

Marine Protected Areas

A Tool to Manage Sustainable Use and Conservation in Large Marine Ecosystems

**LME: LEARN
POLICY BRIEF**

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Context and importance of the problem

Marine Protected Areas (MPAs) come in many forms and with varying levels of protection and use. They include marine reserves, fully protected marine areas, no-take zones, marine sanctuaries, ocean sanctuaries, marine parks, locally managed marine areas, and many more. MPAs can be protected for a number of reasons including economic resources, biodiversity conservation, and species protection. They are created by delineating zones with permitted and non-permitted uses within that zone.

A wide variety of types of MPAs and related policy frameworks have been developed to conserve and sustainably use coastal and marine resources and ecosystems. Globally, 7.5% of the ocean are covered by MPAs with 39% of these in national waters and 61% in Areas Beyond National Jurisdiction (ABNJ) (IUCN 2019). Degradative pressures that MPAs are often brought in to address and manage are invasive species, negative impacts of land-based activities, unsustainable exploitation of fishery resources, environmental destruction for resource exploration/extraction, climate change and tourism. The overarching goals for MPAs can be thought of as related to conservation and/or to sustainable use (Table 1). The goal in many MPAs is to practice both in a workable, but limited, spatial scale and they should not be considered separately but as a combined conservation and socioeconomic set of goals.

Table 1:

Examples of conservation and sustainable use goals for MPAs (Roberts, Andelman *et al.* 2003), which should be considered in parallel.

Conservation goals typically include:	Sustainable use goals include:
1. Biodiversity conservation	1. Managing fisheries for sustainable use and resilience of fish stocks
2. Conservation of rare and restricted-range species	2. Recreational activities and traditional connections
3. Maintenance of genetic diversity	3. Education and engagement
4. Maintenance and/or restoration of natural ecosystem functioning at local and regional scales	4. Research
5. Conservation of areas vital for vulnerable life stages	5. Fulfilling aesthetic needs

[illegible]

Figure 1:
Locations of Big Ocean protected reserves (Big Ocean, 2019)

MPA design and designation has traditionally focused on scientific knowledge of marine ecology and processes. More recently the importance of social science is considered not only relevant, but crucial to MPA planning (Christie et al. 2002). In the best-case scenarios, scientifically derived information about ecology, demography, resource uses, market demand, and socio-political and legal feasibilities is coupled with local or traditional knowledge (Johannes et al. 1999) and community involvement, to develop robust frameworks for MPA design. Marine management and effective MPA implementation in national waters will not be effective without the inclusion of land-based pressures. Currently, more than one-third of the world's population lives within 100 km of the coast or estuaries and approximately 50 million people move into these coastal zones each year (GEF n.d.). Integrated Coastal Management (ICM) is an approach to manage a defined coastal area such as the Large Marine Ecosystem (LME). ICM understands the coast as a complex and dynamic system that encompasses many interactions between people and ecosystems. It recognises the need to manage the coast as an integrated whole. Further, it is an ongoing process of formulating, implementing and refining a comprehensive and holistic vision of how humans should interact in an ecologically sustainable manner with the coastal environment (FAO n.d.). Applying MPA as a tool within the wider ICM management and

A large school of fish, possibly sardines or anchovies, swimming in clear blue water. The fish are densely packed in the center and spread out towards the edges, creating a dynamic pattern of movement. The water is a vibrant turquoise color, and the lighting suggests a bright, sunny day.

Critique of Policy Options

MPAs are most effective when designed as a network rather than individually. The choice of network design depends entirely on the overall goal of conservation, fisheries, or a combination of both. The most common two goals are: (1) representative MPA systems, i.e. networks of MPAs designed specifically to protect threatened species, and (2) networks of fisheries reserves aimed at enhancing management of commercial fisheries. Design of the network should consider the resilience of the wider-system and redundancy of representation, where possible, to build in flexibility as needs and conditions change. Building adequate redundancy into a representative system ensures that the precautionary principle is being put into practice and creates an MPA network that is more resilient to future pressures and conditions. True networks are formed when MPAs are physically linked to each other by physical processes such as currents or by biotic processes such as migration and nutrient cycles. However, networks can also be formed virtually, through a coordinated initiative in which all agencies and institutions have the same common goal. LMEs offer both of these network traits and are the ideal scale to implement MPAs for conservation and sustainable use goals.

