



The contribution of Area-based Management Tools to Sustainable Development Goals and Targets

Technical Report

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Contents

Technical Report	1
Abbreviations	4
1 Introduction.....	5
2 The contribution of area-based management tools to Sustainable Development Goals and Targets 13	
2.1 Area-based management tools contribute to Sustainable Development Goals	13
2.2 Drivers of area-based management tool use.....	14
2.3 The attributes of area-based management tools that support Sustainable Development Goal alignment	21
2.4 Tools used in combination to deliver policies	31
2.5 Area-based management plans provide a framework for action	32
2.6 Synergies	33
3 Enabling conditions and barriers influencing the effectiveness of area-based management tools	35
3.1 Spatial Scale	35
3.2 Legal basis.....	40
3.3 Institutional framework	41
3.4 Funding.....	43
3.5 Multi-Sector stakeholder engagement.....	46
3.6 Use of iterative/adaptive process.....	51
3.7 Data Collection & Monitoring	52
4 Conclusions & Recommendations	56
4.1 Conclusions	56
4.2 Recommendations	57
5 References.....	61
6 Annex.....	69
6.1 Case Study Analytical Framework.....	69
6.2 Sustainable Development Goals Assessed	71

Abbreviations

ABMT	Area-Based Management Tool
ABNJ	Areas Beyond National Jurisdiction
APEI	Area of Particular Environmental Interest
BOBLME	Bay of Bengal Large Marine Ecosystem
CBD	Convention on Biological Diversity
CTI-CFF	Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security
EBM	Ecosystem-Based Management
EC	European Commission
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
FKNMS	Florida Keys National Marine Sanctuary
ICZM	Integrated Coastal Zone Management
IRBM	Integrated River Basin Management
IMO	International Maritime Organization
ISA	International Seabed Authority
IUU	Illegal, unreported and unregulated fishing
LMMA	Locally Managed Marine Area
MAP	Mediterranean Action Plan
MARPOL	International Convention for the Prevention of Pollution from Ships
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive (of the European Union)
MSP	Marine Spatial Planning
NEAFC	North-East Atlantic Fisheries Commission
PAP/RAC	Priority Actions Programme/Regional Activity Centre
PCZM	Patagonian Coastal Zone Management
PERSGA	Regional Organisation for the Conservation of the Environment of the Red Sea and Gulf of Aden
PNCIMA	Pacific North Coast Integrated Management Area
PSSA	Particularly Sensitive Sea Area
SAP	Strategic Action Programme
SDG	Sustainable Development Goal
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Seas
UN Environment	United Nations Environment Programme
UN Environment/MAP	UN Environment Mediterranean Action Plan
UNGA	United Nations General Assembly
VME	Vulnerable Marine Ecosystem

1 Introduction

Area-based management tools

An area-based (or spatial) management tool is an approach that enables the application of management measures to a specific area to achieve a desired policy outcome. A wide variety of area-based management tools exist, each with their own purpose, mandate and authority. Some tools are focused on managing individual activities in a specific area, such as fisheries closure areas, pollution management zones, and seabed mining exclusion areas. Other tools, such as marine spatial planning and integrated coastal zone management, seek to coordinate several types of activity in the same area. Regulation of activities may be required to support blue growth and sustainable development, conservation of critical habitats such as coral reefs or marine features such as seamounts, and to align with provisions or requirements set out in national or regional policies and legislation. A commonality to all these tools is that the management measures they include are applied to a defined area, usually through the creation and implementation of a management plan. Management plans guide implementation of the tool by outlining tool objectives, dedicated management measures, and monitoring and review requirements, which helps support and track progress towards a desired goal or commitment.

Area-based management tools in a global context

Area-based management tools have been recognised as a useful tool for working towards the sustainable use of marine and coastal resources. As such, the use of specific area-based management tools in marine and coastal zones has been defined by a number of global and regional agreements, and the commitment to use them has been reiterated in many international processes. For example, the 2030 Agenda for Sustainable Development - a “*plan of action for people, planet and prosperity*” - stimulates national and regional action towards Sustainable Development via 17 Sustainable Development Goals and 169 associated Targets. In the words of the Agenda, these Goals and Targets “are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental” (United Nations, 2015). Area-based management tools can be useful in fulfilling the need for an integrated approach to sustainable development as they can be used to address each of these dimensions through the considerate and balanced management of marine and coastal activities to contribute towards the delivery of Sustainable Development Goals. Specifically, Sustainable Development Goal (SDG) **Target 14.2** calls on countries to: “By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans” and **Target 14.5** calls for countries to: “By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information”.

The **UN Ocean Conference Call for Action** (June 2017) calls upon on “all stakeholders to conserve and sustainably use the oceans, seas, and marine resources for sustainable development... on an urgent basis” including supporting “the use of effective and appropriate area-based management tools, including marine protected areas and other integrated, cross-sectoral approaches, including marine spatial planning and integrated coastal zone management” (United Nations General Assembly, 2017). This echoes the **European Commission and IOC-UNESCO Maritime Spatial Planning Joint Roadmap** published in March 2017, that seeks to “accelerate Maritime/Marine Spatial Planning processes worldwide” (European Commission and UNESCO, 2017) and the **UN Environment Assembly resolution 2/10 ‘Oceans and Seas’** (May 2016) which calls on UN Environment to enable “intersectoral cooperation in integrated coastal zone management and marine spatial planning” and, when requested, to provide “technical advice on the designation, establishment and active management of marine protected areas and on the application of other spatial management measures”

(United Nations Environment Assembly of the United Nations Environment Programme, 2016). Area-based management tools, used in a marine or coastal context, can therefore originate from a variety of sources, including international conventions, regional agreements, and national or sub-national processes.

Tool guidance and variation

In instances where a tool has originated from a particular global or regional agreement, common understanding between parties on the scope and design of the tool means that there tend to be similarities in its application regardless of where it is applied. For example, Particularly Sensitive Sea Areas, designated by the International Maritime Organization (IMO) to protect sensitive marine and coastal areas from the impacts of shipping, are applied around the world and have comparable designation criteria, management measures, and legal status in all locations.

Tools that originate from global agreements and processes are generally also supported by guidance documentation aiming to promote practical convergence in how the tool is designed and applied. Guidance can also be provided within a regional context, where regions are defined by dedicated agreements such as the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. Examples of international guidance are provided in Box 1 (right).

In contrast, where area-based management tools are developed at national and sub-national scales (or substantially adapted from a globally defined approach), they show greater spatial variation in form and function. For example, many countries have nationally tailored marine protected area designations, which exhibit different designation criteria, designation processes, and legal status from those used in other countries. Such variation is driven by the need to respond to local conditions and needs, but generates significant diversity in the form and function of area-based management tools. However, in the case of the European Union, diversity between Member States is less pronounced as a result of regional guidelines and recommendations. Guidelines for the European region, for example the European Council Recommendation on Integrated Coastal Zone Management (The European Parliament and the Council of the European Union, 2002), reduce variability between area-based management approaches in this region by advocating an integrated approach.

Localised area-based management tools tend to have fewer guidance documents as they are not necessarily implemented as part of an overarching framework approach. The form and function of area-based management tools is therefore highly variable and can influence the strength or robustness of tool implementation in addressing a particular issue. Regardless of variability in tool design between management areas, countries and regions, contributions towards the delivery of ocean-related Sustainable Development Goals and Targets can be significant at all scales.

Box 1

- the **Convention on Biological Diversity (CBD)** guidance on marine spatial planning (Secretariat of the Convention on Biological Diversity and the Scientific and Technical Advisory Panel —GEF, 2012);
- the **IOC-UNESCO** step-by-step guide to marine spatial planning (Ehler and Douvère, 2009);
- International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009b);
- Revised guidelines for the identification and designation of Particularly Sensitive Sea Areas (International Maritime Organisation, 2006).

Aim

The aim of this project is to review how the use of the area-based management tools can contribute to the delivery of Sustainable Development Goals and Targets. The review is based on a detailed examination of different types of area-based management tool represented by twenty-five examples of implementation in a marine or coastal context from around the world. The review identifies enabling conditions and barriers that support or inhibit the contribution of area-based tools to Sustainable Development Goals, and explores the influence of scale, sectoral focus, and policy drivers on potential contributions. The report presents evidence from real-world tools that demonstrates the factors which influence the extent of tool contribution to Goals and Targets. The findings of this report are summarized in a set of guidance points or recommendations on the use of area-based management tools for supporting and contributing towards Sustainable Development Goals and Targets.

Review method

This report reviews how twelve different types of area-based management tool contribute to (or are aligned with) Sustainable Development Goals and Targets (

Table 1 and Error! Reference source not found.). The review evaluated twenty-five specific examples of area-based management tools (see Table 2 for details). Each tool was assessed to identify its contribution to forty-five Sustainable Development Goal Targets (listed in Annex 6.2), pre-selected as being particularly relevant to ocean management, as identified by the International Council for Science (International Council for Science, 2017). A structured and replicable method was applied to each case study using the analytical framework presented in Annex 6.1. In summary, each case study was reviewed to determine descriptive ‘facts of the matter’ (simple factual information), followed by a more complex analysis of the characteristics of each case study to determine its alignment with or contribution to each of the forty-five Sustainable Development Goals and Targets. Any influential factors affecting a tool’s tangible or potential contributions, including scale, sectoral focus, barriers and enablers, were noted and assessed.

This review recognises that Sustainable Development Goals post-date all but the most recent area-based management tool designations. Therefore, few area-based management tools have **dedicated aims or provisions** specifically relating to the delivery of Sustainable Development Goals or Targets. However, many area-based management tools seek policy objectives that are **aligned with** Sustainable Development Goals and/or Targets, particularly those related to the sustainable use of marine and coastal resources. As a result, many area-based management tools are capable of indirectly contributing to Sustainable Development Goals and Targets through aligned policy objectives. In instances where the policy objectives of a tool were found to align with Sustainable Development Goals or Targets, this was considered evidence of the potential for a particular tool to contribute towards the delivery of those Goals or Targets. Finally, for area-based management tools sufficiently progressed into implementation, evidence was sought to identify tangible contributions to Sustainable Development Goals and Targets.

Selection of area-based management tool case studies

Case studies were selected to reflect the main internationally accepted area-based management tools used to support the conservation and sustainable use of oceans, seas and marine resources (typical spatial coverage of such tools is highlighted in **Figure 1-1**). The minimum requirement for the definition of an area-based management tool was its ability to generate management interventions for a defined area over a defined time. The spatial setting, policy driver(s), management methods and intended outcomes were further influences on the selection of case studies. The resulting selection of case studies is intended to reflect the suite of commonly used marine or coastal area-based

management tools in a range of different national, economic, and social contexts. Through reviewing the practical application of each tool in its own context, barriers and enabling conditions to their effective application and their ability to support the delivery of ocean related Sustainable Development Goals could be determined. The area-based management tools reviewed in this study are defined in **Table 1** and the location and name of each case study presented in **Figure 1-2** and **Table 2** respectively.

