-established rules or to monitor management social acceptance? 33-Do you consider there is "adaptive management" being done in the case study?
Principle 6	34-Has there been any formal/informal social control to those breaking the rules set in the community? (Selling the last in the auction, reputational consequences, request of directed inspections, etc.) 35-Has there been a request from the fishers involved to further improve control and its efficiency? 36-Has the co-management body has power to set any sanction or concrete measure to those not complying with the agreements set?
Principle 7	37-When there has been a "conflict" that falls in the competence of the (co-) management scheme, has the (co-) management body been able to manage such conflict? 38-If the previous answer is yes, have you managed to resolve it through consensus and avoid voting systems for example?
Principle 8	39-Is your case study part of an interconnected array of co-management decision-making bodies which operate collectively or do you think it is (still) quite isolated?

We put scores for each question individually: 0, 0,5 or 1. 0 corresponds to a negative answer, 0,5 to a somehow intermediate or incomplete achievement, 1 to a positive answer. The score for each principle corresponds to an arithmetic sum of the different scores in order to give equal weight to each principle.

		P1	P2	P3	P4	P5	P6	P7	P8	TOT
Pantelleria	Pantelleria	0,5	0	0,0	0	0,0	0,0	0	0	0,5
Spain	Catalonia coast	1	1	1,0	1	1,0	1,0	1	1	8,0
Näätämö River, Jukajoki River	Näätämö River, Jukajoki River, Finland	1	1	0,0	0,5	1,0	0,7	0	0	4,2
n/a	Offshore islands of Ireland	0,5	0	0,0	0	0,0	0,3	0	0	0,8
Cabo de Gata Marine Reserve of Fis	SE Spain. Andalucia. Almeria	1	1	0,3	0	0,3	0,0	1	1	4,7
MPA Torre Guaceto	Italy, Adriatic region	1	1	0,7	0	1,0	1,0	0,75	0	5,4
Yumurtalik Bight	Northeastern Mediterranean, Turkey	1	0	0,0	0	0,3	0,0	0	0	1,3
Telašćica Nature Park	Mid Adriatic Sea - Croatia	1	1	0,0	0	0,3	0,3	0,75	0	3,4
Gyaros Island and surrounding mari	Cyclades island archipelago, Greece	1	1	0,5	0,5	0,7	0,7	1	0	5,3
España	Lira (A Coruña-Galicia-España)	1	1	0,5	0,5	0,7	0,7	1	0	5,3
Malta	Malta	0,5	1	0,0	0,5	1,0	0,7	0,25	1	4,9
Kakoskali MPA	Cyprus - Chrysohou Bay	1	0	0,0	0	0,0	0,3	0	0	1,3
Aguas Interiores de las islas Pitiusas	Balearic islands, SPAIN	1	1	0,7	1	0,0	0,7	0	0	4,3
Kurilat island, bay of Monastir	Tunisia	1	1	0,7	0,5	0,7	0,0	1	1	5,8
Ghannouch Gabes tunisia	Ghannouch inthe south of tunisia	0,5	0	0,3	0	0,3	0,3	0	0	1,5
AVERAGE		0,87	0,67	0,31	0,30	0,49	0,44	0,45	0,27	3,79

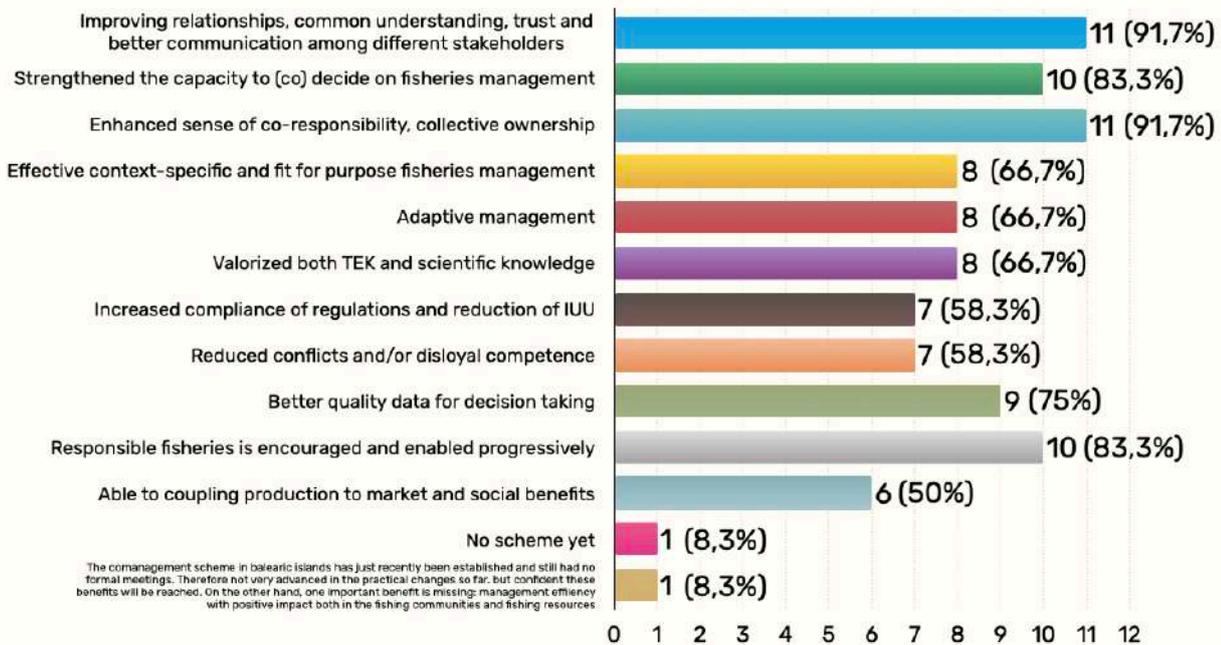
The case studies have then been grouped following their total scores and we are proposing 3 categories:

- Best performing case studies: Catalanian coast (Spain), Torre Guaceto MPA (Italy), Lira (Spain), Kuriat MPA (Tunisia), Gyaros MPA (Greece);
- Medium performing case studies : Finland, Gabo de Gata (Spain), Malta, Islas Pitiusas (Spain);
- Low performing case studies : Pantelleria (Italy), Ireland, Turkey, Telasciça (Croatia), Cyprus, Ghanouch (Tunisia)

In General – except the notable exceptions of Catalonia and Tunisia – all case studies got a poor score for principle 8, corresponding to the fact that co-management remains an isolated experience which is not interconnected with the wider institutional system. ON the contrary the score for principle 1 is high partly due to the fact that case studies have been defined geographically, often corresponding to MPA boundaries.

Whereas the score for principle 2, corresponding to measures being adapted to local needs, being quite good, participation (Principle 3) is quite weak as is principle 4 (rulemaking rights). Principles covering the issues of control and enforcement (principles 5, 6, and 7) have received average scores.

Benefits from co-management



Only 11 respondents actually replied to this question. Most proposals make sense for respondents though some almost grasp unanimity such as “**improving relationships**”, “**strengthen the capacity to co-decide**”, “**enhance co-responsibility**” and “responsible fisheries is encouraged”. It clearly appears that co-management schemes all play on a shift within the relationships that existed between the stakeholders before.

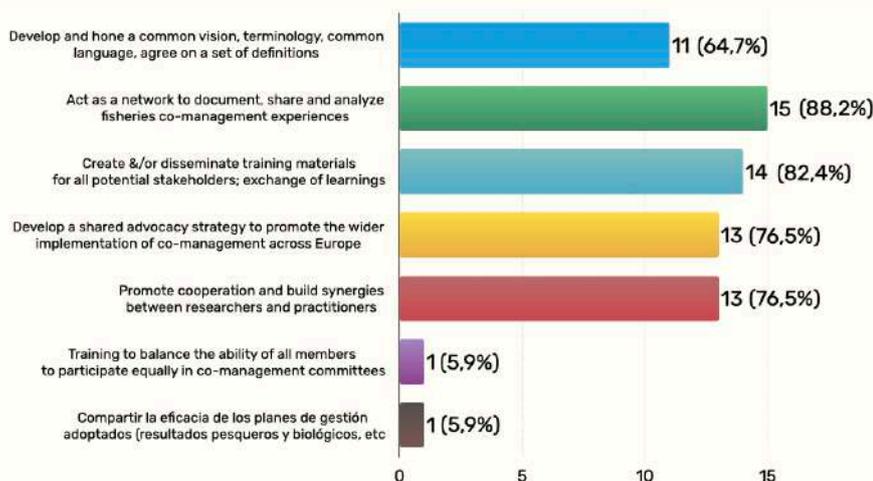
The other proposals also make sense for most of the respondents and it reinforces the usual benefits from co-management: “adaptative management”, “valorize TEK”, “increased compliance”, “reduce conflicts”, “better quality of data”. Yet the proposal that co-management is “able to better coupling production to market and social benefits” grasped less answers.

Challenges of co-management



From the same respondents that before actually answered this question, three proposals appear to grasp a wide majority: co-management takes time and effort, there is often a lack of political will to delegate power, there is a need to further controls (so that the efficiency of the management measures is not undermined by illegal activities).

Actions to implement to address challenges



While being asked on the actions needed to address these challenges, the same 11 respondents insisted on the need for a legal framework and the fight against IUU. Such answers confirm once again that co-management would not work if it were not supported by public authorities. Also, increased training in co-management of all those involved in fisheries management has been referred to recurrently in different ways.