When successfully implemented, representative MPA systems act to conserve biodiversity at the habitat level. This can contribute to biodiversity conservation in indirect ways. When an area receives a designation as a special area (i.e. marine park, marine protected area, biosphere reserve, etc.), the importance of that place is highlighted and grows in the minds of decision makers and the public. This in turn can contribute to the growth of political will to address issues that affect the special area indirectly, such as land-based sources of pollution, destruction of linked critical habitats, decreasing freshwater flows, increased sedimentation loads in rivers, all of which are essential for effective ICM. The flagging of an area as having special importance can contribute to better ICM of the wider area and vice versa, and thus safeguard the biological diversity and ecosystem processes within the area. Conversely, declaring an area as an MPA can act like a draw for visitors (especially if it is identified as a special place on a map), and an increase in visitation following greater publicity may necessitate a far greater level of management.

No-take MPAs can provide invaluable control sites for understanding marine and coastal ecology and human impacts on that ecology. Such areas provide reference sites to allow quantification of human impacts that allow measurement of the impacts of fishing or other extractive activity. This increased understanding can then be harnessed to develop future management regimes that more adequately protect marine biodiversity and inform sustainable fishing practices.

MPA failures can often be attributed when rules and regulations are simply enforced on the local community instead of getting the community involved in supporting the protected area. This can be especially the case when MPAs are viewed as being imposed on locals by the nation's politicians or international agencies who have not set foot in their community. The shift in recognition of the need for both ecological and the social science surveys in MPA design should see this path to failure less common in the future. Importantly, as with the uniqueness and variety of the ecosystems being protected, there is no standardised social science approach and the unique livelihood activities, cultural and religious connections need to be identified. The role of women in the communities and their knowledge and needs must be identified alongside community-wide consultations where information received may not be gendered and reflective of the needs of women in society.

Attempts to limit access to these resources, especially fishing rights, has the potential to disrupt the socio-economic stability of coastal communities and result in conflict among user groups with competing interests over the same limited resources. Regular engagement and outreach sessions with local communities should be held in order to identify and address these problems in both the design and implementation stage of MPA. When communities are involved in the implementation of the MPA this avenue of communication already exists. Compromise between conservation and fisheries goals is often needed in highly populated areas where access restrictions will not become a reality without significant engagement and support of the local communities. The role of women in the communities should be assessed during the MPA empirical data collection phase alongside ecological, socio-economic, hydrological and governance data.

MPAs within ICM and ABNJ frameworks

Effective and coordinated marine management cannot be undertaken through implementation of MPAs alone. For MPAs to be most effective their inclusion as part of a broader effort of marine planning and management should be considered at a strategic policy level. Taking a regional approach using the LME is beneficial as the marine system is not constrained to national borders. The LME boundary offers a clearly defined ecological system and bordering countries. Further, LMEs connect ABNJ with physical coastlines worldwide (Figure 2), thereby allowing an integrated approach between both national waters and the Open Ocean.

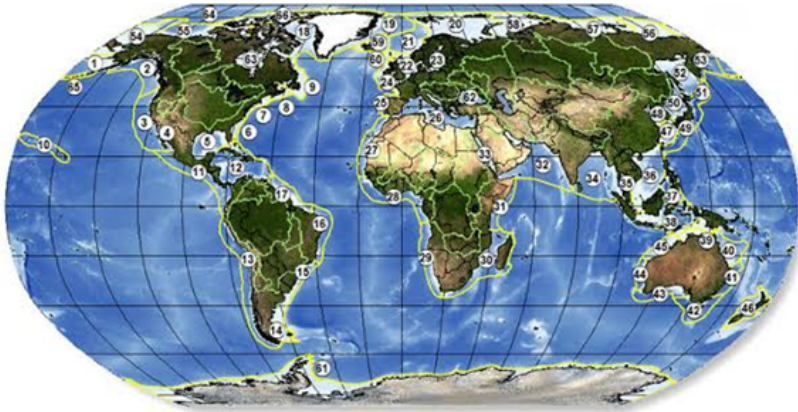


Figure 2: The 66 Large Marine Ecosystems of the world showing their bridging of the open ocean and the worlds' coastline. For 66 LME names see online at <http://lme.edc.uri.edu/index.php/lme-introduction>.