Figure 1-1: Illustrative spatial coverage of the area-based management tools

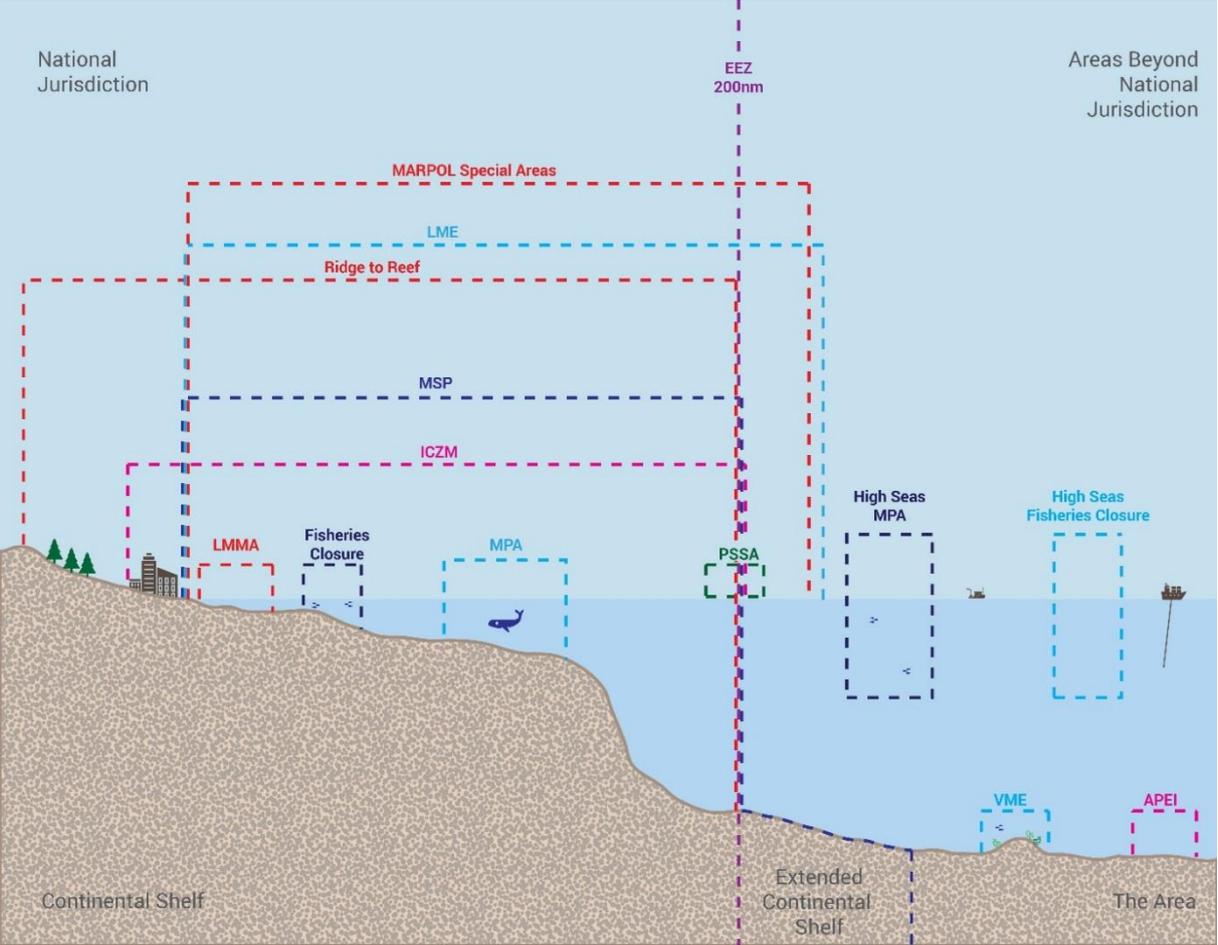


Table 1: Area-based management tools included in this study

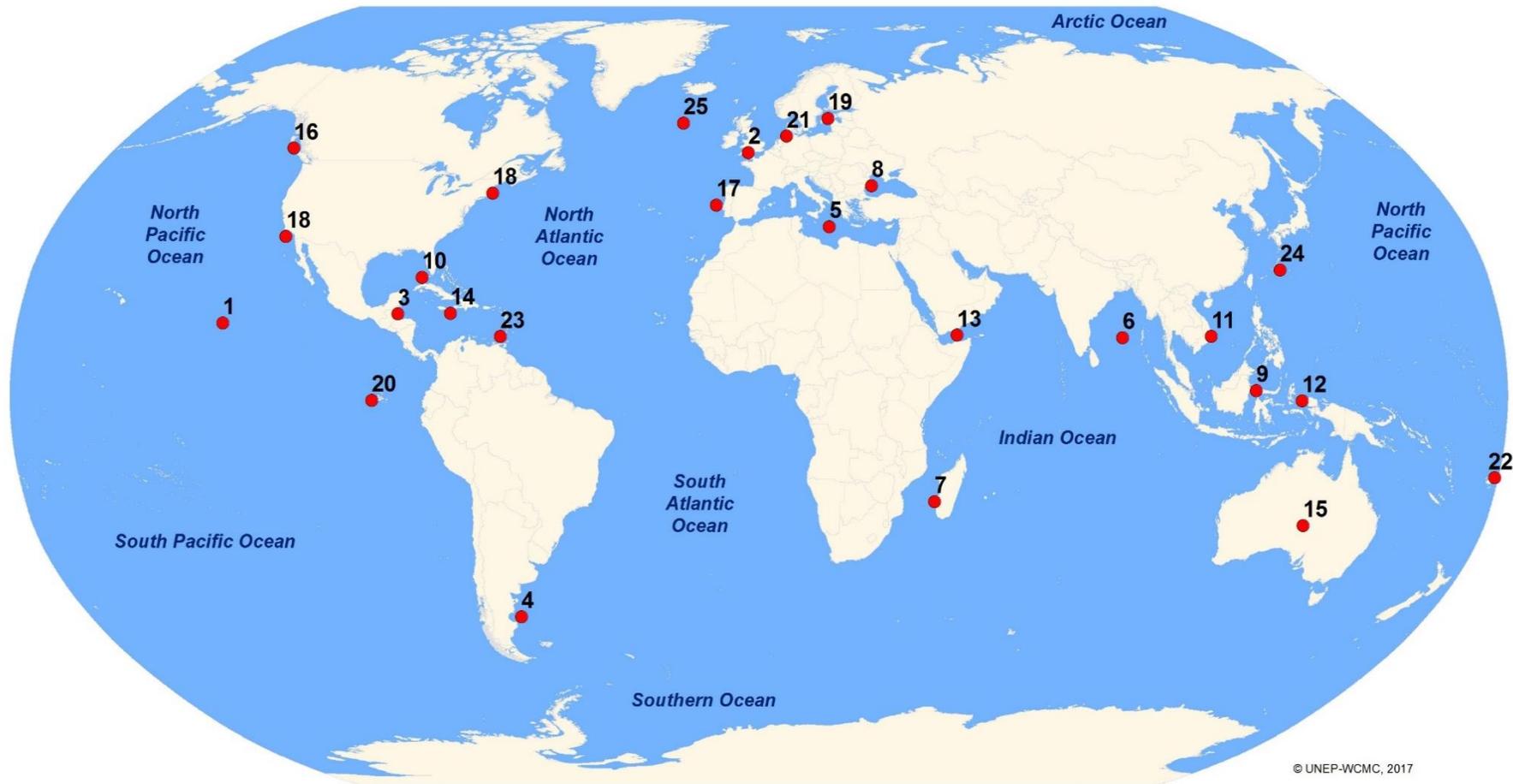
Area-based Management tool	Description
Area of Particular Environmental Interest	Areas of Particular Environmental Interest are management tools used by the International Seabed Authority and are unique to the Clarion-Clipperton Zone in the Eastern Pacific Ocean. Areas of Particular Environmental Interest are considered to be “representative seafloor areas that are closed to mining

Area-based Management tool	Description
	activities” in order to “protect biodiversity and ecosystem structure and function” (International Seabed Authority Legal & Technical Commission, 2012). These areas make up a system of protected sites that aim to include a “wide range of the habitat type present in the Clarion-Clipperton Zone” (International Seabed Authority Legal & Technical Commission, 2012).
Fisheries closure	“In a fishery management system, the closure to fishing by particular gear(s) of an entire fishing ground, or a part of it, for the protection of a selection of the population (e.g. spawners, juveniles), the whole population or several populations. The closure is usually seasonal, but could be permanent” (FAO, 2014).
Integrated Coastal Zone Management	“‘Integrated coastal zone management’ means a dynamic process for the sustainable management and use of coastal zones, taking into account at the same time the fragility of coastal ecosystems and landscapes, the diversity of activities and uses, their interactions, the maritime orientation of certain activities and uses and their impact on both the marine and land parts.” (Protocol on Integrated Coastal Zone Management in the Mediterranean, 2009, Art. 2(f))
Large Marine Ecosystem	“Large Marine Ecosystems (LMEs) are relatively large areas of ocean space of approximately 200,000 km ² or greater, adjacent to the continents in coastal waters where primary productivity is generally higher than in open ocean areas” (NOAA, 2017a). The boundaries and extent of an LME are determined by four linked ecological, rather than political or economic criteria: bathymetry, hydrography, productivity and trophic relationships (Adapted from: (NOAA, 2017a)). The Large Marine Ecosystem approach is a way of promoting ecosystem-based management of coastal and marine resources within a framework of sustainable development (NOAA, 2017a).
Locally-Managed Marine Area	A locally-managed marine area is an area of nearshore waters that is actively being managed in a ‘local’ practitioner context by residing or neighbouring communities and/or families, or being collaboratively managed by both resident communities and local government representatives based in the immediate vicinity of the LMMA. LMMAs are usually ‘managed’ to achieve local conservation and/or sustainable development objectives (NOAA, 2017b) (LMMA Network, 2016).
Marine Protected Area	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, 2008).
Marine Protected Area Networks and	Marine Protected Area Networks are “a collection of individual marine protected areas operating cooperatively and synergistically, at various spatial

Area-based Management tool	Description
Systems	<p>scales, and with a range of protection levels, in order to fulfil ecological aims more effectively and comprehensively than individual sites could acting alone.” (IUCN World Commission on Protected Areas, 2008).</p> <p>Similarly to a Network, a Marine Protected Area System is a group of individual marine protected areas, however these individual areas are not ecologically connected. Systems are created through the same process as Networks and can be applied in similar geographical areas. However, in some instances, the geographical management area is so vast that ecological connectivity is unlikely and so the group of Marine Protected Areas would be described as a System rather than a Network. Both marine protected area networks and systems engage multiple sectors to support their intended outcomes.</p>
Marine Spatial Planning	<p>“Marine spatial planning (MSP) is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that are usually specified through a political process” (Ehler & Douvère, 2009).</p>
MARPOL Special Area	<p>“MARPOL [i.e. the International Convention for the Prevention of Pollution from Ships] defines certain sea areas as "special areas" in which, for technical reasons relating to their oceanographic and ecological condition and to their sea traffic, the adoption of special mandatory methods for the prevention of sea pollution is required. Under the Convention, these special areas are provided with a higher level of protection than other areas of the sea.” (IMO, 2017) Six different types of ‘special areas’ exist, relating to different types of pollution including sewage and emissions (IMO, 2017).</p>
Particularly Sensitive Sea Area	<p>“A Particularly Sensitive Sea Area is an area that needs special protection through action by the International Maritime Organisation (IMO) because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities” (IMO, 2006).</p>
Ridge to Reef	<p>“Healthy and well-managed river basins and coastal areas where people and nature thrive, is the vision behind IUCN’s initiative, ‘Ridge to Reef’ ... Ridge to Reef aims to protect, demonstrate sustainable approaches, and provide better economic understanding of the links between salt and freshwater ecosystems” (IUCN, 2017).</p>
Vulnerable Marine Ecosystem	<p>The International Guidelines for the Management of Deep-sea Fisheries in the High Seas state that “the main objectives of the management of Deep Sea Fisheries are to promote responsible fisheries that provide economic opportunities while ensuring the conservation of marine living resources and the protection of marine biodiversity” (FAO, 2009).</p>

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Figure 1-2: Location of the area-based management tool case studies included in this study



● Illustrative location of the area-based management tools included in this study (see Table 2 for Key).

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations Environment Programme or contributory organisations.

Table 2: Area-Based Management Tool Case Studies included in this Report

No.	Tool	Case Study	Location
1.	Area of Particular Environmental Interest	Clarion-Clipperton Zone Areas of Particular Environmental Interest	Mid Pacific
2.	Fisheries closure and conservation area	Lyme Bay Reserve	United Kingdom
3.	Integrated Coastal Zone Management	Coastal and Marine Spatial Planning in Belize	Belize
4.	Integrated Coastal Zone Management	Patagonian Coastal Zone Management Plan	Argentina
5.	Integrated Coastal Zone Management	Mediterranean Integrated Coastal Zone Management Protocol	Mediterranean
6.	Large Marine Ecosystem	Bay of Bengal Large Marine Ecosystem Project (BOBLME)	Bay of Bengal
7.	Locally Managed Marine Area	Madagascar Locally Managed Marine Area Network (MIHARI)	Madagascar
8.	Marine Protected Area	Black Sea MPA network	Black Sea (Romania & Bulgaria)
9.	Marine Protected Area	Caribbean Specially Protected Areas and Wildlife Protocol	Caribbean
10.	Marine Protected Area	Florida Keys National Marine Sanctuary	U.S.A (Florida)
11.	Marine Protected Area	Hon Mun Marine Protected Area	Viet Nam
12.	Marine Protected Area System	Coral Triangle Marine Protected Area System	Coral Triangle
13.	Marine Protected Area Network	Raja Ampat Marine Protected Area Network	Indonesia
14.	Marine Protected Area Network	Red Sea and Gulf of Aden Regional Marine Protected Area Network	Red Sea - Gulf of Aden
15.	Marine Spatial Planning	Marine Bioregional Planning	Australia
16.	Marine Spatial Planning	Pacific North Coast Integrated Management Area (PNCIMA)	Canada - Pacific North coast
17.	Marine Spatial Planning	Marine Spatial Planning in Portugal	Portugal
18.	MARPOL Emission Control Area	MARPOL North American Emission Control Area	North Atlantic
19.	MARPOL Special Area - Sewage	Baltic Sea Special Areas for Sewage	Baltic Sea
20.	Particularly Sensitive Sea Area	Galapagos Archipelago Particularly Sensitive Sea Area	Galapagos (Ecuador)
21.	Particularly Sensitive Sea Area	Wadden Sea Particularly Sensitive Sea Area	Wadden Sea (Netherlands)
22.	Ridge to Reef	Kubulau District Ridge to Reef	Fiji
23.	Ridge to Reef	Grenada Ridge to Reef Programme	Grenada
24.	Ridge to Reef through community based management	Nansei Shoto Ecoregion Ridge to Reef	Japan
25.	Vulnerable Marine Ecosystem	Mid-Atlantic Vulnerable Marine Ecosystem	North East Atlantic