Relevance of a focus group on co-management

All the 17 respondents agree that it “would be interesting and could support enabling this new governance scheme to be a reality across European countries and the Mediterranean Sea basin.”

There seems to be a strong appetite for such a group to act as a network to document and analyze fisheries co-management experiences. Such a focus group would be a resource centre creating &/or disseminating materials and catalyzing exchanges of experiences, capacity building and cooperation.

The possibility for the group to “Develop a shared advocacy strategy to promote the wider implementation of co-management across Europe” also receives strong support from respondents.

Annex 2: Interviews guidance, list of inter- viewees and key features from the semi- directed-interviews

Interview guidance

Snapshot of your case study

- Could you briefly describe the specific area/fisheries we are going to discuss? (Area, geo-morphology, professional and recreational fishers...) What % of the fishing area is your site covering?
- What are current fisheries' management tools in place in your area? (Quotas, spatial and/or temporary measures, technical measures)
- How would you qualify social cohesion within the fishing community in your area? (weak/individualistic, some collaboration, strong)

Process to establish fisheries' management measures in your area

- What kind of concrete fisheries' management rules have been set? What triggered the establishment of these rules?
- Could you describe the process through which they have been established? Could you identify any specific leadership that is helping to move the process?
- Is there any kind of monitoring? Are there any control and enforcement mechanisms to ensure these management measures are effectively implemented?
- How effective have these measures been up to now?

Institutional arrangements

- Could you briefly clarify the institutional arrangement in your country/region?
- Did you set-up any specific board/council to establish fisheries' management measures in your area?
- Which partners are participating in the establishment of fisheries' management measures?

List of interviewees

Jordi Rodon (Generalitat de Catalunya) - SPAIN
Francesco de Franco (Torre Guaceto) - ITALIA
Antonio Garcia Allut (Lira) - SPAIN
Antonis Petrou (Pancypriot Association of Professional Fishers in Cyprus) - CYPRUS
Spyros Kotomatas (WWF Greece) - GREECE
Amjed Khiareddine and Ahmed Benhmida (Notre Grand Bleu Association) - TUNISIA
Seamus Bonner (IMRO) - IRELAND
Antonio Grau (Govern de les Balears) - SPAIN
Frédéric Cadene (Réserve de Banyuls) - FRANCE
Antoni Font Gelabert (Fundació Marilles) - SPAIN
Vahdet Unal (Marine Conservation Society) - TURKEY
Lionel Bezile (Prud'homme de Hyères-Porquerolles) - Parc National de Port-Cros - FRANCE

Key features from the interviews

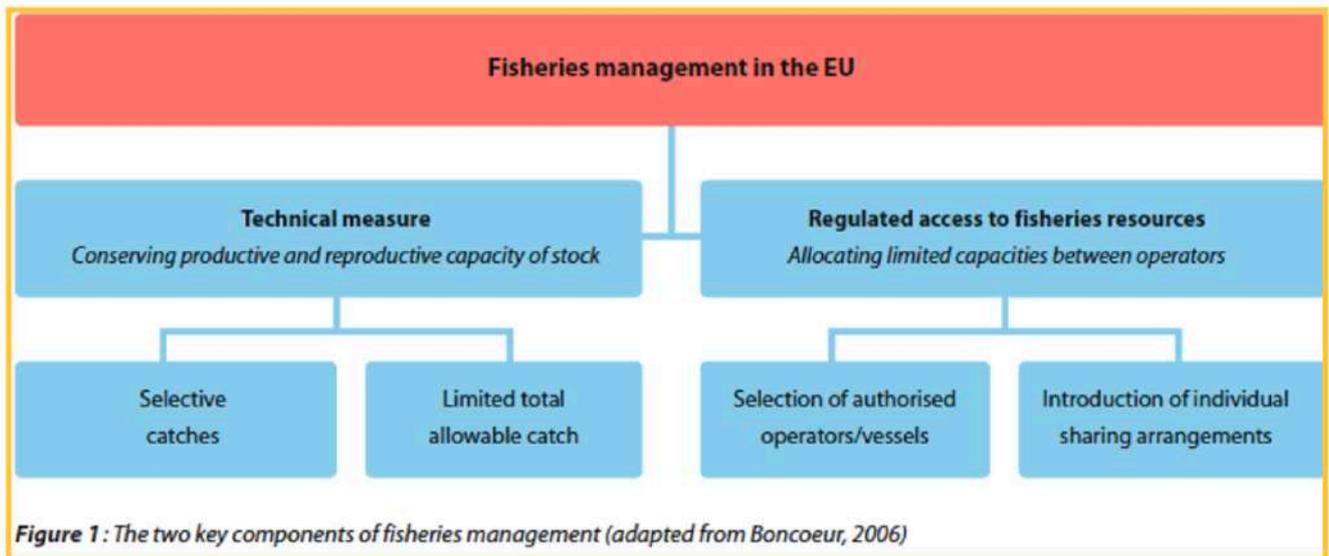
Snapshots of the case studies

The case studies vary from rather small MPA (380 ha for Cyprus' MPA) to large bay (Gokova: 82 700ha), from 5 professional fishing boats to 100.

