



Study on the Economic Benefits of MPAs and SPMs

Abridged version of the Final Report

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Study on the Economic Benefits of MPAs and SPMs

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1 Purpose of the report

This report provides an introduction to the different ways in which the blue economy can benefit from marine protected areas (MPAs) and other spatial protection measures (SPMs), providing success stories from across Europe and across multiple sectors. It demonstrates that there is a broad set of potential benefits and ways in which these can be delivered that are little documented. It draws out key governance and management actions that support the sustainable realisation of benefits and foster support for MPAs and SPMs.

The blue economy supports competitiveness, resource efficiency, job creation, and economic growth. It is a growing part of the EU economy, providing around 5.4 million jobs and €500 billion of economic output through sectors such as fisheries, biotechnology, tourism, ocean renewable energy and ports and shipping.

At the same time, marine ecosystems and biodiversity are declining across the Europe. Loss of biodiversity directly impacts the carrying capacity and resilience of marine ecosystems. Various international and EU commitments, such as the Convention on Biological Diversity (CBD) Aichi Targets and the Natura 2000 network, envision a major role for MPAs as a method for addressing these issues. The area under protection is steadily increasing in line with these commitments.

This report is based on research undertaken for the European Commission in 2017. The research identified and evaluated benefits for the blue economy from MPAs and SPMs (including "de facto refuges") (for definition, see box below), how these are realised sustainably and can be supported by good governance and management.

Types of protected areas and their objectives

- **Marine protected areas (MPAs):** geographically defined areas, whose primary and objective is nature conservation, which are regulated and managed through legal or other effective means to achieve this objective.
- **Fisheries Spatial Protection Measures (SPMs):** area-based conservation measures that do not meet the criteria of MPAs areas, which impose spatially-specific restrictions on fisheries activities for the conservation and sustainable exploitation of marine biological resources.
- **De facto refuges:** spatial measures to support the operation of industrial or leisure activities in the marine environment which, through their synergistic effects, support the conservation and protection of marine biodiversity even though they are not specifically designed to do so. Examples include area closures around marine energy installations and artificial reefs.

The costs and benefits of MPAs and SPMs do not fall equally across society. Society as a whole benefits through improved biodiversity, ecosystem services and climate change mitigation. But for many blue economy sectors MPAs are often thought of solely as a cost or a missed opportunity. In an EU marine context there are few compensatory mechanisms, such as do exist for agriculture, to alleviate such costs. Blue economy operators might well ask: "society benefits, but I'm the one facing restrictions and costs to my livelihood - what will MPAs do for me and my business?"

As both the blue economy and MPA network continue to expand, there is a need to better understand – and an opportunity to better harness – the positive links between them. As such, this research has explored the direct market benefits for those sectors and

stakeholders which are directly affected by an MPA, as measured through economic output and jobs – a particular gap in the existing evidence base. It did not look at societal benefits from ecosystem services and other non-market benefits, and did not look in detail at the costs of MPAs, which have already been the focus of numerous other research studies.

The Economic Benefits of MPAs and SPMs – research study report outputs:

This report provides a short introduction to key findings and examples from research on the blue economy market benefits of MPAs. The main research outputs are:

1. Main report providing a synthesis and discussion of the findings from three primary research outputs
2. Literature review of robust economic evidence
3. Stakeholder consultation presenting stakeholder opinions and examples, drawing on an online survey, interview programme and workshops
4. Case studies providing in depth examination of 10 MPAs in the EU and its overseas territories



2 Pain and gain – blue economy interaction with MPAs

MPAs are policy tools for conservation. They are not engines for economic growth. But they can simultaneously deliver conservation and tangible economic benefits. This is a win-win, as long as the benefits and their realisation do not impede the attainment of conservation objectives.

Economic exploitation of resources in an MPA or SPM must be sustainable – it must not jeopardise the attainment of conservation goals. The study identifies a number of good practice examples of how this is achieved in practice. It also shows that there is a need for adequate funding, effective management and enforcement of MPAs if such benefits are to be lasting.

Delivering effective management and enabling the realisation of economic benefits (in addition to conservation benefits) provides one route to increasing local stakeholder buy-in. This in turn can enhance MPA management legitimacy, stakeholder compliance and conservation benefits.

The implementation of effective MPA management regimes, as well as expectations of potential market benefits, can create **incentives for businesses to change existing practices or invest in new opportunities**. At its simplest this may see changes in activities towards practices that reduce their environmental impact and thus enable the activity to continue within the MPA. Such shifts may also give rise to, or be driven by, potential market benefits of operating in an MPA.

There are typically costs associated with such changes, but greener business models can also bring longer-term benefits – both economic and environmental. For example, improving the long-term viability of an activity by maintaining or improving the underlying natural capital. The case studies and other examples identified in the report (e.g. Wadden Sea and Kosterhavet case studies) provide a range of examples where MPAs and parts of the blue economy have prospered together.

Whilst the report draws together examples of economic benefits, **there remains a lack of robust evidence on the net benefits for blue economy sectors** – the scale of benefits once costs are taken into account.

Despite advances in MPA science and economic analysis, there are few comprehensive ex-ante or ex-post cost benefit analyses (CBAs) of MPAs from either within or outside Europe. Existing studies comparing the costs and benefits of MPAs use primarily an ecosystem services framework and suggest that a large proportion of benefits relate to non-market improvements in societal welfare rather than real economy benefits to sectors. Despite being unable to account for a comprehensive representation of benefits in monetary terms, the few studies available conclude that the overall welfare benefits (when non-market benefits are included) of MPAs exceed total costs. However, in terms of just impacts to the real economy - market benefits to blue economy sectors – there is very limited evidence examining the costs and benefits for any given sector.

3 Who benefits from MPAs, why and how?

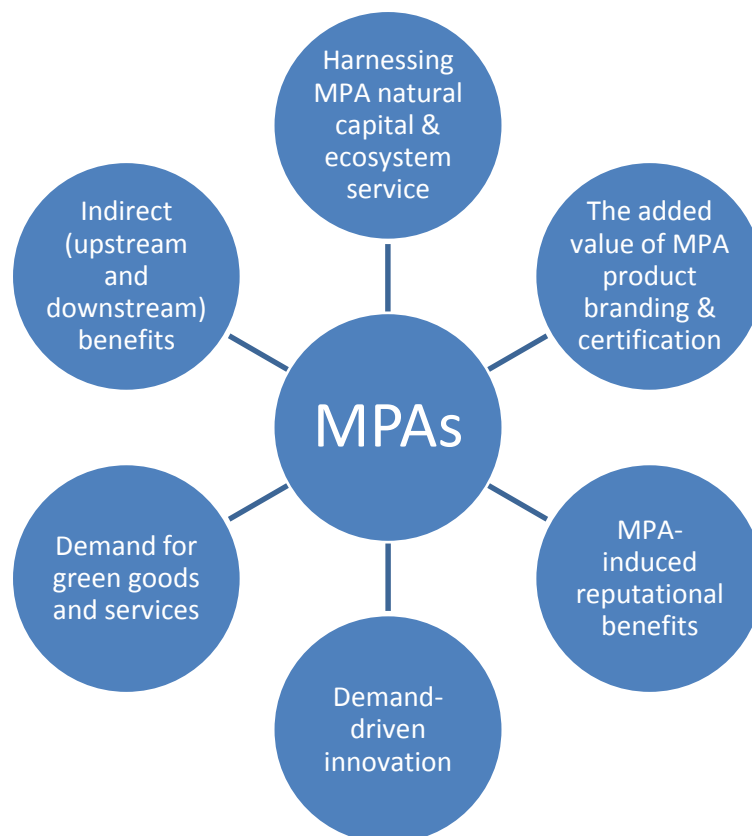
Tourism and fishing are the sectors most people think of as the beneficiaries of MPAs. But the benefits net can be cast wider across the blue economy.