2 The contribution of area-based management tools to Sustainable Development Goals and Targets

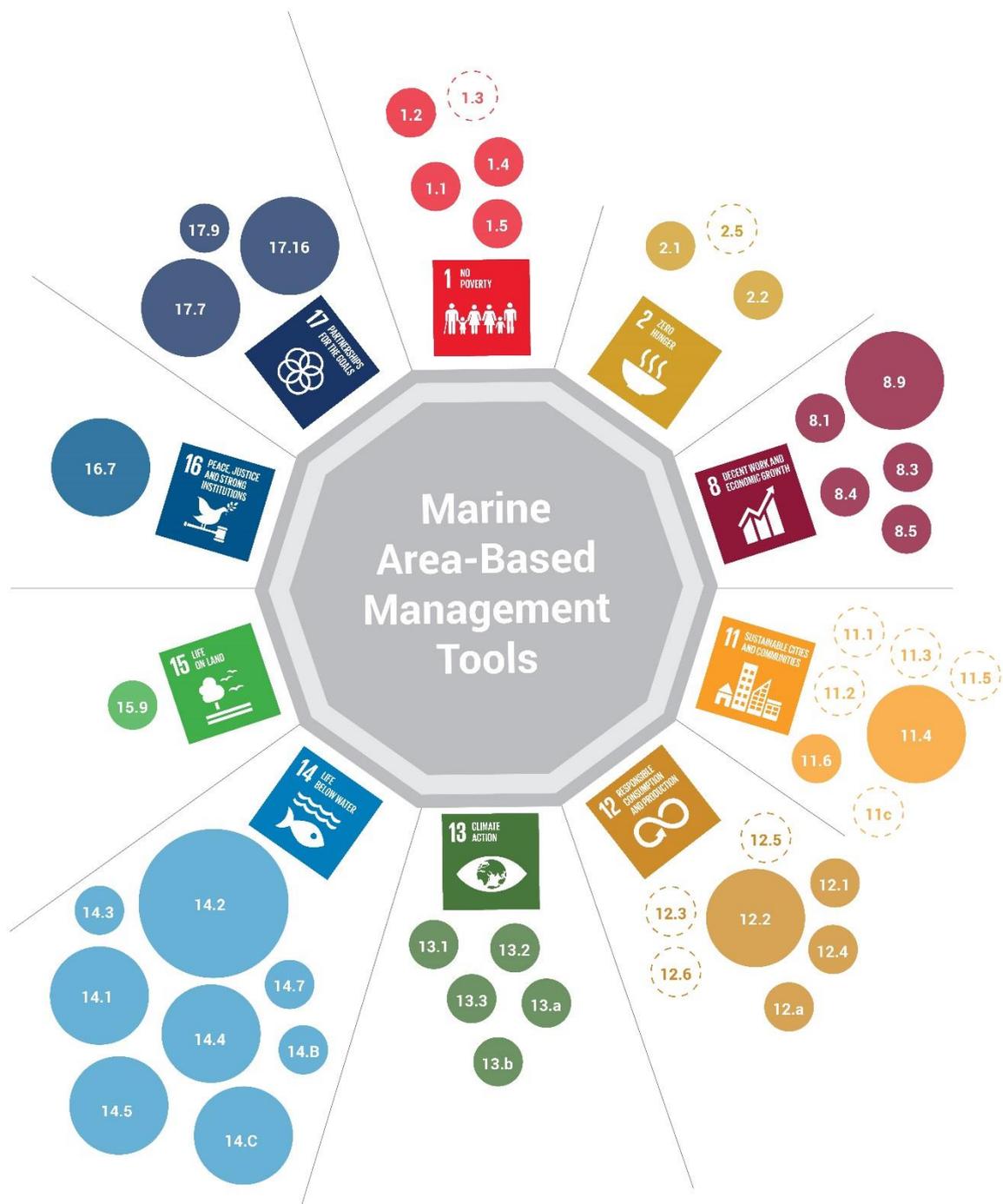
This Chapter analyses how application of the area-based management tools in the twenty-five case studies supports the implementation of the ocean-related Sustainable Development Goals and Targets. It also examines the types of policies supported by area-based management tools, and illustrates the way in which they are able to contribute to the delivery of Sustainable Development Goals. The effect of spatial scale is important, with some tools working at a large scale, and others being used at a more local scale, often overlapping by design and being used in a coordinated way. The chapter then discusses how the attributes of area-based management tools make them suitable to support Sustainable Development Goal delivery, and that different types of area-based management tool tend to contribute to a specific range of policy objectives. Finally, the chapter addresses how area-based management tools are able to deliver across multiple policy objectives, thus providing benefits to more than one Sustainable Development Goal Target at the same time.

2.1 Area-based management tools contribute to Sustainable Development Goals

Each area-based management tool case study was reviewed to determine its alignment with Sustainable Development Goals and Targets. Figure 2-1 shows that across the twenty-five case studies, tool policy objectives aligned with ten Sustainable Development Goals and thirty-nine Targets (of forty-five potentially relevant and assessed – equating to 87%). The results shown in Figure 2-1, were determined by comparing the stated objectives of each area-based management tool (determined from its management plan) with Sustainable Development Goals and Targets. In many cases, individual area-based management tools contributed to several different Goals and Target, with many having considerable potential to contribute to Sustainable Development Goal 14 (Life Below Water). The degree of alignment in Figure 2-1 illustrates that across all the case studies, all assessed Targets under Goal 14 were supported, in particular Target 14.2 which relates to the conservation and sustainable use of the oceans, seas and marine resources for sustainable development. However area-based management tools applied in a marine or coastal setting can contribute to not only Sustainable Development Goal 14 on life below water, but a number of other ocean-related and relevant targets of Agenda 2030 such as:

- Goal 8 Decent Work and Economic Growth;
 - Target 8.9 promoting sustainable tourism and promoting local culture;
- Goal 12 Responsible Consumption and Production;
 - Target 12.2 on the sustainable management and efficient use of natural resources;
- Goal 16 Peace, Justice and Strong Institutions
 - Target 16.7 on participatory decision making;
- Goal 17 Partnerships for the Goals
 - Target 17.7 on partnership development.

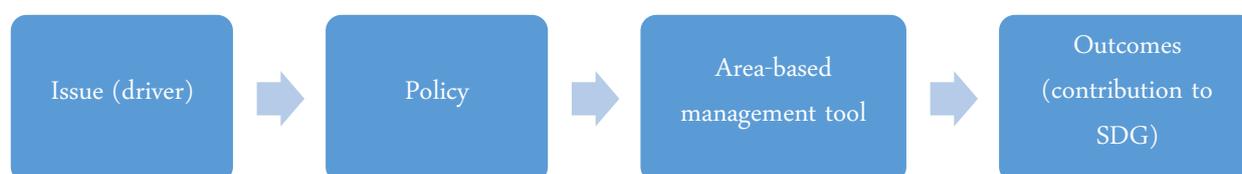
Figure 2-1: Contribution of area-based management case studies to Sustainable Development Goals. The circles in the diagram represent the number of instances in which a particular objective of the tool in each of the case studies aligned with the Sustainable Development Goal Target. Larger circles represent a greater number of case studies which aimed to achieve results against that particular target. Dashed circles indicate where potentially relevant Targets were assessed but not contributed towards by any of the 25 case studies. Results from all 25 area-based management tool case studies were merged and rounded into score ranges.



2.2 Drivers of area-based management tool use

The use of an area-based management tool is driven by the need to address a management issue in a reactive or proactive manner, as shown in **Figure 2-2**. Such issues could include, the need to sustain fish stocks, address sources of marine pollution, or to conserve critical habitats, *inter alia*. The area-based management tool, if effective, generates outcomes that implement a particular policy to address the underlying issue or challenge, which could ultimately contribute to Sustainable Development Goals. The pathway presented in **Figure 2-2** was explored for each case study and example drivers are provided below.

Figure 2-2 - Pathway between management issue and outcome



Drivers of area-based management tool use

Leadership from the six governments in the Coral Triangle region (namely Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor-Leste and the Solomon Islands) led to the establishment of the **Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)** and the **Marine Protected Area System** nested within. The Leaders Declaration sets out the goals of the initiative to urgently address poverty afflicting coastal people and the need to meet international development goals; at the time these were the Millennium Development Goals. The driver initiating the area-based management tool's application was therefore the need to address poverty. Food security and climate change adaptation were also key elements in the declaration (CTI-CFF, 2009a). As a result of the drivers being related to poverty, food security and climate change, these are the areas where the tool has potential to support relevant Sustainable Development Goals, and the tool supports policies which align with SDG1 on poverty, SDG2 on hunger and SDG13 on climate change. For example one of the goals of the Regional Action Plan is to "*improved income, livelihoods and food security of coastal communities through a new Sustainable Coastal Fisheries and Poverty Reduction Initiative (COASTFISH)*" (CTI-CFF, 2009b) .

The concept of **Vulnerable Marine Ecosystems (VME)** was introduced by UN General Assembly Resolution 61/105 in 2006. There were multiple drivers behind this Resolution, two of which were to support sustainable fisheries and to protect deep sea ecosystems from significant adverse impacts of deep sea fishing. The **Mid-Atlantic VME** area closures were first put in place in 2009 by Recommendations of the North East Atlantic Fisheries Commission (NEAFC) on VME closures and bottom fishing. With the Mid-Atlantic VME, NEAFC implements the aforementioned UN General Assembly Resolution, as well as policies to "ensure the long-term sustainability of deep sea fish stocks and non-target species, to rebuild depleted stocks, and to implement the precautionary approach where scientific information is uncertain, unreliable, or inadequate" (NEAFC, 2015). This NEAFC policy reflects the objective set out in the FAO Guidelines for the Management of Deep-sea Fisheries in the High Seas "to promote responsible fisheries that provide economic opportunities while ensuring the conservation of marine living resources and the protection of marine biodiversity" (p. 2, (FAO, 2009b)). As a result, this tool has the potential to support a number of targets under SDG14 on life below water by reducing the likelihood of adverse impacts on sea floor ecosystems and working to improve the sustainability of deep sea fish stocks. The NEAFC recommendation (19:2014) to close the VME takes into account the UN General Assembly resolution 61/105 and aims to establish management measures to protect vulnerable ecosystems and ensure the long-term sustainability of deep sea fish stocks (Res 19:2014 (NEAFC, 2015)). As a result it can contribute to the delivery of Target 14.2 on sustainable management of marine ecosystems. NEAFC actions can also contribute to Target 14.c because they work under the framework of implementing international law as reflected in United Nations Convention on Law of the Sea (p.1, (NEAFC, 1980)).

Table 3 (below) provides an illustration of the types of policies that area-based management tools aim to deliver that is in line with the pathway described above. Examples from the case studies are provided in Table 3 to illustrate potential contributions to Sustainable Development Goal Targets, however this list of examples is not exhaustive. It is also important to note that other Targets will also be supported by the same policy or tool in the examples given.

There are many factors that are known to influence the application of an area-based management tool in a specific context, including the legal framework, stakeholder composition, and problem to be addressed. In many cases, area-based management tools have not been in place long enough to show concrete ecological changes, or the monitoring is not quite adequate enough to demonstrate change – a challenge which is discussed further in Chapter 3. The tools highlighted in Table 3 illustrate how achievements within the various policy themes can be supported, however other tools may also be used to support these policy areas.

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Table 3 – Example types of policy focus delivered by area-based management tools, and ocean-related Sustainable Development Goals and Targets illustrated by case studies

Policy type	Policy implementation through area-based management tools – illustrative examples from case studies
<p>Social considerations, including empowerment and engagement of local communities.</p>	<p>The second phase of the Bay of Bengal Large Marine Ecosystem (BOBLME) Project aims to empower coastal people to participate in sustainable development practices through objectives and regional and national actions set out in a Strategic Action Programme. Whilst not yet in the implementation stage, the project aims to empower communities through measures including, but not limited to, the promotion of institutional coordination and collaboration to foster an enabling environment for coastal communities to work towards implementing national and regional actions; increasing capacity for community participation in management and decision-making, including the establishment of multi-sectoral platforms and fisheries management advisory fora (BOBLME, 2015a). In addition, while the programme acknowledges coastal fisheries and aquaculture as important for poverty reduction, it also identifies and supports the implementation of alternative income generating livelihoods, thus contributing to poverty-related Sustainable Development Goal targets (1.1, 1.2, 1.4 and 1.5).</p>
<p>Conservation and sustainable management of natural resources to maximise economic gain</p>	<p>Marine Spatial Planning in Portugal was undertaken to create an effective legal framework under the National Ocean Strategy 2013-2020, “for reconciling compatibilities between uses or competing activities, contributing towards a better and more economic use of the marine environment, allowing for the coordination of public authorities actions and private initiative, minimizing the impacts of human activities in the marine environment, en-route towards sustainability” within the entire maritime space adjacent to the mainland and archipelagos (DGPM, 2017). The National Ocean Strategy 2013-2020 aims to enhance the economic, social and environmental conditions of the national maritime space. Enhancements to economic and social conditions could help to support job creation and employment within the marine sector (8.3) and enhanced efforts to maintain the marine environment could involve improved resource efficiency and sustainable use which could help sustain and create marine opportunities (8.4, 12.2 & 14.2).</p>
<p>Conservation and sustainable use of coastal resources</p>	<p>In the Mediterranean, the Protocol on Integrated Coastal Zone Management is regarded as a key tool for achieving the objectives set out in the Mediterranean Action Plan regarding sustainable management and use of natural resources. The Protocol requires Parties to establish a common framework for the integrated management of the Mediterranean region.</p>