At a global level, MPAs that are cognizant of both the biodiversity and economic services offered by ABNJ and BBNJ have an important role to play in the changing global ocean. Namely, to manage the increasing degradative pressures on the world's ocean and ensure that the natural, ecological and economical systems of the ocean are maintained and managed in a coordinated manner. Large-scale MPAs (> 240,000 km²) play a central role in this and there are ecological, economic and policy benefits of very large-scale MPAs

(Toonen et al. 2013). While driven by the Convention on Biological Diversity (CBD) Aichi Biodiversity Target 11 of having 10% of the world's marine waters protected by 2020, there is a major role of large MPAs to play for fish stock management and global food security. The Big Ocean network was established on the 20th anniversary of the CBD with the ambitious target of increasing the area of global ocean designated as an MPA from 1% to 10% between 2010-2020. Large-scale MPAs contain some of the most intact and least impacted ecosystems left on the planet (Halpern et al. 2008), and protecting them now before they are actively targeted makes sense. These areas play a predicted major role in achieving the Aichi 11 Target (Figure 3). In contrast, most of the small and coastal MPAs are co-located in areas of high human population pressure, and therefore face massive problems in terms of effectiveness even when set up as completely no-take reserves. Consequently, there is no single, preferred way forward and the best approach for the future of the oceans and those who depend on it will require both large and small MPAs.

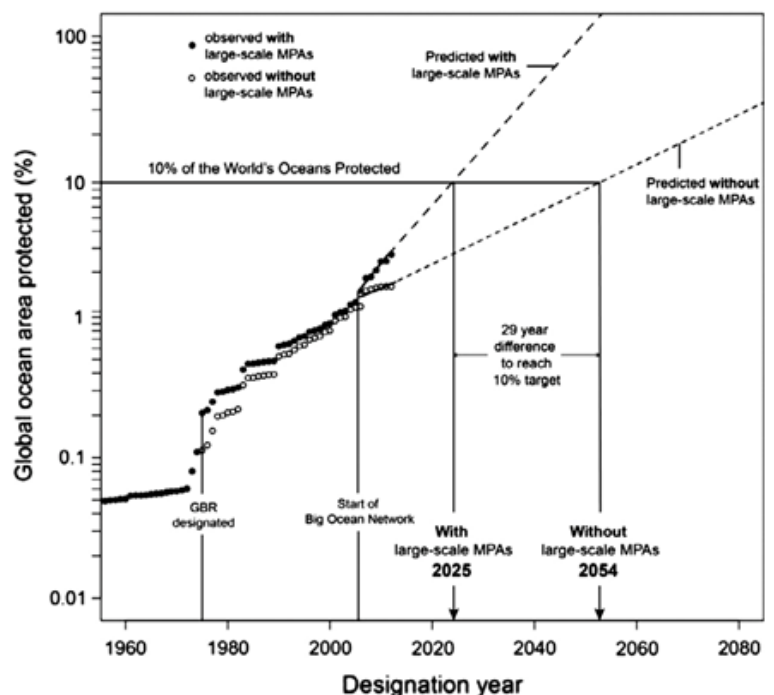


Figure 3: Projection of the annual rate of increase of global marine area protection (Toonen et al. 2013) showing the role of large MPAs in achieving global conservation target of 10% of marine waters protected

When planning an expansion or designation of an MPA, it is important to consider that the term MPA is widely used but has many different variations in meaning (Box 1). The goals for both conservation and sustainable use should be clearly defined and the most appropriate term and management approach chosen. Because of the historically protectionist approach to conservation, which designated areas for exclusion of human activities (on both land and sea), it must be clear what the MPA is set to achieve and what the benefits are. This requires that transparent and open dialogue as to what management actions and restrictions will be put in place. Engagement of the local communities and institutions in the management and monitoring of small-scale coastal MPAs is important for acceptance and to avoid “paper parks” whose regulations are neither respected nor enforced. The local engagement should be communicated within the broader context of ICM and the regional approach being taken with LME partner countries. This then allows for MPAs in national waters to be recognized as part of a patchwork of varying jurisdictions of management in the marine environment.