There is indeed evidence that tourism and parts of the commercial fishing sector – notably coastal small-scale fleets – can, under the right conditions, realise benefits based on improvements in biodiversity, the wider environment and resulting ecosystem services.

However there are opportunities for a range of other sectors too, even when they are not directly reliant on the ecosystem services supported by MPAs. This is most clearly apparent for those sectors that benefit from MPAs as direct drivers of demand for their services. For example, conservation management, investment in habitat restoration and biological research, monitoring and surveillance technology and providers of environmental consulting services.

Regardless of the sector, a properly administered, enforced and monitored MPA is essential for the potential benefits to materialise. And additional individual and institutional effort and investment is often necessary to capitalise on them.

Benefit mechanisms of MPAs



Commercial fishing and aquaculture

The sector can benefit from MPAs in a number of different ways - however the benefits are not shared equally across fleet segments and operators.

There are a number of factors that determine the likelihood that MPAs will deliver improvements in fish stocks and fishing performance – from size and location, to management and access. And not all MPAs successfully deliver benefits, particularly once potential costs to fishers are considered.

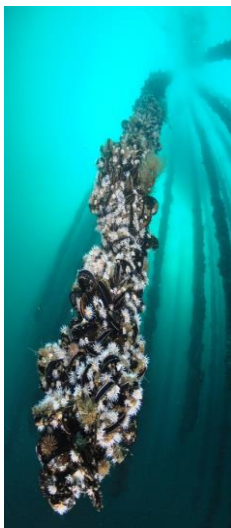
The effects of MPAs may be enhanced when designed expressly for small-scale commercial fishing sector benefit

In Torre Guaceto MPA (Italy) and Os Miñarzos Marine Reserve of Fishing Interest (Spain) the MPAs were demonstrated to have supported stock improvements for a number of species and resulted in fishermen benefitting economically, mainly through increased catch per unit effort (CPUE). This led to catches increasing by well over 100% for some species. In Torre Guaceto it has been calculated that the average income of a fishing day with a 1000 trammel net is around €140/day inside the MPA compared to €70/day nearby outside the MPA (Guidetti et al., 2015).

Artisanal and static gear fishing are most likely to benefit. A majority of the economic evidence is linked to relatively low-mobility species and static gear / artisanal fishing. This includes spillover effects from no-take MPAs (or zones therein) – Columbretes Islands marine reserve in Spain demonstrated a net benefit (once costs of displacement are accounted for) for lobster fishermen as a result of spillover, equating to a net annual increase in yield of spiny lobster of 10% (Goñi et al, 2010). A list of studies providing robust economic evidence of commercial fishing sector benefits can be found in Annex 1 of the Main Report.

However there is little evidence for more mobile species and dispersed fisheries, and industrial and mobile gear fishing, even though a number of fisheries SPMs have been established to enhance mobile species for commercial gain. Such fishermen are often excluded from fishing in MPAs. This displacement can come with a cost – not just for the displaced fishers, but for other fishers and for the wider environment outside of the MPA.

Operational changes fishermen and aquaculture operators have to comply with inside an MPA can **support a broader greening of practices** as businesses witness the viability of these new operational models or the benefits that occur once they are adopted.



MPAs have been a driver of more sustainable mussel cultivation in the Wadden Sea

In the Dutch Wadden Sea, degradation of mussel stocks coupled with the impending arrival of a stricter protection regime, prompted a shift toward more sustainable practices. Under a concordat agreement between fishermen and environmental groups, the sector shifted from mussel seed dredging, which damages the sea floor and its habitats, to rope-grown mussel cultivation that is compatible with MPA objectives.

Growers have benefited from more consistent mussel seed supply, and hence production; and attainment of MSC certification which has helped secure access to key European markets and buyers.

Whilst some growers successfully transitioned, others have struggled with the costs of changing practices and higher production costs. Funding and education has been provided to support the transition.

Granting exclusivity of access to local, small-scale fishers (as in Torre Guaceto MPA, Italy) has been seen to accentuate this greening effect – but can also result in long-standing conflicts (e.g. Os Miñarzos MPA, Spain).

The success of Torre Guaceto has resulted in spillover of sustainable fishing practices

In Torre Guaceto MPA (Italy), fishermen permitted to fish inside the MPA have, through the measures imposed on them when doing so, learnt about the economic benefits of sustainable fishing. These fishermen have started to use the 30-mm mesh nets required to fish inside the MPA in their fishing grounds outside of the MPA (where the legal minimum is smaller, at 22 mm). They understand that a larger mesh size helps to avoid capturing juveniles, improves localised stocks and supports catching lower amounts of higher-priced big fish, which improves their profitability.

Torre Guaceto fishermen
(Picture by Torre Guaceto
Managing Consortium)



Enhanced fishery resource is not the only route to economic benefits. **Other mechanisms can also support MPA-induced improvements in sector performance**, over both the short and long term – such as opportunities for branding and certification, changes in competition and opportunities for diversification.

MPAs provide opportunities to make claims of 'higher value products'

Labels and brands developed around individual MPAs, as well as direct marketing schemes linking (typically artisanal) fishers with local restaurants, have been successfully used to boost first sale prices (e.g. see Lyme Bay MPA (UK), Iroise MPA (France) Gökova MPA (Turkey). An external body (e.g. MPA management body or other organisation or individual(s) associated with the MPA), rather than fishermen themselves, often establish such initiatives. However there can be societal challenges - for example, in the Cabrera MPA (Spain) some stakeholders opposed an MPA label due to problems with traceability of fish (i.e. whether they are caught inside the MPA) and equity (it is unfair for fishermen not permitted to fish in the MPA).

Changes in the MSC certification guidance may open the door for greater use of MPAs in this way in the coming years

New Marine Stewardship Council (MSC) 2.0 standards were introduced in 2014, with all fisheries expected to have transitioned to them from October 2017. The wording on 'habitat' impact in the new standards is such that MPAs are likely to be increasingly relevant measures to help satisfy the threshold criteria. Hence use of MPAs to support certification applications may increase in the future.

Successful fishing tourism diversification in Egadi MPA

A fishing tourism ("pescaturism") initiative was set up by the Egadi MPA (Italy) management authority in collaboration with fishermen and their associations. In 2017 there were seven vessels authorised to conduct fishing tourism. During the summer it generated an estimated €126,000 for them. Some fishers stated that it is a good way to diversify incomes in summer, when catches are low and tourists are numerous. But other fishers complained about the privilege afforded to Marettimo fishers (those local to the MPA) who are the only fishermen permitted to carry out fishing tourism in the MPA.

Tourism and MPAs – a winning combination?

MPAs can facilitate increases in maritime tourism and changes in visitor behaviour that result in higher revenues, increased jobs and additional livelihood opportunities.

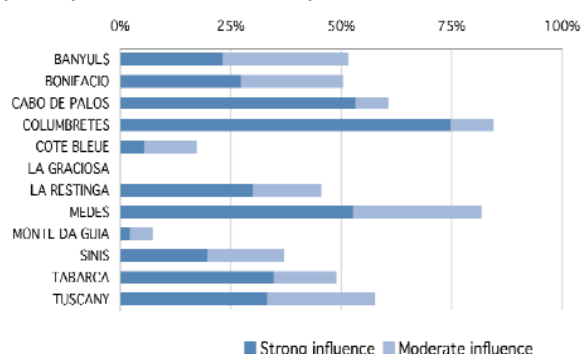
The value of tourism in and around MPAs can be considerable. Whilst MPAs help to sustain this value, it is often hard to determine the specific impact that an MPA has on that value, and only a minority of economic studies have sought to do so. A list of studies providing robust economic evidence of tourism sector benefits can be found in Annex 1 of the Main Report.