<p>Food security</p>	<p>The creation of a Marine Protected Area System is a key focus for the Coral Triangle Initiative in order to protect natural resources and enhance food security throughout the region. Research indicates that MPAs, specifically no-take marine areas, can help to sustain resources and enhance diversity, richness, biomass and the size of species (including commercially exploitable species). MPAs can result in a ‘spillover effect’ whereby the increased abundance and biomass of fished species spills over into adjacent areas (12.2, 14.2) (Russ & Alcala, 2011). Such effects can ultimately enhance food security by increasing the availability of exploitable catch for fisher populations. This has been shown to be the case in two no-take marine reserves in the Philippines (established for both fisheries management and conservation purposes), whereby species richness of large predatory reef fish increased fourfold and 11-fold over 14 and 25 years respectively, with ‘spillover effects’ from one reserve into adjacent waters (Russ & Alcala, 2011). In a recent study, community members surveyed at a number of project and control sites with MPAs within the Coral Triangle Region identified positive changes in ecosystem conditions since the implementation of policies to support the establishment of MPAs under the CTI-CFF, including improvements in coral and mangrove health and fish abundance (Christie <i>et al.</i>, 2016). In the same study, survey responses indicated perceived improvements to national food security, sustainable fisheries and coral reef health as a result of the MPAs established as part of the CTI-CFF, thus demonstrating the role of the initiative in contributing towards targets 2.1 and 2.2 (Christie <i>et al.</i>, 2016).</p>
<p>Preservation of cultural heritage and support of recreation and tourism</p>	<p>One of the primary goals of the Florida Keys National Marine Sanctuary (FKNMS) is to contribute to the conservation, protection and enhancement of the cultural legacy of a national systems of marine protected areas and in doing so, contribute towards the global marine conservation targets (14.5) (National Marine Sanctuary Program, 2007). Tourism is a significant contributor to the local economy within the FKNMS. Through a policy to sustain and bolster the dive tourism industry whilst simultaneously protecting the area’s natural heritage, four artificial reefs in the form of shipwrecks have been created in the FKNMS since 1997. The sinking of the ships was permitted following an extensive evaluation and permitting process. One prominent example is the sinking of the USS Spiegel Grove in the waters off Key Largo in 2002 in order to create an artificial reef (FKNMS, 2017). The aim of the artificial reef was to support local scuba diving charter businesses, whilst providing ecological benefits in the form of reduced dive pressure on natural reefs in the area. A 2005 study, found that the presence of the artificial reef resulted in a 13.7% decrease in total use of surrounding natural reefs and an increase in the local dive tourism industry (Leeworthy, Maher and Stone, 2006). Whilst these events occurred prior to the establishment of the sustainable development goals, these actions demonstrate the desire to maintain and preserve the natural heritage of the sanctuary (11.4).</p>

<p>Conserve health and resilience of the marine environment, biodiversity, and critical habitats</p>	<p>Policies relating to wider biodiversity conservation, ecosystem health and sustainable resource use have been implemented in Indonesia through the establishment of the Raja Ampat Marine Protected Area Network. The creation of marine protected areas can mitigate adverse impacts associated with a wide range of marine activities and support the delivery of sustainable development goal targets through measures established under overarching policy goals, including the implementation of quotas, gear restrictions or the designation of no-take zones. This has been demonstrated specifically, the Misool Eco-Resort in Raja Ampat– a 168 square mile, no-take zone that is managed in partnership with WildAid and the Coral Reef Partnership. In the five years following the designation of the area and continual patrolling by local rangers, blacktip reef sharks have returned to the region and fish biomass has improved through the reduction of destructive fishing practices (12.2, 12a) (Heinrichs, 2011). Following the success of the eco-resort, the entire 15,000 square mile area of Raja Ampat was established as the Raja Ampat Shark Sanctuary in 2010 to support the delivery of policies relating to biodiversity conservation and ecosystem health. The sanctuary provides full protection for sharks, mobula, manta rays, dugongs and turtles and additionally prohibits highly destructive fishing practices and fishing for the aquarium fish trade and is aimed at enhancing and maintaining biodiversity and ecosystems and sustainable use of coastal and marine resources through increases in sustainable eco-tourism (8.9, 14.2, 12.4, 14.5) (Heinrichs, 2011).</p>
<p>Integrated development planning and capacity development activities</p>	<p>As part of the implementation of a regional conservation policy Red Sea and Gulf of Aden Marine Protected Area Network, PERSGA held a number of regional training workshop on marine protected area planning and management to improve technical capacity and knowledge in these areas. Regional approaches such as this facilitate the sharing of lessons or good practice between countries and helps to build strong relationships, ultimately supporting the delivery of Target 17.9.</p> <p>One of the objectives of the Marine Mammal Action Plan, under the Caribbean Specially Protected Areas and Wildlife Protocol, is to establish regional cooperation programmes to “increase scientific, technical, and educational exchange among relevant national, regional, and international organizations” (UNEP, 2008), thus contributing to the delivery of Target 17.9.</p>
<p>Climate change adaptation</p>	<p>In the context of Marine Spatial Planning in Portugal, plans can be updated and adapted to address emerging issues. As such, an update to the national climate change adaptation plan established a working group for coastal management issues, which identified required actions for climate change adaptation and mitigation, which support the delivery of Target 13.1 and 13.2 (European Commission, 2017).</p>
<p>Minimise marine (air) pollution</p>	<p>The North American MARPOL Special Area - Emission Control Area sets limits for emissions of the main pollutants contained in ship exhaust fumes, including nitrous oxides (NOx), Sulphur Oxides (SOx) and Ozone Depleting Substances and as such supports the delivery of Target 12.4 and 14c (IMO, 2017).</p>

Engagement and collaboration with and empowerment of local communities

In the **Raja Ampat Marine Protected Area Network**, sustainable tourism is being promoted as a means of reducing IUU fishing within the area by private businesses, in partnership with NGOs (17.7). One such operator has signed up to 20 concession agreements with local communities and has delineated a privately managed sanctuary in which fishing and other economic activities are prohibited to ensure the protection and conservation of the environment and resources within (11.4) (Steenbergen, 2013). In return, the dive operator provides the surrounding communities with a spectrum of benefits and services including, monetary payments, employment opportunities and training for locals in the tourism industry, and in-village infrastructure improvements (14.7). In particular, the dive operator has attempted to implement a ‘social well-being approach’ to address the root causes of illegal fishing, such as unemployment and lack of alternative income (8.9). This approach has included, the employment and training of locals in the dive industry, and the establishment of woodworking cooperatives to train locals in furniture making to promote stable income and sustainable forest resource use (Steenbergen, 2013). Finally, the dive operator engages in the enforcement of fishing regulations in the area, using the diving boats to monitor IUU fishing, provide a continuous presence of dive staff and tourist on the reefs to deter illegal fishing practices, and to apprehend illegal fishers (14.4) (Steenbergen, 2013).

2.3 The attributes of area-based management tools that support Sustainable Development Goal alignment

During the analysis, it became clear that certain attributes of area-based management tools make them suitable to support the delivery of particular Sustainable Development Goals. A number of common attributes of area-based management tools have been identified and are described in Figure 2-3. An examination of the differences in attributes between the types of area-based management tools reviewed is presented in Figure 2-4. This section will focus on a number of these attributes and examine their value in supporting Sustainable Development Goals. The following attributes were considered in more detail:

- Tool Spatial focus (terrestrial and marine)
- Ecosystem-based management
- Stakeholder engagement
- Transboundary cooperation
- Sector focus

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Figure 2-3 - Common attributes of Area-Based Management Tools



Figure 2-4 - Examination of attributes of different Area-Based Management Tools reviewed in this study

Tool	Tool Spatial Focus		Tool Sector Focus		Tool Attributes				
	Sea	Land	Multi	Single	Reliance on spatial data and analysis	Adaptive based on performance monitoring	Transboundary focus	Stakeholder engagement	Ecosystem-based management
Integrated Coastal Zone Management (ICZM)									
Ridge to Reef									
Large Marine Ecosystem									
Locally Managed Marine Area									
Marine Spatial Planning (MSP)									
Area of Particular Environmental Interest									
Fisheries Closure / Management Area									
Marine Protected Area (MPA)									
MARPOL Special Area									
Particularly Sensitive Sea Area									
Vulnerable Marine Ecosystem									

2.3.1 Tool Spatial Focus

Larger scale frameworks can support the delivery of area-based management tools at the international and national level. The design of large-scale area-based management tools can also aid their implementation on smaller scales such as local or community scales by providing an overarching framework. In the example below, a regional framework has been established, which is then implemented by countries at the national level through national legislation. The highly connected nature of the marine environment, and the fact that many issues are considered to be transboundary, means that consistency in approaches between countries or municipalities can be highly beneficial in addressing such issues.

Mediterranean ICZM implemented at national level

Protocol on Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol), was signed in 2008 in Madrid and entered into force in March 2011. The ICZM Protocol implements obligations set out in Article 4 of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean. To cascade from regional to local, it is important that ICZM is endorsed at the national level (Soriani, Buono and Camuffo, 2015). Implementation of ICZM in the Mediterranean, from a survey in 2010, suggested it was progressing well with 33% of the region having legislation in place and 38% progressing towards legislation (Shipman and Petit, 2010).

Tools which can cross the land-sea interface have the potential to solve challenges in the marine environment

Some multi-sector tools have a wide geographical remit that includes both land and sea areas; tool examples included in this study are Integrated Coastal Zone Management and Ridge to Reef approaches. The inclusion of both land and sea in a tool's focus can encompass a large variety of stakeholders and ultimately support efforts to address transboundary issues.

Run off and transboundary management

One advantage of a transboundary tool which encompasses the terrestrial environment, is its ability to manage pollution issues within the boundary of the tool planning area. For example, the **Grenada Ridge to Reef Project** and the **Japanese Nansei Shoto Ecoregion Ridge to Reef Project** incorporated in-land catchments and as a result were both able to focus on run off. Both area-based management tools adopted management measures to reduce harmful run-off damaging coral reefs (Ministry of Environment Government of Japan, ICRI and WWF, 2015) which contributed to Target 14.1.

Coastal regions across the globe are subject to a suite of pressures due to dense populations and intensive anthropogenic uses. For example, approximately 27 per cent of the world's population live near the coast on 9 per cent of the global land (Kummu *et al.*, 2016). In addition, over half the world's largest cities are located on the coast, further contributing to these pressures (Kummu *et al.*, 2016). Where there are population pressures, there are also issues of environmental degradation of the marine environment, for example as a result of land-based pollution. Addressing area-based management issues in the context of reducing the impact of coastal cities on marine and coastal areas has the potential to contribute to **SDG Target 11.6** relating to the environmental impact of cities and **Target 14.1** on land-based pollution.

Wastewater management in coastal cities - achieving synergies between SDGs 11.6 and 14.1

In the **Florida Keys National Marine Sanctuary (FKNMS)**, the negative impacts of land sourced pollution from the cities and settlements on the islands have been identified as a threat to the health of marine habitats in the Sanctuary. To address this threat, specific strategies for domestic wastewater, stormwater and landfill have been integrated into the Revised Marine Management Plan for the Sanctuary (FKNMS, 2007). The wastewater strategies, for example, support the enforcement of existing standards through inspection and compliance programmes, promote research to set nutrient reduction targets, drive the development of water quality standards and indicators, and advance engineering solutions such as regional wastewater treatment plants. Water quality in the Florida Keys has been monitored under the Water Quality Monitoring Program since 1995, feeding into the review of the Sanctuary Management Plan. As part of management responses to water quality pressures, local authorities are upgrading their wastewater infrastructure to provide improved wastewater treatment and reduce land-based impacts on the marine environment (Office of National Marine Sanctuaries, 2011).

2.3.2 Ecosystem-based management

The ecosystem approach is part of many area-based management tools and facilitates their delivery of Sustainable Development Goals.

The ecosystem approach is central to Sustainable Development Goals 14 and 15, which focus on specific ecosystems (marine and terrestrial ecosystems respectively) and encourage an ecosystem-based approach to their management. The term is highlighted in **Target 14.2** (to sustainably manage and protect marine and coastal ecosystems) and **Target 15.9** (which calls for ecosystem values to be integrated into planning) and is also relevant to the other Targets under both Goals. The ecosystem approach is also considered a key component of area-based management tools such as Marine Spatial Planning, Integrated Coastal Zone Management, Ridge to Reef approaches, Marine Protected Areas, and the Ecosystem Approach to Fisheries (FAO, 2010). Identification of ecosystems which may be vulnerable to human activities, and then integrating this information into the planning process, provides a mechanism to ensure that areas important for underlying ecosystem processes are integrated into management approaches.

Ecosystem-based management approaches can help identify where the focus for area-based management tools may be required.

The inclusion of ecosystems as a fundamental aspect in area-based management tool design can support the application of the ecosystem approach by providing ecological information. Such information can be used to inform management boundary definition in areas where management may be required. Specific area-based management targets can also be focused on particular ecosystems, supporting the delivery of Goal 14. Practically, the spatial boundary of an area-based management tool is often based on administrative boundaries, within which management actions can be undertaken. Helpfully, in the Fiji case study, ecological and political boundaries are similar, thus allowing activities affecting marine and coastal ecosystems to be appropriately managed in line with jurisdictional powers. In some cases, such as Belize, Argentina or Australia, the national area in which a tool can be applied is so large that it encompasses entire ecosystems and the threats that are afflicting them. It is therefore possible to undertake area-based management using an ecosystem approach for the entirety of sovereign maritime jurisdictions.