Box 1: Protected Areas

The term ‘Marine Protected Area’ (MPA) and Marine and ‘Coastal Protected Area’ (MCPAs) are widely used around the world but its meaning in any one country or region may be quite different from that in others. There are many terms related to MPA. These include SPA (Specially Protected Area), SCA (Special Conservation Area), MCZ (Marine Conservation Zone sea type of MPA in English waters), MR (Marine Reserve), MP (Marine Park), NTZ (No Take Zone) (or closed area in fisheries management) and ASCC (Area of Special Conservation Concern). Each of these terms has specific types of restriction associated with them as defined by the laws of the countries concerned (Paterson et al. 2013).

The IUCN defines a protected area as:

... a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (IUCN 2012)

If this definition is used it is difficult to both utilise fisheries resources in the protected area and meet the conservation requirements for a marine protected area classification. The long-term goals of conservation and perceived or actual inability to extract resources, fisheries or otherwise, in MPAs can be a deterrent for government to declare MPAs. The CBD supports MPAs as a conservation tool but also recognises that current sectoral approaches to the management of marine and coastal resources have not always been successful in conserving marine and coastal biological diversity. It is now better understood that a multisectoral approach such as ICM is needed to

design, develop and implement multiple-use, systems-oriented modes of management. This is needed to meet both effective conservation targets and the sustainable use of marine and coastal living resources.

ICM, and similarly-termed approaches such as Integrated Marine and Coastal Area Management (IMCAM), Integrated Coastal Zone Management (ICZM), is a participatory process for decision-making to prevent, control, or mitigate the adverse impacts from human activities in the marine and coastal environment and to contribute to the restoration of degraded coastal areas. These involve all stakeholders: decision-makers in the public and private sectors; resource owners, managers and users; non-governmental organizations; and the general public. Community-based management approaches have proven particularly important. Integrated management programmes have already demonstrated their potential as an effective tool in developed and developing countries around the world. The adoption of a broad ICM multisectoral approach at the LME-level allows for effective MPA designation and management at a regional level. This is doubly effective as the LME scale connects with both the local stakeholders and creates a meaningful interface with the fisheries, economic and cultural benefits offered by the Big Ocean approach and BBNJ protection efforts. Clearly, the best hope for the future of the oceans includes both large and small MPAs.

Policy Recommendations

In order for MPAs to succeed in meeting the objectives of conserving habitats and protecting fisheries and biodiversity, management of these areas should address the known and anticipated threats and pressures. In most coastal habitats and LMEs around the world, the threats are multiple and cumulative over time. Policy recommendations to implement MPAs to manage sustainable use and conservation in LMEs are:

- Take a network approach to MPAs that considers the spatial distribution and connectivity of areas important for conservation and fisheries needs as well as existing protected and/or managed areas.
- Engage with local communities and institutions to ensure that the reason for the MPA, the type of restrictions and what they are for, the broader benefits and their role in the national and regional collaboration are communicated.
- Actively bring the needs of women, their roles and relationship with the areas in question into the design and implementation of MPAs during community consultations.
- Design to preserve at the habitat level and build in adequate redundancy of habitat representation at a national/regional scale to create resilience in the face of uncertainty.
- Embed MPAs within ICM, or a similar multisectoral management approach, at the national level to facilitate a participatory process for decision-making and manage land-based pressures on the marine environment.
- Coordinate national MPAs and ICM at a regional level to effectively manage the ecology and fisheries at an LME scale.
- Coordinate the regional LME MPA network with large MPAs in ABNJ to report on the contribution and benefits of the global MPA system to regional MPA networks and vice versa.

Case Study: Mediterranean Sea Large Marine Ecosystem

This GEF LME project assisted Mediterranean riparian countries in the setting up of an ecologically coherent network of MPAs in the region. This was achieved by the identification and characterisation of marine sites suitable to become MPAs. Acceptance and support for MPAs was facilitated through demonstration projects for MPA creation and planning, including stakeholders' participation and financial sustainability mechanisms. As is essential for effective MPA design, a regional approach was implemented through the Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (MedPartnership). One of the objectives of the MedPartnership was to implement the Strategic Actions Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP-BIO). This saw a collective effort of leading environmental institutions and organizations together with countries sharing the Mediterranean Sea address environmental challenges faced by marine and coastal ecosystems in the Mediterranean.