The Lyme Bay MPA (UK) had a clear impact on tourism within a few years

Three years after the Lyme Bay MPA designation, income generated inside the MPA had increased by £2.2 million (Rees et al, 2015). In particular, angler and diver expenditure had increased by £1.5 million and £0.5 million respectively (due to an increase in visits of 19% and 35%), whereas the turnover of charter boat operators and dive business had increased by £108,427 and £39,864 respectively (due to an increase in their activities of 51% and 201% respectively).

MPAs can have a strong influence on the destination choices of visitors. However, the extent to which visitor destination decisions are based on a perception that the environmental quality (and hence visitor satisfaction) will be better in an MPA, or demonstrable knowledge that it is better, is often unclear. This is known as the 'designation effect'.

MPA-induced environmental impacts are often a more important driver of tourism demand for visitors undertaking activities, such as diving, which directly depend on the quality of biodiversity and the wider



The influence of an MPA on visit decisions can vary considerably

Across a sample of 12 Southern European MPAs, between 5% and 75% of scuba divers (see graph) and recreational anglers said that the MPA had a strong or moderate influence on their decision to visit (Roncin et al, 2008).

environment.

Where benefits do occur, the significance of impact varies considerably across MPAs. In Bonaire, the economic impact of the MPA has been considerable. However, in Cyprus, the impacts of an MPA Artificial Reef programme have been modest and have not occurred for all of the artificial reefs installed.

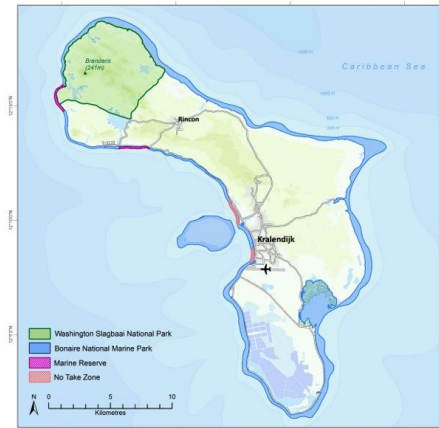
An MPA and its attractions must be marketed actively if the full potential of an MPA as a draw for tourism is to be achieved. This means a targeted effort, with information campaigns in favour of local touristic products and supply chains aimed at the kind of visitors potentially sensitive to them. Where MPAs have particular designation accreditations, there can be marketing benefits via promotion undertaken by the accrediting agency.

The Bonaire National Marine Park has been a key driver of the island economy

Since the Park was established in 1979, annual tourist numbers have grown from just a few thousand to around 130,000. Tourism is the main engine of economic growth - expenditure was estimated to be USD160million in 2012, directly generating 16.4% of Bonaire's GDP. The marine park directly supports Bonaire's status as a premium dive destination by:

- Maintaining the quality of the reef and other intertidal habitats – only 10% of stay-over tourists indicated they would return to Bonaire if coral reef quality declined significantly (Wolf et al, 2012).
- Enhancing the experience - the rules, education and communication, and visibility of effective park management, are valued by dive and other tourists.
- Supporting marketing and the differentiation of Bonaire from other tourism destinations.

Bonaire National Marine Park
(www.dcnanature.org)



The **marketing pull of an MPA may be enhanced when it has a particularly unique feature** – which may be a natural feature, an aspect of the MPA management approach or access arrangements, or the particular designation label. For example, the Wadden Sea World Heritage Site status acts as a quality mark, attracting tourists to the region. International designations and business certifications in existing schemes provide an opportunity for **promotion via the broader marketing networks of the scheme certification body**. However designation labels and certifications come with costs – for MPA managers, businesses and local society. The economic merits should therefore be carefully considered.

"It's [the marine park] number one, it's what we sell. [...] In absence of the marine park, what would be our unique selling point?" Bonaire National Marine Park stakeholder

MPAs can be catalysts to kick-start nature-based tourism and other specialised tourism opportunities. The report's case studies show examples of such local initiatives (wildlife watching, sea kayaking, events, etc). These can deliver important benefits. For example, generating higher profits through premium prices and extending the tourism season, as was seen in Kosterhavet marine national park (Sweden). Improvements in the recreation and tourism offer (new sea-based activities, integrated packages with gastronomy and cultural heritage), and better overall sector performance as a result of such entrepreneurial dynamism, spill over into the wider economy and provide broader community benefits.

Policies and investment can help realise these opportunities and increase the local retention of income. Financial support to and training of local business can support supply-side investment.

But with success comes risk. The success of MPAs in attracting tourists can result in conflicts within and between sectors (e.g. between divers and sight-seeing boats, Zakynthos MPA, Greece; between divers and fishermen, Dasoudi MPA, Cyprus) as well as environmental impacts (e.g. cruise tourism in Bonaire, Dutch Caribbean). A particular case is recreational fishing. It is an important part of the maritime tourism sector, but its relationship to professional fishing, another blue economy sector, is often fraught. The Torre Guaceto case study revealed major tensions between recreational and commercial fishing sectors.

Do other blue economy sectors benefit from MPAs?

The research identifies cases where there is good evidence of economic benefits, as well as case examples that indicate that further research should be undertaken to better understand the supportive role of MPAs for the wider blue economy.

Other parts of the blue economy that can realise economic benefits from MPAs

Economic sector / activity	Benefit mechanism*			
	New/expand ed activity	Product branding & association	Change in biodiversity & environment	Reduced competition
MPA management and associated research	✓✓✓			
Ecological restoration, enhancement and mitigation services	✓✓	✓		
Environmental consultancy and related services	✓			
Technology developers and operators	✓✓			
Aquaculture and biotechnology	✓	✓	✓	✓
Transport and ports	✓	✓		
Maritime energy		✓		✓

✓ = the strength of the evidence for such benefit mechanisms

The most clear-cut economic benefits occur where MPAs directly generate demand for new goods and services. Notably, demand for environmental management and research services necessary to designate, manage and monitor MPAs.

MPA management bodies are generators of employment and purchasers of management support services

MPA operating budgets in EU Mediterranean MPAs average €0.7million/yr. (Binet et al, 2015). Evidence from six case studies in this study gives an annual budget range of €0.5-2.5million/year. The case studies indicate that direct employment in individual MPA management bodies may range from around five to 30.

Environmental monitoring: approximately £1.1million/year of environmental monitoring services were forecast to be required as a result of designating 28 Marine Conservation Zones in the UK (Defra, 2013).

EU-funded research projects provide millions of Euros for applied research services – for example the research project AMARe - Actions for Marine Protected Areas (2016-19), had total funding of €2.7million, with €2.3million coming from Interreg.

Ecological restoration and enhancement may be carried out to improve or recover the natural environment within an MPA, or to offset or minimise the potential negative effects of a permitted development on the features of an MPA. Such activity may be driven explicitly by MPA conservation objectives and can range from small-scale activities to major eco-engineering projects worth many millions of Euros.

Increased business turnover from demand for ecological restoration and enhancement goods and services

Off Laeso Island (Denmark), €3.8 million of design and construction goods and services (50% co-financed by the EU LIFE programme) were procured for an artificial boulder reef (to mimic habitat 1170 of the Habitats Directive). The site is now part of an offshore Natura 2000 site: Laeso Trindel.

Nearly €1 million of services were procured to prepare, clean and deploy vessels used to create five artificial reef MPAs in Cyprus, and to deploy other infrastructure such as marker buoys and moorings.

The island of Griend is in the Dutch Wadden Sea UNESCO World Heritage Site and a Natura 2000 site. An eco-engineering project with contract value of €2.5-3million was commissioned to enable continual nourishment of the island in the face of erosion and geomorphological changes.



Island of Griend, Dutch Wadden Sea (Photo credit: Boskalis)

Where permitted within an MPA, benefits may occur for aquaculture, algaculture and biotechnology sectors. Case study examples, such as Iroise and Kosterhavet, demonstrate such benefits – however there is a lack of more formal research. MPAs can ensure maintenance of the water quality required by the sector, which can support both the cultivation process and the marketing of products. The European Commission is developing guidance for sustainable aquaculture within Natura 2000 sites.