Case studies where the ecosystem boundary was included as part of the management tool

boundary

In the **Coral Triangle**, the scientific boundary is based on coral and coral reef fish diversity, while the implementation boundary is larger and encompasses the sovereign maritime jurisdictions of the six countries involved (CTI-CFF, 2017). The extent of the coral ecosystem was a key factor in the regional approach to marine conservation (**Target 14.5**) and food security (**Target 2.1**).

A **Large Marine Ecosystem (LME)** is a concept identifying large areas (greater than 200,000 km²) of highly productive coastal waters adjacent to continents. The four criteria to identify LMEs is environmental: (i) bathymetry, (ii) hydrography, (iii) productivity, and (iv) trophic relationships. Using these criteria, 64 LMEs have been identified (NOAA, 2017a). The **Bay of Bengal LME** is one example and is being considered for funding in order to improve regional environmental and fisheries management to support coastal communities.

In **Fiji** the boundary of the **Kubulau District Ridge to Reef** used traditional district units and customary fishing ground boundaries to determine its spatial coverage. This facilitates ecosystem-based management as traditional land tenure boundaries include ridge to reef units (Jupiter, 2011) supporting the delivery of a number of Targets including those under Sustainable Development Goal 14.

2.3.3 Stakeholder Engagement

Area-based management tools can facilitate stakeholder engagement and communication.

This section identifies how stakeholder engagement, as an attribute of area-based management tools, can support Sustainable Development Goal delivery. For details on how stakeholder engagement can be undertaken, and enabling factors, see Chapter 3.

Stakeholder engagement and inclusive decision-making is facilitated by area-based management tools through the processes established to develop, implement and monitor a management plan. The use of an area-based management tool also provides coastal communities and stakeholders with a common reason to engage with each other, for example, to collectively address issues of pollution or illegal fishing. Through stakeholder engagement, area-based management planning has the potential to contribute to Sustainable Development Goals related to justice (**SDG16**) and partnerships (**SDG17**).

The Ridge to Reef approach can connect communities

As part of the **Grenada Ridge to Reef Project**, transboundary management has been encouraged through the participation of local inland and coastal stakeholders in a co-management approach for the area. Local community stakeholders have participated in a series of workshops, consultations and training, and educational initiatives regarding management of the area. For example, the Reef Guardian Stewardship Program acts as a complementary program to the ridge to reef project, aiming to raise awareness and understanding of the linkages between inland activities and downstream impacts on coastal and marine ecosystem health. The project recognises, implements and promotes good environmental practices through educational and training workshops (e.g. proper fertiliser application techniques) and recognition of sustainable and environmentally friendly farming practices (Ministry of Environment Government of Japan, ICRI and WWF, 2015). In addition, educational tours to the inland Beausejour watershed, a farm belonging to a farmer who is part of the Reef Guardian programme and the Moliniere-Beausejour Marine Protected Area downstream have been held to educate school children and raise awareness of how inland activities affect coral reefs downstream (Grenada R2R Project, 2016). Such activities have helped to raise awareness of issues that transcend inland and coastal boundaries and have helped to create a dialogue between inland and coastal communities.

The creation of partnerships can support Sustainable Development Goal Delivery

Area-based management tools can support stakeholder engagement through the establishment of multi-stakeholder partnerships during the development and subsequent implementation of a management plan. These partnerships also provide a forum for ongoing participation and decision-making on management issues (Target 16.7).

Partnerships for sustainable development

The **BOBLME Project** worked with a wide range of stakeholders, including local communities, local, national and state governments, universities, technical experts, NGOs, industry and regional organisations, to develop a regional programme to determine how to address priority marine issues. By adopting participatory decision-making this contributed to **Target 16.7** to “Ensure responsive, inclusive, participatory and representative decision-making at all levels“ (BOBLME, 2011). In addition, the identification of specific regional and national actions under the Strategic Action Programme, was supported by the creation of multi-sectoral National Task Forces in some countries, in order to foster cooperation and coordination whilst addressing priority issues. These task forces comprised representatives from government ministries and departments, international and national NGOs, International development agencies, university researchers, public and private research institutions, the private sector and civil society organisations. They represent partnerships for sustainable development contributing to **Target 17.17** (BOBLME, 2011).

The **Florida Keys National Marine Sanctuary**, USA, has teamed up with NOAA’s Office of National Marine Sanctuaries, Catlin Seaview Survey and Google. The Catlin Seaview camera is being used to document reef conditions in the sanctuary. The special high resolution camera allows scenes to be stitched into 360 degree panoramas for eventual release on Google Street View (NOAA, 2014). This is an example of a partnership (**SDG17**) which has the potential to deliver monitoring results supporting conservation action.

The **Velondriake Locally Managed Marine Area** is one site within the wider **Madagascar Locally Managed Marine Area Network (MIHARI)**. This Network facilitates partnerships between Non-Governmental Organisations, policy-makers (government departments), local management organisations and local communities. The creation of a participatory information sharing network facilitated cooperation between managers of each of the over 150 locally managed marine areas throughout Madagascar (*pers comm* A. Harris, September 2017) and encouraged the sharing of lessons and best practice approaches to community managed marine protected areas. As such, the project is supporting the delivery of **Target 17.16** because it mobilizes partnerships to share knowledge and expertise. A web based platform has been created to support this Network (<https://mihari-network.org/>).

Area-based management tools can clarify rights and facilitate access

The application of management measures to a specific area requires the identification of rights holders. In instances where rights holders are unclear, area-based management processes can assist in clarifying rights through stakeholder engagement processes. Similarly, where the nature of the rights are unclear or non-transparent, the area-based management process can assist in clarifying and making rights more transparent to the wider stakeholder group. Rights clarification contributes to Sustainable Development Goal **Target 1.4** which advocates “equal rights to economic resources...ownership and control over land and other form of property” and **Target 14b** which supports “access for small-scale artisanal fishers” to marine resources. Given the potential for rights disputes to cause tension between stakeholders when discussing sustainable development, the clarification of rights through area-based management tools has the potential to reduce conflict between stakeholders and promote effective co-existence.

Mapping access and rights can result in engagement with management measures and increase compliance

In **Lyme Bay (UK)** legal measures were introduced to stop damaging fishing practices, in this case bottom trawling. Fishing through non-damaging methods is still permitted, such as pots to catch lobster and scuba diving for scallops and crabs. The protection of the reef has resulted in an increase in reef-associated species such as scallops, contributing to **Target 14.2** on marine ecosystem protection. Access is now regulated only for specific fishing methods and collaborative ventures between fisherman and an NGO has seen the launch of sustainable fishing brand called ‘Reserve Seafood’ providing an economic benefit to the area and supporting **Target 14b** on access by small-scale artisanal fishers. Fishermen who use static gear (pots) and hand dive caught shellfish have achieved increased job satisfaction and income and decreased conflict as a result of the management of the area. (Rees *et al.*, 2016). Singer (2016), notes that there is a 'sense of pride in sustainable fishing for local static boats'. The more damaging towed fishing methods were displaced outside the reserve which may have contributed to lower income and increased stress for this group. Trade-offs are something that needs to be considered in the context of area-based planning and the livelihoods of those that are affected by management decisions. Stakeholder engagement has been crucial to the effective delivery of the fisheries and conservation objectives in Lyme Bay. The creation of relationships between stakeholders has led to 'increased compliance, peer enforcement and collective learning' amongst users of the Reserve (Singer, 2016).

In the case of the **Pacific North Coast Integrated Planning Area (PNCIMA), Canada**, the planning process involved the creation of a collaborative partnership between federal, provincial, and First Nations governments (PNCIMA Initiative, 2017a). A number of First Nations assert title rights, including ownership, jurisdiction and management over the land, water and resources throughout their territories. As such, the strategic plan operates within a multi-jurisdictional management context and respects existing legal and administrative jurisdictions, including existing Aboriginal rights and treaty rights of Canada’s Aboriginal peoples, supporting **Target 1.4** on rights to economic resources and property. The plan adopts an ecosystem-based management approach that respects Aboriginal rights, titles and treaty rights and supports the achievement of mutually acceptable planning, stewardship and management of resources within First Nation territories (PNCIMA Initiative, 2017a).

2.3.4 Transboundary cooperation

Area-based management tools can encourage and support transnational cooperation and partnerships. This can occur through voluntary partnerships or governance frameworks with a legal basis, contributing to a number of Sustainable Development Goals.

Area-based management tools can support regional cooperation in a transboundary context

Area-based management tools may require transboundary cooperation between countries if the issues they are seeking to address or the policies they aim to deliver are international in nature. For example, migratory marine mammals pass through many countries' jurisdictions and require transboundary planning approaches to ensure effective management across their entire range. Area-based planning can also support transboundary management between countries where their Exclusive Economic Zones are adjacent to each other, but also where management is required across the boundary between national and international waters.

Regional cooperation for Marine Protected Areas

In the Caribbean, 19 of the 25 island states and countries that are Contracting Parties to the Cartagena Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, mutually agreed to include provisions for the design of ecologically connected Marine Protected Areas in the Marine Mammal Action Plan (UN Environment, 2008), that was set up under the **Caribbean Specially Protected Areas and Wildlife Protocol**. The provisions recognised the migratory nature of marine mammals in the region, which includes over 30 species of whales, manatees and seals travelling to the area for feeding, mating and birthing. The Cartagena Regional Seas Convention provides an overarching institutional framework for the Protocol which was associated with the Convention. This type of cooperation is valuable for these migratory species and helps support **Target 14.2**.

There are also examples of cooperation in areas beyond national jurisdiction, where regional organisations have specific mandates, supporting Sustainable Development Goal **Targets 14.2** and **14.c**.

Cooperation in Areas Beyond National Jurisdiction

The **Mid-Atlantic Vulnerable Marine Ecosystem** is comprised of management measures for protecting the seabed from fisheries actions. Fisheries management is by the North East Atlantic Fishery Commission (NEAFC), which is the Regional Fishery Management Organisation (RFMO) for the North East Atlantic region. The Contracting Parties to the North East Atlantic Fishery Convention are Denmark, Iceland, Norway, the Russian Federation and the European Union (NEAFC, 2017). Vulnerable Marine Ecosystems are unusual as they are one of the few area-based management tools that can be used in areas beyond national jurisdiction because of RFMO mandates to operate in areas beyond national jurisdiction. While VMEs are not a cross-sectoral tool, and are specifically focused on fisheries, there is cooperation in this region with the Regional Sea Organisation, the OSPAR Commission for the Protection of the Marine Environment of the North East Atlantic. OSPAR has designated High Seas Marine Protected Areas in the North East Atlantic which overlap with NEAFC VMEs. Management measures within these MPAs are provided through OSPAR Recommendations to their contracting parties; they do not include fisheries measures but look at issues such as pollution ((OSPAR Commission, 2013). This cooperation is facilitated through a *collective arrangement* between the two competent international organisations on cooperation and coordination regarding selected areas in areas beyond national jurisdiction in the North-East Atlantic (OSPAR & NEAFC, 2015).

2.3.5 Sectoral focus

The sector focus of area-based management tools influences contribution to Sustainable Development Goals and Targets.

As highlighted in Figure 2-4, area-based management tools can focus on multiple or single sectors. The sectoral focus of a tool reflects its policy ambitions. For example, some tools are fairly narrowly focussed to address specific issues or areas of policy relating to a single sector. Examples include, *inter alia*, the use of fishery closures which relate to the fishing sector, or Particularly Sensitive Sea Areas which apply only to shipping activities.

Single sector tool active in the Baltic Sea to address issues of sewage dumping

The **Special Area for Sewage in the Baltic Sea** which is implemented in collaboration between the Contracting Parties to the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea for the Baltic Marine Environment. The Special area for Sewage limits where ships can discharge sewage and requires them to use port disposal facilities. This single sector approach has the potential to be very powerful because it has targeted actions and a defined sector who need to implement them. The tool has delivered action to facilitate the process to ensure that adequate sewage port reception facilities are established within the Baltic Sea Countries. The designation proposed could only take effect once all the Baltic countries had notified IMO that adequate facilities had been created, and in 2016 this occurred. (HELCOM, 2015). The effect of this area-based management tool in the marine environment is not yet in a position to be evaluated because the dumping rules will be applied from 2019 for new ships and 2021 for existing ships. However, at this point in time, the tool has been used to galvanise steps towards reducing pollution through the collective action that has occurred in the region to provide the appropriate facilities. This example shows how area-based management tools have the potential to contribute to **Target 12.4, 14.1 and 14c** relating to marine pollution, through the prohibition of in-water sewage dumping, requirements for sewage management facilities at ports and sewage treatment prior to discharge. It also shows the value of an organisation such as HELCOM in providing the institutional support to continue the process.

From the case studies, it is apparent that area-based management tools which cross the land-sea interface, notably Integrated Coastal Zone Management and Ridge to Reef, can align with many Sustainable Development Goals and Targets, and thus have the potential to contribute to the delivery of a greater number of goals than strictly marine or terrestrial tools. This has also been found to be the case for multi-sector tools, such as Marine Spatial Planning, in comparison to single sector tools, which contribute to a narrower range of Goals and Targets.