Before MedPartnership many MPAs across the Mediterranean were "paper parks" that were insufficiently managed. In the southern and north-eastern Mediterranean this exacerbated due to staff shortages and shortfalls in equipment and resources (Abdulla et al. 2008). The Mediterranean had established the Regional Activity Centre for Specially Protected Areas (RAC/SPA) under the Barcelona Convention in 1985. This provided a coordination body to provide support to Mediterranean countries in identifying and characterising marine and coastal sites suitable to be declared as MPAs. Demonstration cases in preparing management and zoning plans for MPAs were also prepared and such activities contributed to the global (Convention on Biological Diversity) and regional (Barcelona Convention and its Protocol concerning Specially Protected Areas and Biological Diversity) objectives, stating that by 2020, at least 10 per cent of coastal and marine areas are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas (Aichi Target 11).

Leveraging the international and regional biodiversity objectives, new MPAs were established based taking into account both the ecological and socioeconomic contexts of the concerned areas. This multidisciplinary approach allowed draft management and zoning plans to be developed in a participative manner with all the concerned stakeholders, including government agencies, NGOs, local community groups, local communities, scientists and other resource management agencies. The management plans were produced and



validated during local public workshops, taking into account both conservation objectives and a requirement that the MPA is integrated and compatible with its economic and social environments.

This approach has led to the declaration of seven MPAs (totalling a surface of 98,411 ha of marine waters), which are: Porto Palermo (Albania), Réghaia (Algeria), Ras Chekaa, and Naqoura (Lebanon), Ain Al- Ghazala and Bomba Gulf (Libya), Cap des Trois Fourches (Morocco) and Kuriat Islands (Tunisia). The coordinated regional partnership allowed the identification, listing and ecological characterisation of 24 priority areas of conservation interest in Croatia, Lebanon, Morocco and Montenegro. It provided support for the inception, ecological and socioeconomic characterization, zoning and management planning of four new MPAs in Albania (Porto Palermo), Algeria (Réghaia), Morocco (Cap des Trois Fourches) and Tunisia (Kuriat Islands). Prior to this, the identification and selection of marine sites suitable to be declared as MPAs by the Mediterranean countries were focussed on ecological criteria, whereas it proved key to introduce social and economic criteria into MPA selection schemes.

Once the MPAs had been established, their effective management and operation needed to be ensured and made sustainable. MedPartnership achieved this through coordinated technical assistance and capacity building activities at the LME-level. These were to improve MPA management provided through regional and national training workshops, on-the-job training, small-granted projects, and technical tools and teaching packages. Capacity building and training activities implemented within the project allowed enhancing the capacities of 600 MPA managers, practitioners and other stakeholders from the participating Mediterranean countries.

This case study provides a prime example of the benefits MPAs offer for sustainable use of marine resources and the benefits of aligning biodiversity conservation measures with socioeconomic considerations. Transparency from the national level to the local community and multisectoral involvement in drafting the management plans were essential to inform of the reasons and benefits of an MPA network. Communication and sharing of knowledge at the regional level ensured that broader benefits to the region and between countries were taken into account and both biodiversity goals and socioeconomic wellbeing were coordinated.

Note: This case study has been written based on information taken from the MedPartnership Experience Notes.

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GEF LME:LEARN

GEF LME: LEARN is a program to improve global ecosystem-based governance of Large Marine Ecosystems and their coasts by generating knowledge, building capacity, harnessing public and private partners and supporting south-to-south learning and north-to-south learning. A key element of this improved governance is main-streaming cooperation between LME, MPA, and ICM projects in overlapping areas, both for GEF projects and for non-GEF projects. This Full-scale project plans to achieve a multiplier effect using demonstrations of learning tools and toolboxes, to aid practitioners and other key stakeholders, in conducting and learning from GEF projects. This global project is funded by the Global Environmental Facility (GEF), implemented by the United Nations Development Programme (UNDP), and executed by the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization. The GEF LME:LEARN's Project Coordination Unit (PCU) is headquartered at UNESCO-IOC's offices in Paris.

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