The costs of operating in an MPA can be prohibitive

In Kosterhavet (Sweden), a company Grebbestad Tångknäcke produces food products including seaweed bread and dried seaweed / seaweed salt ("seaweed hard bread"). It received a permit to farm its own macro-algae inside the MPA but has been unable to enact it due to prohibitively high costs of the compulsory environmental monitoring.

In Iroise the MPA acts as a seal of quality for algal products

Rockweed harvesting in Iroise (France) is used for nutraceutical, food, cosmetic, veterinary and agronomic products. The MPA supported rockweed harvesting operators in attaining an organic label, by enabling good water quality to be demonstrated. This label is a strong sales driver, especially in the cosmetics industry. The international recognition of the Park's Man and Biosphere status was also said to be a differentiating factor for cosmetics exports.

Although not self-evident, there can be commercial benefits of extracting marine minerals from a protected area.

Sea salt and nature conservation

In Sečovlje Salina protected area (Natura 2000, Slovenia) the park is managed for traditional salt production from sea water by evaporation. A number of products are made using the natural resources (salt, mud and algae) available from the salt pans and surrounding waters. Their commercialisation is bolstered by their association with the natural values of the protected area.

MPAs may both stimulate and act as new markets for the application of new and emerging technologies. Examples were identified where the need for better MPA surveillance and to solve practical sustainable use challenges, have led to growth in the MPA-related technology market.

Techbuoy - Innovation to meet MPA management and enforcement demands

'Techbuoy' (<http://www.techbuoy.eu/>), co-funded by the EU's Eco-Innovation Initiative, developed a solution for regulating recreational anchoring in *Posidonia oceanica* meadows. The system is based on a series of buoys and barriers which control access to an area and eco-moorings within it. Only permitted boats can open the barrier gate. Access permissions and reservations are supported by an online platform and app. It offers a cost-effective solution to managing the use of restricted-access moorings. The first commercial sale of the technology was in summer 2017. Additional applications are being pursued, applying the technology to fisheries management, ports and harbours and military areas.

MPAs can actively encourage innovation through management decisions that support the undertaking of trials and testing within an MPA. These may then develop equipment and practices to enable businesses to take advantage of the potential economic benefits offered by MPAs (a so-called virtuous circle).

Kosterhavet Marine National Park (Sweden) is acting as platform for algae-culture and biotechnology innovation and research

Seafarm is a research project for closed-loop, sustainable industrial cultivation of macro-algae and algae-based products. A private company, KosterAlg AB, which will sell the algae and products, is currently in the start-up phase. The project is located in the park in part because it has ideal natural conditions for cultivation. The project aims to demonstrate acceptability of sustainable cultivation within a national park and the local socio-economic benefits of commercial-scale cultivation. By permitting project, the Park is enabling innovation in environmentally sustainable cultivation practices and business models that can support growth of the sector on a 'green' basis.

Tapping into the concept of MPA-based branding, there are examples where businesses have extended this concept, using the MPA to **enhance brand image and demonstrate sound Corporate Social Responsibility (CSR)** credentials. The economic value of such action is hard to quantify. Benefits may be realised through retail consumer demand. In addition, a European port operator indicated (via interview) that tangible CSR credentials can be very supportive when courting corporate investments.

The economic benefits of soft power

In Sečovlje Salina Nature Park (Slovenia), a telecommunications company invested in the MPA through the purchase of the on-site salt production works and funding and staff to support the park restoration and management. The telecoms company benefited indirectly through an improved corporate image amongst customers, which was reported to have commercial benefits.

4 The untapped potential of de facto refuges

Evidence is emerging on how blue economy sectors can contribute to biodiversity through the creation of "de facto refuges"¹ and capture the associated economic benefits.

Evidence largely concerns de facto refuges resulting from artificial reefs and energy infrastructure and focuses on their impacts on fisheries, angling and diving as a consequence of changes in biodiversity. Shipping lanes, cables and military areas are also thought to offer potential conservation and economic benefits, although there can equally be negative environmental effects from these activities and infrastructures.

The evidence is growing but is still relatively piecemeal and is concentrated on the ecological effects of de facto refuges, often based on experimental studies.

Experimental studies have demonstrated improving fishing catches

Experimental studies (e.g. Santos and Monteiro, 2007) – rather than studies based on actual commercial fishing vessel performance – at an artificial reef system in the Algarve, Portugal, have demonstrated improved catches. A gill net survey carried out over four and a half years at an artificial reef system found that the fishing yield (in weight) from the reefs exceeded that from the control sites by between 86% and 128%. A later study (Whitmarsh et al, 2008) found that the value per unit effort of the catch at artificial reefs was 73% greater than that of control sites when the reef was first installed and that the catch value increased the longer the reef system had been deployed.

But there is little robust evidence of the resulting economic benefits. For example, there may be evidence of increases in fisheries resources around artificial reefs and energy installations, but there is a lack of evidence showing that fishers actually use these refuges or how catches from the refuge compare with other non-refuge sites. Evidence of concentrations of fishing effort around de facto refuges have not been linked with improved fishing performance.

Any economic benefits are likely to be generated through support for new areas of biodiversity, rather than the conservation of existing biodiversity. It is through changes in seabed structure and habitat, resulting from the introduction of artificial structures (e.g. artificial reefs, energy installations, mussel strings), that increases in biodiversity are supported, often in places where it was not previously found. There is debate whether this constitutes a genuine increase in biodiversity or simply an aggregation of species. However there is evidence of increases in abundance, site fidelity and for the increased provision of nursery habitat for species of both commercial and non-commercial interest (e.g. mussels, cod, pouting and eels). There is also some evidence that structures such as offshore wind farms can improve foraging for mammals once the impacts from construction have been overcome.

The extent to which benefits emerge will depend on where the de facto refuge is and who has access to it. The exclusion zones that lead to the creation of de facto refuges typically restrict access. For fisheries, this restriction will typically limit the economic benefits to those depending on spill over, although these effects could be enhanced through artificial reefs (e.g. along the Purbeck coast, UK, artificial reefs are being built to provide habitat for lobsters that may spill over from a neighbouring MPA). Even when access is granted, fishers may be reluctant to enter if there is the potential for the entanglement of gear (e.g. with submarine infrastructure associated with offshore wind turbines).

Recreational benefits from artificial reefs can be significant, with some estimated to have generated millions of Euros, especially when created for diving

¹ See Section 1 for definition

purposes. Some refuges are open to selected activities such as recreational angling and diving, and so have the potential to provide both on- and off-site economic benefits. In these cases, proximity to the coast may be the main determinant of access and therefore economic benefit.

Economic benefits of diving at an artificial reef can be significant

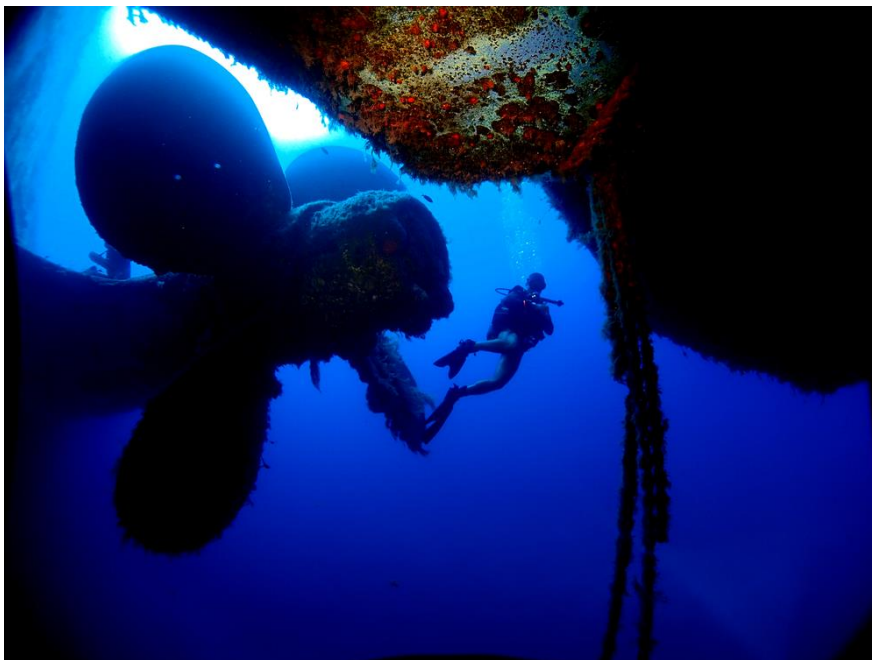
The artificial reef created by the sinking of the HMS Scylla, UK, has been colonised by characteristic wreck species of interest to divers. Within 5 years of its creation, some 42,000 divers had visited the site on 7,000 dive boat trips, contributing an estimated €30-35 (£25-30) million to the local economy.