Multi-sector tool used for national level marine and coastal planning

In **Belize, an Integrated Coastal Zone Management Plan** was developed by the Coastal Zone Management Authority and Institute (CZMAI) under the legal framework provided by Belize's 1998, Coastal Zone Management Act. The development of the plan was undertaken over a six year period and involved extensive multi-stakeholder participation to ensure the needs of different sectors were taken into account and that management measures were multi-sectoral in nature (Verutes *et al.*, 2017). The plan is relevant to a number of sectors including, *inter alia*, extractive uses, non-extractive uses, commercial fishing, environment, conservation, tourism and cultural heritage. The plan sets out to facilitate improved management of coastal and marine ecosystems to maintain their integrity and ensure the delivery of ecosystem services into the future through the implementation of an integrated, land-sea, multi-sectoral management approach (CZMAI, 2016). As such, the ICZM Plan implements socio-economic and environmental policies for managing all aspects of the coastal zone, aiming to ensure sustainable coastal resource use by balancing

conservation and socio-economic needs of the country, contributing to multiple Sustainable Development Goals including those related to **Goal 8** on sustainable economic growth and **Goal 12** on sustainable consumption and production.

Nineteen multi--sector case studies and six single sector case studies were reviewed. The multi-sector tools contributed towards, on average, 14 different Targets each, while on average the single sector tools contributed towards 5 Targets. It is important to recognise that this analysis does not suggest that multi-sector tools are more important than single sector tools. In fact, multi- and single-sector tools are often used in conjunction to achieve effective management, as is discussed in the next section.

2.4 Tools used in combination to deliver policies

In many of the case studies, more than one tool is active in a particular area. As a result, when the twenty-five case studies were analysed, it became clear that in many cases, a number of different tools were used in combination to deliver policies, and thus Sustainable Development Goals and Targets. **Figure 2-1**, represents a combined summary of potential contributions to Sustainable Development goals from all twenty-five of the case studies. The tools are not in competition regarding the number of Sustainable Development Goal Targets they can potentially contribute to. In general, it is possible to say that tools which have a wider geographical scope, generally involve more stakeholders and have a greater number of policy objectives, and as a result can potentially contribute to more Targets. However, what is important to note is that larger scale tools, such as ICZM, MSP and LMEs, often utilise other tools such as MPAs, Fisheries Closures and PSSAs as part of their management approach.

Tool overlap by design

In many instances, more than one area-based management tool is applied to the same area at the same time. For example, it is common to see a Marine Protected Area within a Marine Spatial Planning Framework, or Fisheries Closures linked to Protected Areas. A tool is often chosen because it has the potential to solve a particular policy issue, and therefore combinations of tools which spatially overlap can be highly beneficial.

Tool coordination

In the **Pacific North Coast Integrated Management Area (PCNIMA), Canada**, a Marine Spatial Planning process, Marine Protected Area network planning is included as a key implementation priority. Marine Protected Area planning is ongoing and compliments the overarching process through the collection of various types of data from a number of sources, including complimentary planning processes such as the Marine Plan Partnership. In other cases, multiple single sector tools overlap with each other, for example in **Lyme Bay, UK**, a Marine Protected Area and Fisheries Closure overlap in order to bring together objectives for sustainable fisheries and biodiversity. The combination of Marine Protected Areas and Fisheries Closures is reasonably common and was also found in **the Coral Triangle** and the **Kubulau District, Fiji**. The Kubulau Fisheries Management Area and Marine Protected Area combines traditional fisheries management with biodiversity protection (Kincaid, Rose and Devillers, 2017).

As noted above, multiple tools can be nested within a broader framework tool. For example, PSSAs for shipping, Marine Protected Areas for biodiversity, Fisheries Management Areas and large scale integrated planning processes, such as Integrated Coastal Zone Management, can all be found in the same place.

Multiple area-based management tools require a coordinated approach

The **Wadden Sea** case study in this review focussed on the **Particularly Sensitive Sea Area** designation, however provides an illustration of where multiple tools are applied in the same area and the need for coordination in such instances. Other tools implemented in the Wadden Sea include a variety of protected area designations covering parts of the area, notably, an international designation as a World Heritage Site as one of the largest unbroken system of intertidal sand and mud flats in the world (UNESCO, 2017) and a Ramsar site for internationally important wetlands. At a regional scale, the Wadden Sea is designated through both the Birds and Habitats European Directives as part of the Natura 2000 protected areas network. National level designations are also in place and are governed by bordering countries. In addition to these biodiversity focused designations, fisheries management actions are also in place throughout the region (Wadden Sea Secretariat, 2013b). To integrate management at some level, there is an Integrated Coastal Zone Management Strategy which aims to provide structure to the planning of the diverse regional activities (Wadden Sea Forum, 2013). The Wadden Sea is a transboundary cooperation area in which the Netherlands, Germany and Denmark have been working to protect as an ecological entity since 1978. The variety of different activities, tools and national and regional values present in this area requires coordination to ensure effective planning can take place and that all needs are respected. Recognising this need, a formal Trilateral Wadden Sea Cooperation, supported by a Secretariat, aims to “achieve, as far as possible, a natural and sustainable ecosystem in which natural processes proceed in an undisturbed way” (Wadden Sea Secretariat, 2013a).

Given the degree of spatial overlap between tools and the drive for efficient and effective delivery of ocean-related Sustainable Development Goals, it is useful to reflect on opportunities for their focused application. A key consideration for focusing tool application is to note the similarities and differences between the area-based management tools to facilitate the selection of the most appropriate tool to deliver upon policy requirements. In instances where the focus of a tool overlaps administrative boundaries, the use of a combination of different tools can overcome issues of mandate and jurisdiction.

Two organisations coordinating under a collective arrangement - area-based management tool coordination at the regional scale

The **Mid-Atlantic VMEs** represent single sector measures to manage fisheries, in particular bottom fishing activities. They are managed by the North East Atlantic Fisheries Commission (NEAFC) which has jurisdiction over fisheries matters in the north east Atlantic. NEAFC cooperates with the OSPAR Commission for the Protection of the Marine Environment of the North East Atlantic, which has jurisdiction over environmental considerations in the same area (OSPAR & NEAFC, 2015). Therefore the work of the two entities is interlinked. Cooperation between these two organisations has been facilitated by the establishment of a *collective arrangement for cooperation* and had resulted in MPAs overlapping VMEs on the seabed. Consequently, two different sectors, environment and fisheries, are managed collectively in the same space (OSPAR & NEAFC, 2015). This example demonstrates the possibilities for effective management when two regional organisations with differing mandates and operating at the same scale, coordinate their activities.

2.5 Area-based management plans provide a framework for action

A fundamental element of many area-based management tools is the production of a management plan to guide management actions. Many of the Sustainable Development Goals identify the production of

plans as a mechanism for their delivery. For example, plans can help deliver sustainable consumption and production under Sustainable Development **Goal 12**. Other examples include: **Target 13.2**, which specifically highlights the use of plans to achieve the “*integration of climate change measures*” into national “*policies, strategies and planning*”; **Goal 14**, which directly refers to “*science based management plans*” to “*regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices*”; and **Target 15.9**, which aims to “*integrate ecosystem and biodiversity values into national and local planning*”.

In this study, management plans were found to be the primary vehicle to direct management efforts towards supporting the delivery of Sustainable Development Goals and Targets. Each area-based management tool has its own plan, specifically tailored to meet the policy ambitions behind the identification of the area as important or special. Given the potential contribution of area-based management plans to Sustainable Development Goals and Targets, a key mechanism to enhance this contribution is to ensure comprehensively designed plans that can be delivered effectively. Where multiple area-based management plans exist for the same area, it is important that management measures in each plan are aligned, as this could assist in supporting multiple Sustainable Development Goals.

At the national level, different types of plan exist, including National Adaptation Strategies (NAP), Nationally Determined Contributions (NDC) for climate change, and National Biodiversity Strategies and Action Plans. These plans will ideally include a spatial component, but it is not mandatory. However, the implementation of national plans could benefit from clear spatial planning and could be supported by the use of area-based management tools to deliver specific policy ambitions. In such instances, it is important that there is alignment between national plans and area-based management tools, particularly if both focus on the same geographic area or contain actions for the same important species and habitats. Consequently, connecting the aims of the different planning processes would aid the identification of instances in which a country or region may be able to achieve multiple goals and achieve synergies in their planning processes.

An effective management plan is supported by clear actions and indicators

Maritime Spatial Planning in Portugal is a key mechanism for the delivery of the National Ocean Strategy 2013-2020. The current iteration of the National Ocean Strategy notes that the previous version did not contain an action plan or matrix of indicators for tracking progress. The lack of these two critical features prevented the effectiveness of the previous Strategy from being evaluated. It was also recognised that the existence of an Action Plan facilitates the adaptation of national Strategies based on monitoring results for specific targets. In recognition of this, an Action Plan for the most recent Strategy, has been created as a separate document, the Mar-Portugal Plan (MPP) (Governo de Portugal, 2014).

2.6 Synergies

Sustainable Development Goals are intended as one integrated package. In the words of the preamble to the 2030 Agenda, the Sustainable Development Goals “are integrated and indivisible and balance the three dimensions of sustainable development” (United Nations, 2015). Area-based management tools can help in making this a reality where they are able to realise synergies, or efficiencies, in supporting the achievement of different Sustainable Development Goal Targets. Achieving *synergies* means to explore how linking processes increases the effects of the sum of the joint activities beyond the sum of individual activities. The overall aim is to make management more effective and efficient (UNEP, 2015).

Area-based management tools are well placed to support the achievement of synergies in the delivery of Sustainable Development Goals. The analysis illustrated that area-based management tools are able to support, not only SDG 14 (life below the water) but also the delivery of a number of other Goals. From the case studies, it is possible to identify where tools are mutually supportive, for example, **Target 12.2** on sustainable management and efficient use of natural resources, and **Target 8.9** on promoting sustainable tourism and local culture, were simultaneously delivered in Marine Bioregional Planning Process undertaken for the Australian Exclusive Economic Zone. The delivery of a particular target is likely to contribute towards the simultaneous delivery of other targets. For example, work towards **Target 12.5** on reduction of waste is likely to also contribute towards **Target 14.1** on prevention of land based sources of pollution, as is one of the aims of the Bay of Bengal LME. In this way the targets are synergistic and complementary.

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3 Enabling conditions and barriers influencing the effectiveness of area-based management tools

Chapter 2 has demonstrated that ocean-related area-based management tools can contribute to Sustainable Development Goals and Targets. However, there are often barriers to contributions which can be overcome by ensuring that particular enabling conditions. This section draws evidence from the twenty-five case studies to identify barriers and enablers to the effective application of area-based management tools to contribute to Sustainable Development Goals and Targets. This section is organised around the following themes:

- Spatial scale
- Legal basis of the area-based management tool
- Funding
- Institutional framework
- Stakeholder and multi-sector Engagement
- Iterative and/or Adaptive Process
- Data Collection and Monitoring

3.1 Spatial Scale

The spatial scale at which a tool is implemented will depend on the policy that drives the decision to use the tool. For example, if trying to manage diffuse pollution from many sources, then a tool that can be applied on a large scale, such as a MARPOL Special Area, would be appropriate. If the aim is to address local pollution impacts on coral reefs, a site-level Marine Protected Area may be more appropriate. The following subsections discuss the challenges and enabling conditions related to scale.

Large scale, single sector area-based management tool used to address a diffuse pollution issue

The establishment of the **North American MARPOL Emission Control Area** has resulted in coordinated transnational efforts between different countries that share maritime areas and are affected by international shipping in a similar way. The Emission Control Area (a type of ‘Special Area’), was established following a proposal by the Governments of Canada and the USA, (with support from France due to the territory of Saint-Pierre et Miquelon), in an effort to address air pollution from shipping across the region. In the Emission Control Area, emissions limits for Nitrogen Oxide (NO_x) and Sulphur Oxide (SO_x) apply to shipping activities. Mechanisms for compliance include the use of low sulphur fuel oils or through engine modifications (**Target 14.1**) (IMO, 2017).

Regional Cooperation

When considering area-based management within a regional context, regional frameworks can provide an overarching legal framework and policy direction to guide national level planning to ensure integrated regional planning. Some case studies demonstrate regional cooperation between different countries in the implementation of area-based management approaches. For example, Portugal was able to establish the legal basis and policies for Marine Spatial Planning for its entire maritime area, including its extended continental shelf, through the regional framework provided by the 2014 European Commission Directive on Maritime Spatial Planning. It is however important to note that whilst a regional framework can enable planning at the national level, differences in country capacity (e.g. institutional, financial, technical) affects their capability to develop and implement measures in line with regional approaches. Further examples of regional cooperation are illustrated below.

Regional cooperation through Marine Protected Area planning

Under the EU Marine Strategy Framework Directive (2008/56/EC), Good Environmental Status is to be determined for marine (sub) regions and should be achieved in cooperation with neighbouring Member States. In the **Black Sea, Romania and Bulgaria** are collaborating on the implementation of the **Marine Strategy Framework Directive**, among other things, by establishing a **transnational Marine Protected Area Network** (Barova, 2015). The collaborative efforts of the two countries are supported by the existence of well-established regional coordinating bodies under the Bucharest Convention on the Protection of the Black Sea Against Pollution, including the Black Sea Commission and Permanent Secretariat, as well as the Joint Romanian-Bulgarian Commission for the cooperation on water management. Moreover, Romania and Bulgaria received assistance through a European Commission funded project that helped the two countries coordinate their approaches, exchange experiences, agree on definitions of Good Environmental Status and harmonize measures and processes to achieve the objectives of the Marine Strategy Framework Directive (Rommens *et al.*, 2015).