In terms of fisheries management measures, there are no quotas except for the Catalanian sandeel fishery where catch limit is being decided. However, there are various technical and conservation measures applying to manage fisheries such as on gears (for example mesh size increase in Torre Guaceto), on fishing effort (number of days in Torre Guaceto also) or in space (closures as for Lira's reserve).in Rigaud et al., 2018

AS for social cohesion, the situation is also very variable but some lines are splitting the fishing community as conflicts between fishing gears, or conflicts between active and retired

fishers. However, through the participatory mechanism it has forced fishers to try and speak through a more unified voice. Where relevant yet, there is not much or none dialog between users as with recreational fishers or spear fishers.



Process to establish fisheries' management measures

It is interesting to note that various successful examples (Lira, Banyuls, Torre Guaceto, Malta) are in the way of extending their area of competency thanks to the positive results they have obtained and the interests they have raised.

It can also be noted that the move to more participative arrangements have **reinforced the role of local associations of fishers as they are able to organize dialog and propose unified positions** from the fishing sector.

In terms of monitoring, control and surveillance we have also noticed variable situations. In Catalonia the government has pushed for the creation of an autonomous institute for the governance of the sea. In Torre Guaceto, fishers are assuming the monitoring themselves and it has always been part of a deal where they assume this task in order to keep the right to access the area. Control is a widely shared concern and different sites are using dedicated patrols or rangers as for Gokova bay or Gyaros MPA, where modern

technological means as radar and drones are enabling a full and permanent surveillance of the area (see the following <https://www.youtube.com/watch?v=vxwXV6d5drQ> for further information). However, in this last site, because of insufficient coordination between administrations, fishers are now authorized to fish without the special license that was developed for the MPA and encompasses specific technical conservation measures. Interesting also to mention that insufficient scientific monitoring could be compensated by traditional ecological knowledge.

Data collection however it has been noted that it still remains an issue and remote electronic system such as ABALONE app, VISIO CAPTURE in France, or the use of the green box (obligatory to have access to the Pitiuses islands in the new regulation from the Balearic Islands) offer adequate technical solutions.

In many sites that have been considered during the interviews', existing regulations are still old and have not been able to maintain the number of fishing boats in the last decade. There are few examples of increase in yields such as for Torre Guaceto but before the COVID crisis as the crisis has let illegal fishing operate and undermined the benefits of the protection of the area. Impacts on products' prices have been more regularly quoted as in Lira, Catalonia for the sandeel fishery or Torre Guaceto.

Institutional arrangements

In all the countries where the case studies have been selected (Tunisia, Turkey, Greece, Cyprus, Italy, France, Spain) the fisheries' management system is centralised even if for Spain, autonomous regions (as Catalonia) do have specific competency when it comes to internal waters and shellfish harvest.

In this legal framework, it is therefore easy to understand the relevance of MPA to experiment new forms of management as they do have some delegated competency in a specific area.

In France also, it should be noted that Producers' Organisations and the regional fisheries committee do have delegated competencies from the state but it would even

overcome the strict definition of co-management and look more as self-management by representatives of the fishing sector.

Beyond the arrangements, the role of human relationships have also been underlined with an additional difficulty when administration is facing high turn-over of their staff who cannot invest sufficient time to participate in these processes which require personal investment over a relatively long period (3 to 5 years).

Formalized co-management bodies have been set in different case studies:

- Lira, 8 people: 4 fishers, 4 from the administration;
- Catalonia, 8 people: 2 fishers, 2 from the administration, 2 scientists, and 2 NGOs;
- Gokova Bay, 8 people: 1-2 from the administration, 2 scientists, 3 fishery cooperatives' presidents, 1 coast guard, 1 NGO);
- Gyaros, 15 people: (Ministry of Environment & Energy, Ministry of Maritime and Island Policy (Hellenic Coast Guard), Ministry of Culture, Decentralized Administrative Authority of the Aegean, Regional Government of South Aegean, Municipality of Syros, Municipality of Andros,, Association of professional fishermen of Syros, Association of professional fishermen of Andros, Cyclades Chamber of Commerce, Hellenic Centre of Marine Research, Natural History Museum of Crete, Mom/Hellenic Society for the Study and Protection of the Monk Seal, Development Company of Local Authorities of Cyclades and, WWF Greece

It has been mentioned in different interviews that it is key to have representatives of the local users and be well anchored in the local community.