There are currently insufficient incentives for the economic sectors that create de facto refuges to design them for 'co-location', be that for conservation or other economic benefits. As a result the de facto refuges are typically seen as costs to other blue economy sectors – excluding activity from certain areas through formal spatial restrictions, often for safety reasons, or informally for safety or other practical reasons.

There are opportunities to use licencing award criteria and conditions to promote co-location opportunities, which would raise the prospect of enhancing environmental and economic benefits from de facto refuges. Any incentives would however need to take account of concerns over safety and insurance liability associated with operation in and around refuge infrastructure. There are a number European-funded research projects currently looking into opportunities for multi-use of offshore space and infrastructure (e.g. [MUSES](#))

No evidence was found for benefits to other blue economy sectors, although stakeholders engaged through this study do anticipate benefits to all blue economy sectors, primarily from changes in biodiversity and opportunities for new and/or expanded activity.

Should de facto refuges be classified as 'other area based conservation measures', then certain sectors may need to be excluded from using the refuges to ensure they offer the same conservation benefits as designated MPAs. This may further limit the opportunities for some economic sectors, but given the limited interaction identified between de facto refuges and many blue economy sectors so far, this may have little impact.



Zenobia wreck artificial reef, Larnaca, Cyprus

5 Harnessing the economic benefits – they won't just land on your plate

Achieving the potential economic benefits offered by an MPA is more likely to occur where this is planned for as part of the MPA's governance, and the necessary resources are put in place.

As a minimum, MPA planning and management must establish the right balance of measures to enable conservation objectives to be attained without stifling the opportunities to realise benefits.

In the most successful examples, MPAs are catalysing sustainable economic benefits by acting as clusters. In this role MPA management bodies (or similar) act as a forum, bringing together organisations, expertise and financial resources necessary to capitalise on the available opportunities. These fora can facilitate engagement between different stakeholders to explore potential synergistic relationships. Greater coordination with multi-objective Maritime Spatial Planning Directive processes could further enhance this effect.

Capitalising on the potential marketing power of an MPA designation requires relevant partners and initiatives to be established

Cases such as Iroise and Os Miñarzos demonstrate that MPA management bodies can be particularly proactive in both directly undertaking initiatives but also in facilitating the creation of partnerships with the tourism sector and between tourism and other sectors.

Some MPA bodies provide direct support to local business ventures – such as promotion via websites, advice to obtain grants, support with technical standards).

Providing financial support and business expertise for new business ventures and projects in Iroise

In Iroise, the number of aquaculture operators (shellfish harvesting and seaweed cultivation) has doubled, with eight organisations now operating in the Park, providing approximately 30 jobs. This increase is partly due to the Park's efforts to support the creation of new projects that align with the management plan objectives i.e. sustainable use. The Park provides financial support to new projects as well as expertise and assistance with project plans.

Working with the fishing sector to improve access to funding in Torre Guaceto

The Torre Guaceto management consortium has worked with fishermen to help them access external funding (from the Con il Sud foundation) to invest in new fishing gears that are compliant with the fishing protocol, hence removing much of the initial cost of compliance. To enable access to funding on an ongoing basis, a fishermen's cooperative was created. The cooperative allows the fishermen to participate in projects as a legal entity and thereby receive funds to improve the sustainability of their fishing practices, such as the project financed by the Con il Sud foundation.

Licences and permits can be used as explicit tools to create optimal conditions for realising economic benefits and synergies between economic operators. Public procurement evaluation criteria can emphasize the positive value of creating the conditions for co-benefits (e.g. in Cabrera conditions were included as part of the tendering process for ferry services to the island). This was highlighted as a currently missed opportunity regarding de facto refuges and the co-location of activities in them (see above).

6 Making it work – stakeholder engagement and management regimes

Where stakeholder engagement and collaboration is good – with clear roles, rules and plans – stakeholders are often reported as having greater ownership of the MPA as well as an understanding and respect for its management and rules.

The research suggests that these elements not only support attainment of environmental objectives, but can be a good recipe for stimulating local business innovation and developing business models in line with the objectives of the site.

No stretch of coast or part of the sea is the same. Neither is any MPA or group of people involved in its management, living in its proximity or using its resources. Consequently, there are a number of interesting management regimes and bespoke solutions being implemented to try to enable environmental conservation whilst also enabling stakeholder buy-in across communities and economic sectors. Such flexibility of governance is stimulated by the fact that the large majority of MPAs in Europe are Natura 2000 sites, designated under the EU Nature Directives. While the framework for designating Natura 2000 areas is focussed on scientific criteria, in terms of practical daily management Natura 2000 focuses on achieving results (attainment of 'favourable conservation status') rather than laying down a one-size-fits-all regime how to achieve them.

Widely evidenced throughout the survey interviews and case studies in this report: individuals and groups with an interest or stake in the protected area need to be formally and actively involved right from the beginning – from planning and decision-making to day-to-day management and evaluation.

Egadi MPA (Italy) demonstrates success from a change in management regime

There have been three periods since the Egadi MPA's establishment, during which different governance approaches have been used: (i) a top down approach (1991-2001), which was found to be ineffective due to a lack of stakeholder dialogue and poor control of activities; (ii) a municipal government approach (2001-2010) which was considered weak and inefficient; and (iii) a bottom-up approach, which has been in place since 2010 (D'Anna et al, 2016).

This new management regime, grounded in a bottom-up approach with strong involvement of local stakeholders, has improved transparency and participation from the local stakeholders. Achieving improved buy-in has enabled the establishment of multiple new sectoral management agreements, and a reformulation of the MPA's zoning plan, that has in turn improved environmental and economic performance in the MPA.

Adaptive management in Torre Guaceto MPA (Italy)

In Torre Guaceto MPA, local fishermen participated in the preparation of the fishing protocol, together with the managing body and researchers from the University of Salento. The protocol established the rules to be observed within the MPA, and allowed fishing in the site with small boats and 30-mm mesh nets but only once a week. These rules are stricter than the European fishery regulation, but the fishermen understood how the protocol could benefit their activity (and they have indeed benefited from it).

An adaptive management approach was adopted in Torre Guaceto. Fishermen signed a document stating that they would accept a change in the rules if a decrease in the fish stock were observed. They also voluntarily participate in regular monitoring activities carried out by the staff of the managing body to provide evidence to support adaptive management decision making.

Of course, achieving successful stakeholder engagement can be tricky. Importantly, **collaboration is per definition a two-way affair that requires trust and mutual respect** between **those involved**. It cannot be imposed, nor does it grow overnight – trust takes time, commitment and dialogue. In the Kosterhavet case study, fishermen point to the importance of the courses and the fishing trips they did together with policy makers – “they had no idea what we were up to and we didn’t know much about what they did”.

Hearing all voices is one thing, accounting for them is another.