In another example, the **PERSGA Regional Master Plan for the Red Sea and Gulf of Aden Regional Marine Protected Area Network** demonstrates cooperation between PERSGA member states: Djibouti, Egypt, Jordan, Saudi Arabia, Somalia, Sudan, and Yemen. The Master Plan emphasises the role of coordination of activities and sharing of knowledge and experience in strengthening regional and local capacity for sustainable resource management. Thus coordination between Marine Protected Areas will support efforts to achieve regional goals through local action (PERSGA/GEF, 2002). The Regional Master Plan provides for developments in terms of governance, suggesting the establishment of an institutional framework for regional cooperation, including 1) a Regional Coordinating Committee, 2) a Regional Activity Centre for Marine Protected Areas, and 3) Marine Protected Area Focal Points in each country.

In the Bay of Bengal, prior to the **Bay of Bengal Large Marine Ecosystem (BOBLME) Project**, existing international, regional and sub-regional bodies and programmes operating in the area lacked a clear mandate, geographical scope and the national institutional capacity to support a regional initiative to address transboundary issues (BOBLME, 2015a, 2017). To address these challenges, the BOBLME Project, which aims to improve the lives of coastal populations through better regional management of the Bay of Bengal environment and its fisheries, established a Project Steering Committee to help govern the project and the development of a Strategic Action Programme. The project also established Regional Coordination Units to coordinate and drive national planning and management actions in line with existing relevant organisations at all levels, (BOBLME, 2015a). In this case, the establishment of designated bodies helped to coordinate existing institutional and national capacity towards a more regional approach.

In South East Asia, six countries and a number of regionally operating NGOs and organisations

established **the Coral Triangle Initiative** as a voluntary partnership to create a regional approach to marine conservation and sustainable resource use in the area (CTI-CFF, 2009b). The Coral Triangle Initiative aims to set up a Marine Protected Area System that is coordinated regionally by its Members and implemented nationally in the six countries (CTI-CFF MPA TWG, 2013). While this promotes a regionally coherent approach and collaboration between the different partners, the voluntary partnership also faces challenges when tensions arise between country governments.

National planning is supported by sub-national cooperation

Area-based management at national or local levels can be challenging if there are multiple regions, districts or jurisdictions involved in the process. As such, transboundary cooperation and communication between sub-national units is often required to support effective management. At a sub-national scale, area-based management tools that coordinate activities and facilitate the sharing of knowledge across administrative boundaries, can support the effective delivery of coherent national policies and contribute to capacity building for sustainable resource management and conservation (**Targets 12.2 and 17.9**). Planning and management processes in smaller sub-national administrations can also be scaled up to the national level, allowing local variability to be captured.

Sub-national planning to scale up to a coherent national plan – Marine Spatial Planning

In **Belize, Coastal and Marine Spatial Planning** took place in nine coastal planning regions. This enabled the development of a comprehensive, integrated and coherent national strategy while allowing for regional differences and interests to be considered. In **Australia, Marine Bioregional Planning** was initiated in 2006, and in 2012 the process delivered four Marine Bioregional Plans and forty new Commonwealth marine reserves (renamed as Australian Marine Parks). Combined with existing marine parks, these reserves contributed to a nationally representative system covering approximately 36% of Australia's exclusive economic zone. Marine bioregional plans were developed for the South-west, North-west, North and Temperate East marine regions. Each marine bioregional plan describes the marine environment and conservation values (protected species, protected places and key ecological features) of the respective marine region, sets out broad objectives for its biodiversity, identifies regional priorities, and outlines strategies and actions to achieve these. The plans are underpinned by an ecosystem approach, which requires government decision-makers to consider issues across jurisdictional, sectoral and disciplinary boundaries, so that actions are not considered in isolation from each other. The information provided in each plan assists decision-makers to collaborate more effectively across jurisdictional and sectoral boundaries. For example, a marine region may be significant for the conservation and management of a migratory species in Australia, but also possibly in a global context. Strategies within the plans include participating in international efforts to manage such conservation values and the pressures on them.

Scale in terms of size / ambition and cost

The scale of a tool will influence the focus of its management objectives and the tool's ability to delivery upon these objectives. The larger the scale, the more ambitious a tool is likely to be in terms of the number of actors involved, the issues aiming to be addressed and the financial and human capacity required for successful implementation. The implementation of area-based management tools on a large scale is often subject to inter-jurisdictional complexities, including those between countries, governments (national and provincial) and local communities. For example, tools applied on a regional scale will involve multiple countries, each with their own priorities, socio-economic and environmental conditions, and financial and human capacities. However, regardless of such

complexities, large-scale tools can reflect regional ambitions and efforts to affect positive change within a broad geographical area, provided the application of the tool is proportionate to the scale of challenges it is aiming to address. Mechanisms to overcome jurisdictional overlap include, the clarification of what the jurisdictions and responsibilities are, and the creation of a coordination mechanism to enable communication between relevant competent authorities or institutions.

Clarifying organisations responsibilities in the Northeast Atlantic Region

In order to improve cooperation between regional organisations in the Northeast Atlantic, a bilateral collective arrangement has been put in place between the organisations, aiming to have wider organisational inclusion in the future, to facilitate cooperation and coordination between the competent authorities (NEAFC & OSPAR, 2015). The following steps have been undertaken to reach such an arrangement: information exchange between the two organisations a process of understanding the intentions and practices of each organisation, and the formulation of a Memorandum of Understanding (MoU). The MoU clarified the two organisations' legal competencies and provided a basis for mutual understanding. Participation in the arrangement occurs via participation of each organisation's secretariat in the relevant committees of the other organisation and regular information sharing.

The **Bay of Bengal Large Marine Ecosystem (BOBLME) Project** represents a collaboration between 8 countries that has identified priority issues, causes and drivers affecting the region using a 'Transboundary Diagnostic Analysis' and has developed a set of actions to address the issues under a Strategic Action Programme (SAP) (BOBLME, 2015a). The Strategic Action Programme demonstrates a shared vision of the 8 member countries and their commitment to work collaboratively to address transboundary issues within the region. However, a recent project evaluation has suggested that many of the issues identified are not necessarily transboundary, but common to each of the member countries and therefore may not require a regional approach, but a targeted approach at the national level (FAO, 2016). Regardless, the process to undertake a transboundary diagnostic analysis has fostered a collaborative environment between the countries of the region. The process has resulted in increased awareness and communication of issues and the sharing of good practices between neighbouring countries.

In Australia, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. **Marine Bioregional Plans** were developed under section 176 of the EPBC Act to help improve the way decisions are made under the Act, particularly in relation to the protection of marine biodiversity and the sustainable use of our oceans and their resources by our marine-based industries. The minister responsible for the environment must have regard to a bioregional plan when making any decision under the Act to which the plan is relevant. The preparation of marine bioregional plans supports an ecosystem-based approach at a landscape scale. The bioregional plans help address drivers of biodiversity loss rather than their symptoms. They provide a basis to focus on building and maintaining the resilience of ecosystems, which is more efficient and effective than trying to address problems after they have occurred.

Whilst large-scale tools, including multi-sectoral and transboundary tools, with wider remits can be beneficial, there may be some trade-offs in terms of the time and financial resources required to implement a larger process. However, it is important to recognise that these tools have the potential to guide actions at the national level by encouraging the development of coherent national plans. A barrier to the inclusion of large areas or multiple jurisdictions within the remit of a tool is the large number of stakeholders that should be involved in the process. For example, tools that include both terrestrial and marine areas will involve a greater array of governmental departments, ultimately

magnifying the scale and complexity of the process. Different institutions often have jurisdiction over the terrestrial and marine spatial areas, and policy application is also divided between these realms. In line with this, it has been noted in the Integrated Coastal Zone Management process in Europe that the divide between terrestrial and marine planning has constrained the implementation of the approach (UNEP/MAP/PAP, 2011). This issue of jurisdictional divides between terrestrial and marine is not limited to Europe but is found in the majority of countries. It is however possible to overcome jurisdictional challenges, as demonstrated by the example below.

Challenges and solutions to greater numbers of participating stakeholders and institutions

The **Belize Coastal and Marine Integrated Coastal Zone Management Plan** illustrates that the challenges of multi-sectoral, transboundary processes can be overcome successfully. As part of the Integrated Coastal Zone Management process in Belize, four different government departments were identified as “major agencies” with responsibilities for research and monitoring the marine environment. The Plan also notes other relevant departments, illustrating the extent to which horizontal integration between government departments is required. In Belize, the central planning agency, Coastal Zone Management Authority and Institute (CZMAI), made efforts to ensure that the plan they were developing would also meet the needs and objectives of different government departments. In addition, the Advisory Council for the plan consisted of government agencies and NGOs, ensuring the government had a variety of stakeholder inputs during the process. Further stakeholder involvement in plan development occurred through Coastal Advisory Committees for each sub-national planning unit. These Coastal Advisory Committees represented multi-stakeholder groups made up of public sector, educational institutions, business sector, government, NGOs and/or civil society and worked towards a participatory planning approach (Verutes *et al.*, 2017). One prominent lesson from this process was that ‘*change takes time*’ and the six year process the CZMAI undertook to develop the plan built upon efforts which had started in the 1990’s (Verutes *et al.*, 2017). Despite, or because of, the time taken, a comprehensive plan is now in place and its implementation will provide fascinating lessons over the years to come. In addition, the use of the nine coastal planning regions to support community-driven planning with a science basis meant that the plan could be both national and locally recognisable (Verutes *et al.*, 2017).

Legal scale

Spatial management measures implemented to meet obligations under a particular piece of legislation can cross-cut a range of other legislative provisions and align with a variety of other management measures within a particular area. For example, through actions undertaken to deliver Good Environmental Status required under the **Marine Strategy Framework Directive** have included the production of a dedicated programme of measures. Within Romania and Bulgaria, the creation of a **Black Sea Marine Protected Area Network** was identified as one measure to work towards Good Environmental Status. This measure also contributes to the delivery of five other regional commitments and policies, namely the Habitats Directive, Birds Directive, Common Fisheries Policy, Environmental Impact Assessment Directive and the Water Framework Directive, thus demonstrating cross-cutting contributions to both national and regional legislation.

Regional legislation supports cooperation on area-based management tools

An example of regional frameworks is the **Mediterranean ICZM Protocol** which requires its Parties to strengthen regional cooperation for implementation of Integrated Coastal Zone Management throughout the Mediterranean region (Protocol on Integrated Coastal Zone Management in the Mediterranean, 2009). In the Mediterranean, existing regional coordinating bodies are in place under the Regional Seas Convention, the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, that support

regional cooperation on the implementation of ICZM.

3.2 Legal basis

The legal basis and/or legal frameworks put in place to support area-based management tools can vary significantly, with a spectrum of different legal options noted across the twenty-five case studies in this review. Existing legislation can provide a legal basis for the planning stage of an area-based management tool, and in some instances, can also have provisions relating to the implementation of the tool. Similarly, the creation of new, dedicated legislation can support the development and implementation of a tool in a particular area. Contrastingly, at the other end of the spectrum, the development and implementation of an area-based management tool can be an entirely voluntary process, for which there is no legal basis, rather the process is guided by expressions of goodwill.

3.2.1 Legal Implementation

A strong legal basis can provide a mandate and create obligations for an organisation or individual countries to plan and implement area-based management tools to deliver certain policies.

Implementation of legally binding management measures

In the case of the **Madagascar Locally Managed Marine Area Network (MIHARI)**, planning and development of sites within the Network has been led predominantly by local communities. For example, in the **Velondriake LMMA**, the implementation of management measures occurs through traditional customary laws known as *Dina* (Mayol, 2013). Whilst *dina* are created and enforced by local communities, they can be recognised and accepted into the national legal system to help further enforcement of measures (Mayol, 2013). To aid effective implementation, the declaration of areas as no-take zones within LMMAs should also set out penalties for violations. Penalties can range from more traditional penalties, such as social repercussions or public shame, to legalistic penalties, such as fines administered under the community legal system (Govan et al., 2008).

An example in which voluntary fisheries management measures have been made legally-binding is that of the **Lyme Bay Fisheries and Conservation Reserve** in the United Kingdom. In this case, infringements of voluntary gear restrictions have resulted in legal measures and illegal fishing in fisheries closure areas have subsequently been tackled through prosecutions under the Habitats Directive (Rees *et al.*, 2016). The legal framework in place in Lyme Bay incentivises compliance with management measures, as non-compliance can be met with prosecution under this framework. Despite these legal incentives, challenges exist, namely that recreational fisheries do not have to abide by the same management measures as the commercial sector, often resulting in friction (Singer, 2016).

3.2.2 Non-binding implementation

The use of non-binding agreements can be an enabler in the planning and implementation of area-based management tools as they can encourage collaboration and commitment. Non-binding agreements do not require legal commitments from participating entities and as such, can encourage goodwill commitments on the basis that inability to uphold a commitment will not be met with punitive action. In line with this, voluntary partnerships can be formed to develop measures to address particular issues and through a collaborative approach, partners can agree upon voluntary or goodwill commitments for action depending upon their capacity. Alternatively, commitments can be more firmly established through different types of non-binding agreements such as a Memorandum of

Understanding (MoU). The box below illustrates both the use of MoUs and the evolution of voluntary partnerships.