There are subtle yet important differences between *consulting* stakeholders and merely *informing* them. The study indicates that if participation has been promised, management and park authorities have to follow through and be ready to listen, compromise and not raise false expectations about what the MPA may or may not deliver. If they fail to do so, they instead risk losing any existing legitimacy and ultimately jeopardising the future of the MPA.



Formalising stakeholder involvement on an on-going basis has been successfully implemented in a number of MPAs. For instance, there are several examples in the report of MPAs establishing co-management arrangements, with both weaker and stronger variants. Co-management can formalise the interaction between economic stakeholders, community groups, environmental stakeholders and public authorities, if it bestows some meaningful power for co-decision making, implementation and enforcement. Although as the cases of Iroise and Os Miñarzos show, the right mix of stakeholder can be very different for different MPAs. And the mix itself may even raise new questions, for instance if and where the stakeholders with direct specific interest (fishers, aquaculture, nautical tourism operators) feel outnumbered by indirect general interests (social partners, civil society and public authority representatives). The Cabrera case study quotes complaints that 'only 1 seat out of 21 is reserved for a representative of the fishing sector'.

Local influence via the power of veto in Iroise Marine Natural Park (France)

The management council (“Conseil de gestion”) of the Iroise Marine Nature Park is the principal management body of the area. The management council includes 49 representatives from professional organisations (e.g. tourism, agriculture, and fishery), environmental associations, local authorities, the State, and other qualified professionals (e.g. scientists, universities, protected areas managers).

Whilst the council does not have legislative power, which remains with the public authorities, it can both propose initiatives and has veto power (“avis conforme”) to block proposals. Hence MPA local stakeholders, as a management council, can formally seek to promote and protect their specific interests.

Co-management in Os Miñarzos Marine Reserve of Fishing Interest (Spain)

Os Miñarzos has a governance model that facilitates participation and collaborative management between the main parties.

The Management Body is made up of four elected fishermen and four members of the public administration. One scientist and one NGO representative are also on the board but do not have voting rights. Decisions are taken by consensus and this, along with the group's membership structure, is thought to ensure balanced decision-making.

Every year fishermen listed within the MPA census, in collaboration with scientists, design the fisheries management plans of the different species of interest. These are put to the Management Body for approval, in order to be implemented in January of the following year.

The co-management governance is thought to facilitate a greater willingness for dialogue, collaboration and interaction, especially within the fisheries sector, but also with the scientists and public administrations involved.

Some form of conflict is of course inevitable – either between sectors and management, between sectors or within a sector. In fact, globally, conflicts between stakeholders are believed to be one of the reasons for the high rate of MPAs failing to achieve their management goals. While there are examples of initial opposition to MPAs and SPMs having faded over time, achieving fair and lasting resolution to conflicts can be difficult – and it can take time. A mix of measures is often required, with various awareness-raising and educative approaches applied early on in the process thought to be particularly successful. **In many cases trade-offs and compromises need to be made – win-win solutions are not always possible.**

A lack of understanding between nature conservation representatives and resource users can reinforce an unwillingness to collaborate. Making sure that stakeholders speak to and understand one another may not only prevent and resolve conflicts, it can foster more realistic expectations among sectors and management about what types and levels of economic benefits might derive from the protection measures.

Peer-to-peer learning to resolve and avoid conflict

Sometimes learning from fellow fishermen or tourism operators is more convincing and easily digested than receiving instructions from scientists or authorities.

Artisanal fishermen who had opposed the establishment of an MPA in Taza, Algeria, became more favourable to it after some of them visited the Scandola Marine Reserve in France, where they learnt from the experience of local French fishermen (Boubekri and Djebar, 2016).

In a similar example, Tunisian fishermen visited fishermen from a successful MPA in Spain to better understand the potential benefits of MPAs. They returned home in favour of a Tunisian MPA.

The introduction of maritime spatial planning (MSP) through an EU Directive adopted in 2014, is a potentially promising means of facilitating dialogue between all MPA stakeholder groups.

In contrast to more traditional approaches, MSP is an overarching tool to coordinate and integrate various policy objectives, including social, economic and environmental ones, and accounting for off-site and MPA network effects.

MSP also provides a tool to help reconcile and manage competing claims for space, which may improve clarity and reduce conflict between different interests in relation to marine nature conservation. In a similar way, **zoning of MPAs** is already helping to achieve this in some MPAs, in the Mediterranean in particular.

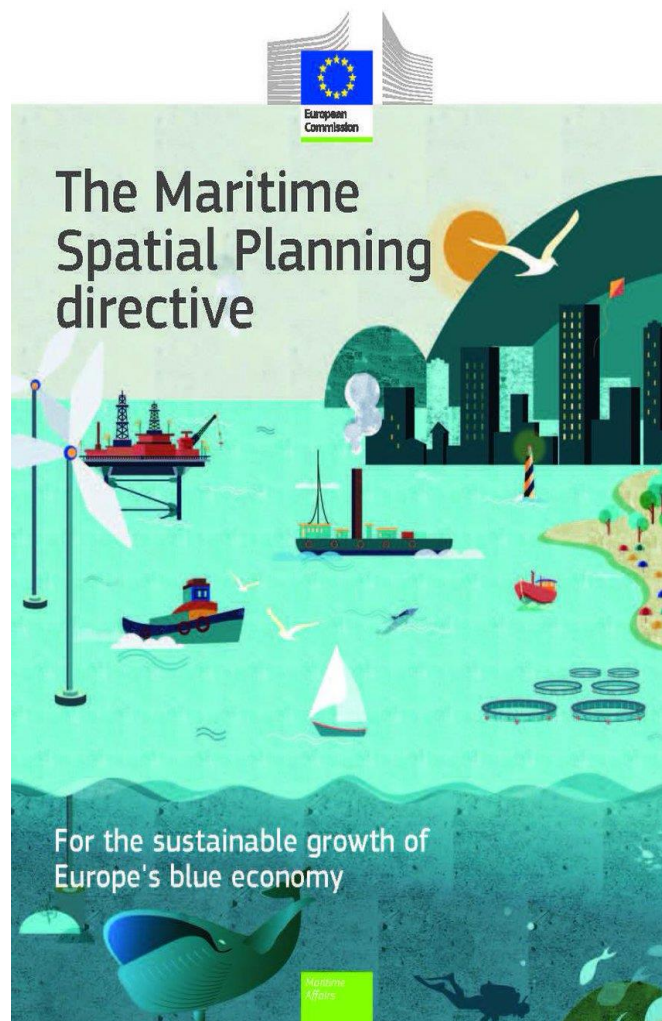
Benefits from MPA zoning in Plemmirio (Italy)

The Plemmirio MPA is divided into three zones. Different activities are permitted in each, reducing competition for space between different users. Zone A is a no-take zone where diving is the only permitted use. Zone B is a general reserve where recreational activities are allowed. Zone C is a partial reserve, where small-scale fishing activities can occur. The zoning is working. The increased abundance of marine life in Zone A is attracting divers. Dive numbers have increased from 450 in 2004, the first year of the MPA, to over 3,000 in 2017.

To date, MPA planning has generally taken place outside of MSP processes. But the expansion of MPA networks and blue economy sectors (and resulting de facto refuges), is leading to ever greater competition for space.

Some stakeholders suggest that because MSP processes are often engaged in on a more positive basis than MPA processes (i.e. what can I gain rather than what will this cost) stronger alignment between the two may have a number of benefits. Stronger integration and coherence between MPA and MSP processes may help to alleviate unnecessary conflicts, minimise off-site environmental impacts, and provide for a greater focus on synergies.

Ultimately, greater coherence with such a multi-objective process as MSP may better support the creation of a functioning blue infrastructure network that provides for the most appropriate distribution of conservation and economic activity (including additional designations or zones that complement MPAs and meet blue economy objectives) and improved land-sea interactions.



7 Ensuring delivery – no enforcement, no benefits

A large proportion of European MPAs lack effective management. Yet proper management and enforcement is essential if MPAs are to deliver on their conservation objectives – and if sustainable economic benefits are to be realised.

Investing in surveillance and enforcement can support not only the conservation goals of the MPA, but also the potential economic benefits that delivering these conservation goals offers. The case of Os Miñarzos demonstrates that surveillance and enforcement ought to be seen as an investment, not a cost.

Erosion of economic benefits in Os Miñarzos

In its first years after designation in 2007, the Os Miñarzos MPA (Spain) had a dedicated and well-equipped surveillance team. Thanks to it, illegal fish sales decreased by 50-60%, and local fishermen experienced increased catches of a number of species and increased fish and shellfish sizes. However in 2011 the regional government of Galicia withdrew funding for surveillance. As a result, poaching increased again, undermining the success of the MPA resulting in a deterioration of the economic performance of the local sector.

Three key types of incentive mechanism can support effective enforcement: top-down (legal) mechanisms, bottom-up (participatory) mechanisms and market-led (economic) mechanisms (Jones et al, 2011).

Legal mechanisms used to establish access/use rules need to be supported by robust enforcement. Enforcement should be linked to adequate penalties in case of infringement. Rules may establish which activities are permitted within the site, or the conditions with which permitted activities must comply, e.g. restrictions on the use of specific fishing gear, on practices that damage particular species/habitats, or on the spatial zones/timing in which activities can take place. In order to ensure that rules are respected, enough resources need to be invested in surveillance and sufficient penalties put in place to act as a deterrent.

Insufficient enforcement and deterrents in Cyprus

The Artificial Reef Programme in Cyprus created five artificial reefs as no-take MPAs. Benefits for commercial fisheries were expected via spillover effects but have not emerged. This is thought to be partly due to a lack of surveillance and enforcement and insufficient penalties (fines), resulting in a failure to eradicate illegal fishing in the no-take areas.

Communication and education help achieve self-enforcement and compliance. Communication combined with education is used in a number of MPAs to encourage compliance. It can be particularly important where users are unfamiliar with MPA rules or where MPA regulations change. In the Wadden Sea, efforts to transition mussel cultivators to new more sustainable practices were supported by an education programme; in Iroise MPA (France), fishers were trained in how to minimise the risk of sudden pollution incidents. In Bonaire, communication education is used to ensure that tourists are both aware of and able to conform to the rules of using the park.

To be effective, communication and education promoters need to be able to access MPA users in a way that allows the messages and learning to occur. Cruise tourists – due to their short-period visits to MPAs – can be particularly hard to access and provide sufficient education to.

Educating tourists and tourism businesses in Bonaire

The principal means of encouraging compliance with the Bonaire National Marine Park rules is through education and communication. Education is seen as critical: if individuals understand why the rules are there, they are more likely to follow them. Every diver visiting Bonaire undertakes a mandatory dive orientation, a practical test of competence, and is educated on the park rules. For activities outside of diving the same approach is applied, but less formally. However the success of this system is being tested as tourism expands and competition for dive business increases.

Increased involvement of **stakeholders in MPA governance can foster a sense of ownership and that, in some cases, can generate self-policing behaviour** i.e. stakeholders reporting infringements or addressing their peers. Such self-policing by members of a sector is partly due to the expectation of personal economic gain if MPA regulations are adhered to. Successful examples can be seen in Torre Guaceto and Os Miñarzos.

An adequate system for acknowledging the legitimacy of self-policing and for providing a system for reporting breaches of MPA rules to the proper authorities, is necessary if self-policing is to be truly successful and not generate conflicts.

Economic instruments can complement legal and participatory approaches, and in some cases can be very effective in encouraging behavioural changes.

Property/user rights can be assigned to specific categories of stakeholders. For example, only resident fishermen are allowed to operate in many Italian MPAs, which creates a strong incentive for them to operate within sustainability limits, because they are the only ones to benefit from the fish stock inside the protected area – but also has costs for those excluded.

The provision of property rights induces compliance for private gain

In Torre Guaceto MPA (Italy), only fishermen that are resident in one of the two adjacent municipalities are permitted to operate in the MPA. Ensuring the long-term sustainability of commercial species in the area is therefore in the best interest of these fishermen, who are the only beneficiaries. For this reason, fishermen respect the restrictions, collaborate with monitoring activities and report illegal fishing activity.

Using labelling to net fishermen

In Iroise MPA (France), fishing businesses commit to certain sustainable practices, including transparency about the origin, techniques and volumes fished; returning waste collected in nets to shore; taking observers on board, and undergoing training (e.g. on pollution prevention). In return, they can use the product label 'Partner of the Park', which certifies their commitments and makes them eligible for financial support for activities contributing to the MPA management plan.

introduced to support businesses with lower environmental impacts, for instance small-scale, low-impact fisheries, or certification of so-called 'eco-tourism'.

In addition, *branding, labelling and certification schemes* may be

Finally, a range of *direct support mechanisms* – access to finance, technical and administrative support – are being successfully employed in MPAs to help operators shift to more sustainable practices.

Using a transitional period to support shifts to compliant practices

In the Wadden Sea MPA, the administration granted a transition period, which gave time for mussel farm operators to invest in new equipment and techniques required to comply with MPA management rules.

8 Monitoring and evaluation is often overlooked

In general, MPAs are not monitored or evaluated for their social and economic impact. Existing monitoring is often narrow and incomplete, typically focusing only on ecological impacts.

In some cases a lack of social and economic monitoring is a consequence of the legislation driving MPA designation. For example, Natura 2000 sites are only required, as a minimum, to monitor the species or habitats for which the site has been designated, as these must be reported under Article 17 of the Habitats Directive. Their conservation status determines whether the site is achieving its objective. Impacts on other species, including ones of commercial interest, typically remain unmonitored. Given resource constraints this is understandable.

But it is a missed opportunity to obtain hard information with which to enter into debate with economic sectors. A more complete, long-term monitoring and evaluation programme – that includes items of economic relevance – would support greater understanding of the benefits of MPAs. This in turn may foster greater stakeholder support for the MPA as well as supporting the wider debate on the importance of natural capital and the need to protect it.

The research found a small number of examples of full social, economic and ecological monitoring and evaluation associated with MPAs. In some cases these provide information to guide ongoing management. But more typically they have remained time-limited and periodic.

Social and economic monitoring examples

In Os Miñarzos (Spain), ecological monitoring as well as social and economic monitoring of fishing activity was carried out (although the funding to do so was only available during the early years of the MPA).

In Lyme Bay MP (UK), social, ecological and economic monitoring has been undertaken on a periodic basis. It was initially funded through by the UK Government, and more recently by the Blue Marine Foundation, an NGO that has been assisting the management and development of the MPA.

Monitoring of the management plan for Iroise Marine Nature Park (France) is reported upon annually via a 'dashboard' of indicators, alongside their qualitative translation (on a scale from "very bad" to "very good"). This helps the Park's governing body to achieve balance between economic and environmental objectives and allows progress against these objectives to be tracked.

Management of the Sečovelje Salina Nature Park (Slovenia) is monitored by the park's Committee. The Committee evaluates the progress of the park against key performance indicators relevant to the park's goals including preservation of species and habitats, enabling park experiences, achievement of public interest objectives and facilitation of the connection between the local population and the park.

Monitoring needs to be programmed in from the point at which MPAs are being considered for designation. Just like environmental monitoring, social and economic monitoring requires a robust baseline (ideally situated before MPA designation) and a committed long-term programme in order to deliver effective results.

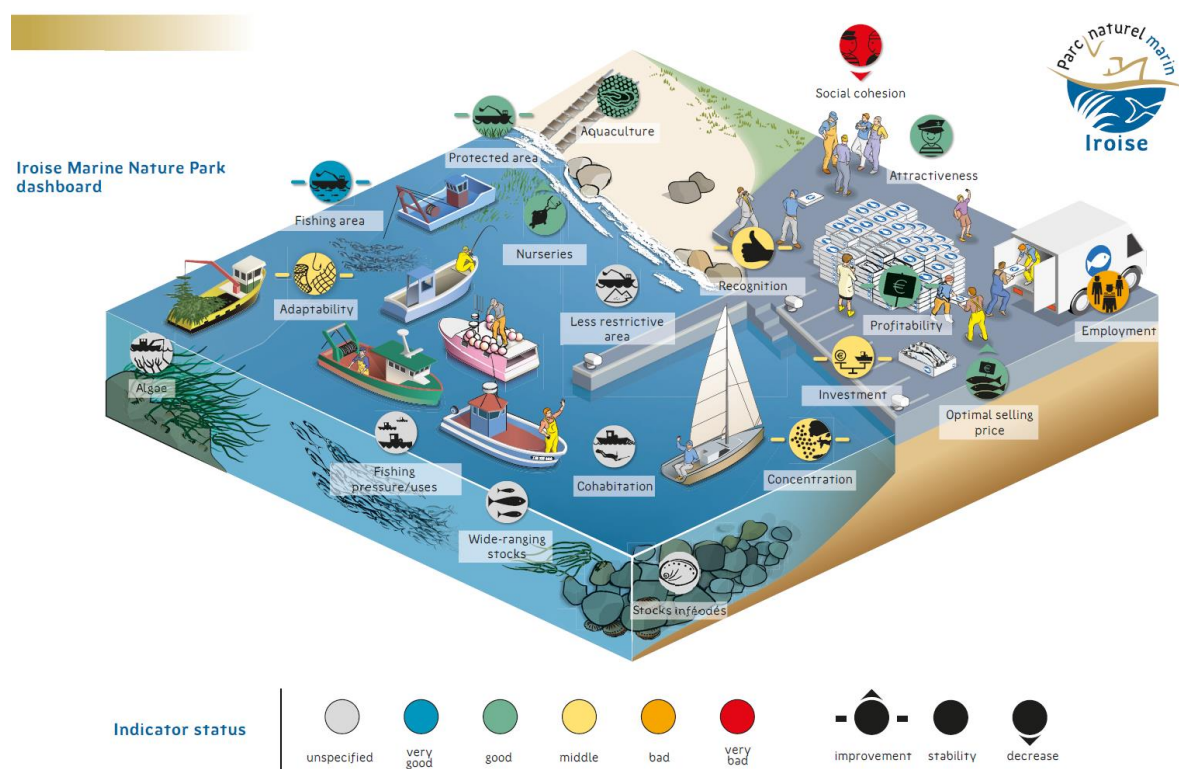
To enable comparability across MPAs and understanding of best practices, some level of standardisation in monitoring and evaluation would be beneficial. This could be achieved through a broader EU or Member State programme of MPA monitoring and evaluation at site or network level.

Long-term monitoring is essential as many ecological impacts may take years to appear and consequently, any social and economic benefits may only become apparent in the long run. This reinforces the need for long-term investment in monitoring.

Opportunities exist for reducing the cost burden of long-term monitoring, including involving MPA users (such as divers, as already done in some MPAs) and other citizen scientists in data collection. Involving MPA users in monitoring would also support the IUCN recommendation that indigenous/traditional knowledge is more fully captured in MPA management. It may also be an important tool for reducing conflict between the MPA management and MPA users.

New technological solutions, such as unmanned and autonomous vehicles and satellite applications, also provide opportunities for improved social and economic monitoring. For instance, inshore vessel monitoring systems (iVMS) are also being used to observe fishing behaviour around MPAs. In Lyme Bay, inshore VMS has been trialled on fishing vessels under 12m to assess its potential as a management tool, to support surveillance and refine spatial management rules within the MPA.

Iroise Marine Nature Park (France) uses info-graphics (see below) and provides indicator trends as part of its monitoring reporting (source: Agence des aires marines protégées)



9 Sustainable MPAs require sustained funding

Good management, proper enforcement and sustained monitoring require financing. However, many European MPAs are not adequately funded.

Public funding is declining in many locations, as witnessed in the MPAs of Torre Guaceto, Iroise and Cabrera. Shrinking funds jeopardise both the environmental and economic success of MPAs and their long-term continuation. For example, the reduced availability of public funding for surveillance and enforcement in Os Miñarzos resulted in declining fish stocks and decreasing related income of local fishermen.

For this reason, it is becoming increasingly important that public funding is complemented by alternative sources, particularly self-generated sources that are not time-limited (such as direct payments by tourists, i.e. payment for ecosystem services).

Diver fees are already in place in some MPAs, like for example the diver access fee in the Medes Island Marine Reserve (Spain) of €3.5 per dive. Other types of access fees appear rarely used, but as is shown in Bonaire they can target all MPA users. Tourism taxes can offer an easier route for comprehensive collection, but there is a risk that collected funds do not get channelled towards MPA management. The example of Bonaire National Marine Park shows that **payment for ecosystem services** programmes can be an effective option to raise funds for environmental conservation and MPA management.

A targeted tax on MPA users

A tax is levied on transport services for all maritime passengers travelling to the Îles du Ponant (France), a group of 15 islands that are located within a MPA. The tax is set at between 1.5% and 7% of the ticket price.

The study's literature review found evidence that the imposition of fees is not necessarily opposed by MPA users. Font and Lloret (2011) found that 65% of the surveyed anglers in Cap de Creus (Spain) were willing to pay a fee of between €5 and €60, with a mean value of €20, and only 26% were opposed. Trivourea et al (2011) found that 78% of interviewed visitors would be willing to pay an entrance fee in order to visit the uninhabited areas of Alonissos MPA (Greece). According to Green and Donnelly (2003), tourists visiting the Caribbean island are willing to pay a fee of around US\$ 25 per person, even though the actual fees are at about US\$2-3 per diver.

Public and NGO grant funding is major source of income for MPA management. However private investments can also be accessed (as occurred in Sečovlje Salina Nature Park, Slovenia), including through public-private partnerships.

Complementary financing sources should ideally be secured for a long period, in order to reduce vulnerability to changes in funding opportunities and to allow the involved stakeholders to plan their activities on the long term. Using a variety of sources can increase resilience against possible changes in funding opportunities. In many cases there are a number of readily accessible sources that can be tapped by MPA management bodies.

Self-generated funding from a range of accessible sources

The management body of the Egadi MPA (Italy) utilises a number of self-generated funding sources which generate around €350,000 a year – about 50% of the MPA budget. They include funds raised from fines for illegal activities (€35,000), permits/authorisations, tourist entrance fees (€200,000, merchandising, sponsorship and donations.

The Cabrera MPA (Spain) management body generates around €400,000 a year, close to one quarter of its total core financial needs, from a mix of ferry company licence fees, diver fees, mooring fees, tourism facilities including a hostel and museum and guided tour services.



As is shown in the Bonaire case study, obligations may be attached to time-limited funding (such as grants) that require mechanisms to enable a certain level of self-funding by the end of the grant period – indeed, such obligations may be necessary to focus resources on such medium term priorities when other shorter term priorities may seem more important.

A success story for self-generated funds in the Dutch Caribbean

In 1991, Dutch Government funding was provided to 'revitalize' the Bonaire National Marine Park (Dutch Caribbean). A key condition of the funding was that the Park should become self-financing within the term of the grant. The Park now derives 90% of its funding from park user fees, including a dive tag fee of US\$25 per year and US\$10 per year fee for all other recreational activities (e.g. snorkelling, sailing) (local residents are exempted). The revenue from the fee is spent on maintaining the marine assets that tourists are paying to use, which helps legitimise the fee in the eyes of those paying it. The independence of funding sources from the government is a benefit for the management authority, as it both ensures its autonomy and guards it against a possible reduction in the available public funding that may result from changes in political priorities.



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