Use of non-legally binding agreements to facilitate planning

The legislative basis for the **Pacific North Coast Integrated Management Area (PNCIMA)** planning process was provided by Canada's Oceans Act (1997), which sets a precedent for integrated management planning for the conservation and sustainable development of Canada's marine environment. However, overlapping jurisdictions and mandates belonging to Federal, Provincial and First Nations Governments required collaboration to achieve mutually desired goals for the PNCIMA (PNCIMA Initiative, 2017a). In order to overcome jurisdictional complexities, the non-binding, PNCIMA Collaborative Oceans Governance Memorandum of Understanding (MoU) was signed in 2008 by the Government of Canada and First Nations. In 2010, the Province of British Columbia signed onto the Collaborative Oceans Governance MoU, creating a trilateral agreement. This MoU established a new governance mechanism through which the PNCIMA process could be supported by collaborative governance (PNCIMA Initiative, 2017a). The non-binding nature of the MoU has been found to aid the development of a strategic plan through the promotion of information sharing and integration across all levels of government, the identification of policy gaps and the strengthening of relationships between the different levels of government (PNCIMA Initiative, 2017a). The PNCIMA plan identifies that implementation will be achieved through "*work plans*", which will clarify accountabilities of partners and identify specific actions and time lines for completion (PNCIMA Initiative, 2017a). As such, it has been identified that the success of plan implementation will depend on continued engagement and involvement of governments and diverse stakeholders.

In the case of the **Coral Triangle Marine Protected Area System**, the establishment of the Coral Triangle Initiative for Food Security, Fisheries and Coral Reefs (CTI-CFF) was a result of a voluntary partnership between the 6 member countries, which was consolidated through the creation of a non-binding Regional Plan of Action (2009). The Plan of Action sets out a specific goal pertaining to the establishment and effective management of Marine Protected Areas and provides the basis for the Coral Triangle Marine Protected Area System Framework and Action Plan (CTMPAS) (CTI-CFF, 2009b). The Regional Plan of Action, and the subsequent CTMPAS are considered to be 'soft law' and are therefore not legally binding upon the 6 Coral Triangle countries (Thomas *et al.*, 2017). As such, these plans rely upon voluntary commitments and member country goodwill to contribute towards an agreed regional approach to sustainable marine resource use.

3.3 Institutional framework

When undertaking area-based planning, there is often an institution with the primary responsibility of leading the planning process. There are a variety of institutional structures that can lead area-based planning processes, including governments, organisations with governmental support, independent non-governmental organisations, local communities, or a combination of these. There are a number of institutional attributes which have been found to support the planning process, for example leadership, technical skills, a legal mandate and collaboration mechanisms. These will be discussed in more detail below.

3.3.1 Authority with legal Mandate

As demonstrated by various case studies in this review, an enabler of area-based management has been the establishment of an institutional body with a specific legal mandate to undertake the planning process and/or to coordinate the implementation of area-based management tools for a given jurisdiction.

Institutional legal mandate supporting area-based management

As part of **Coastal and Marine Spatial Planning in Belize**, the Coastal Zone Management Authority and Institute (CZMAI) was established. It was recognised that a legal mandate for the CZMAI would support the process to create a management plan for the coastal zone. Consequently, the CZMAI was given a legal mandate under the country's Coastal Zone Management Act (Revised 2003), to develop an integrated management plan (Government of Belize, 2003). An Advisory Council made up of NGOs and Government Agencies provided a coordinating mechanism for managing activities within national jurisdiction. This case study provides an example of where a legally mandated planning organisation supports the production of a plan.

The **Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)** was originally established as a voluntary multilateral partnership between the six Coral Triangle Countries. However in 2011, the CTI-CFF partnership was legally formalised by member countries as a regional body through the 'Secretariat Agreement' (CTI-CFF, 2016). The CTI-CFF regional secretariat is mandated to coordinate actions within the region and facilitate communication between member countries. In order to coordinate and guide national actions towards a regional Marine Protected Area Network, the CTI-CFF has established the Marine Protected Area Technical Working Group, which has developed the Coral Triangle Marine Protected Area System (CTMPAS) Framework and Action Plan, and provides advice on potential opportunities and actions for solutions to current and emerging issues in the Coral Triangle region (CTI-CFF, 2009b).

Institutional arrangements may change or be required to evolve in light of various economic or social influences, such as national administration restructures, political turmoil, capacity limitations or changes in national priorities. Such changes could lead to a transfer of legal mandates for area-based planning, which may result in uncertainty regarding institutional responsibilities between different government agencies. Uncertainty such as this could therefore hinder the effectiveness of area-based management efforts until responsibilities can be clarified. One such example of institutional change comes from the efforts to implement area-based management under the **EU Marine Strategy Framework Directive in Romania**. In this case, the implementation of a regional Marine Protected Area Network has been hindered by repeated changes in government structure, redistribution of activities and changes in ministerial responsibilities (Boicenco and Milkova, 2016). These institutional changes have proven to be a barrier to area-based planning in Romania due to uncertainty regarding responsibilities, capacity limitations and a loss of expertise and awareness of existing efforts.

Challenges faced when legal mandate is absent or unpredictable

In the case of the **Nha Trang Bay Marine Protected Area (MPA)**, formerly named **Hon Mun MPA, Vietnam**, the establishment of a designated Nha Trang Bay MPA Authority, with a specific mandate for MPA implementation and management, has helped to coordinate and facilitate activities. However, whilst the authority has the power to develop management regulations, contribute to functional zoning of the MPA, and conduct routine monitoring, it has no mandate for enforcement and cannot impose sanctions upon individuals in violation of management restrictions (Walton *et al.*, 2015). In response to this, the Nha Trang City People's Committee established a joint working group to monitor the MPA and address any violations independently from the Nha Trang Bay MPA authority (Walton *et al.*, 2015).

3.3.2 Inter-Institutional Collaboration

Institutional arrangements and a lack of coordination and cooperation between different levels of government and different agencies can act as a barrier to area-based management tool development and implementation. Therefore, if an institution exists, or is established, specifically for the purpose of implementing an area-based management tool, effective planning can be enabled through the creation of a mechanism to facilitate cooperation with other relevant agencies at all levels (regional, national, local).

Clarification of jurisdiction supported Marine Protected Area designation

In the case of **Coastal Zone Planning in Patagonia, Argentina**, a local Non-Governmental Organisation with a governmental mandate led the coastal planning process and acted as an independent planning institution (Thomas, et.al.2016). Inter-jurisdictional complexities for coastal planning, arising from the existing governance arrangements between national and provincial governments, was a barrier to the implementation of Marine Protected Areas within the coastal zone. In order to overcome complex national and provincial responsibilities for coastal planning, inter-jurisdictional treaties between the two levels of government were negotiated, and through which inter-jurisdictional protected areas could be designated in the coastal zone (UNDP, 2009). This example demonstrates how area-based management processes can highlight, and resolve, jurisdictional complexities, helping to clarify institutional responsibilities and facilitate policy implementation.

3.4 Funding

Funding plays an important role in many aspects of management plan development and effective implementation of area-based management tools. Funding is necessary for many activities, including research and data gathering, stakeholder engagement, monitoring and review processes, enforcement, as well as staffing and resources for implementing institutions. Consequently, the availability of funding can enable or hinder the delivery of associated marine and coastal policies via area-based management tools.

3.4.1 Sources of Funding: Opportunities and challenges

Funding for area-based management can come from different sources, including government funding, grant funding, NGO-funded projects and development bank funding, each of which can be associated with specific opportunities and challenges. Government funding, either through direct financial support, or through dedicated budgets for government bodies responsible for implementing area-based management, can provide comparatively stable or secure financial resources.

Secure funding can enable area-based planning processes

On a regional scale, institutions such as the European Commission can support their Member States in the implementation of area-based management through funded projects. An example of such includes a European Commission-funded project which assisted Romania and Bulgaria in the collaborative establishment of a Black Sea Marine Protected Area Network in accordance with the regional strategy for implementing the Marine Strategy Framework Directive (Rommens *et al.*, 2015). In Argentina, Global Environment Facility (GEF) funding supported a series of projects associated with the **Patagonian Coastal Zone Management Plan**. The first project started in 1992 to undertake the creation of the management plan (GEF, 2017c). A subsequent project supported the implementation of the management plan with over \$5million in funding (GEF, 2017a). The third project was to support the inter-jurisdictional designation of a system of marine projected areas (GEF, 2017b).

Funding sources – challenges from administration changes and government variability

The main funding for the **Florida Keys National Marine Sanctuary** comes from the National Oceanic and Atmospheric Administration (NOAA), which is responsible for the administration of the Sanctuary. This provides the Sanctuary with a comparatively stable and secure source of funding. However, as government funding is influenced by political priorities, changes in government can lead to reductions in the resources available for the Sanctuary.

Changing priorities have affected the **Red Sea and Gulf of Aden Regional Marine Protected Area Network**, where economic constraints and development priorities have resulted in limited government funding for the establishment and management of Marine Protected Areas (PERSGA/GEF, 2002). To counteract the insecurity arising from fluctuating government funding, the Regional Master Plan for the Marine Protected Area Network sets out strategies for sustainable financing. Tourism, in particular, was identified as a source of revenue for Marine Protected Areas (PERSGA/GEF, 2002).

Funding and in-kind contributions for area-based management are also available from other sources, such as Non-Governmental Organisations, and other external donors, including philanthropic foundations. Non-Governmental Organisations and external donors often play an important role in the development and early implementation stages of area-based management tool development and implementation by providing financial capacity, in-kind contributions in the form of training or equipment and on-the ground assistance.

NGO funding of area-based management plans

In the **Kubulau Ridge to Reef** case study in Fiji, the Wildlife Conservation Society and other NGOs provide 'in-kind' financial support for the Marine Protected Area Network, implemented as part of the Ridge to Reef approach, by funding and conducting research that informs the monitoring and evaluation of the Marine Protected Areas (WCS, 2012). The University of the South Pacific conducted research which fed into the management plan, regarding forest species. Existing research can be used to provide benefits to a planning process (WCS, 2012).

During the development process for the **Raja Ampat Marine Protected Area Network**, a partnership between the Raja Ampat Regency Government, the Nature Conservancy, Conservation International and the University of Queensland was formed (TNC, 2012). Project partners provided in-kind contributions in the form of mapping expertise and technical capacity in the use of decision-support tools such as Marxan during the development of the zoning plans for each of the Marine Protected Areas within the Network (TNC, 2012). In addition, partners provided capacity to help integrate local communities into the Marine Protected Area designation process through the facilitation of a community mapping process (TNC, 2012).

In **Madagascar**, Blue Ventures provided initial funding for the establishment of various **Locally Managed Marine Areas within the MIHARI Network** and continues to support local communities in managing their marine areas through the provision of financial and technical support, as well as training in activities such as data collection and stock assessments (Rocliffe and Peabody, 2013). However, recognising the need to ensure management within the LMMA is financially sustainable in the long term, Blue Ventures is also supporting local communities to become more financially independent through the identification and development of alternative income sources. These include marine ecotourism programmes, eco-certifications for sustainable

fisheries, and payment for ecosystem services, such as mangrove carbon sequestration under the REDD+ initiative (Blue Ventures, 2017). More information on eco-certification can be found in section 3.4.2.

In several case studies, inconsistent and insufficient funding was identified as a barrier to the effective implementation of area-based management tools and ultimately the delivery of associated policies.

Challenges of financing conservation funds

In the case of **Coastal and Marine Spatial Planning in Belize**, funding cuts to the Coastal Zone Management Authority and Institute (CZMAI) hindered the planning process to develop an Integrated Coastal Zone Management plan for the area. Without adequate funding, the CZMAI, could only continue plan development on an ad-hoc basis, resulting in a prolonged and fragmented planning process. When funding was secured, the CZMAI was reinstated, and it was then possible to finalise the plan, which has now been published.

Successful implementation of all elements of the **Pacific North Coast Integrated Management Area Plan** in Canada will rely heavily on sufficient federal, provincial, and First Nation capacity. Federal funding was limited in recent years, however, new resources under Canada's Ocean Protection Plan and Marine Conservation Targets initiative will support delivery of some PNCIMA priorities, such as Marine Protected Area Network planning. Truly collaborative and participatory planning processes are resource intensive. A lack of funding may also present a barrier to other elements of area-based management, such as effective monitoring and enforcement of management measures and regulations. For example in Romania the establishment of the regional **Black Sea MPA network**, is hampered by low levels of government funding for routine monitoring.

Ongoing funding can be challenging to start and sustain

In Argentina, a dedicated fund was established to support the implementation of the **Patagonian Coastal Zone Management Plan** across different jurisdictions. However, as the money to support this fund has not yet been made available, the Argentinian case study illustrates the need to consider the financing for such a fund if it is to provide sustained financial support for area-based management in the region.

3.4.2 Sustained and self-generated funding

Secure, sustained funding enables continued management and enforcement efforts beyond the initial stages of the establishment of area-based management tools. Funding supports activities such as monitoring programmes, educations programmes and continued stakeholder engagement. Different approaches to achieve long-term financial security and independence from external funding have been developed and adopted in a number of the case studies in this review. For example, income from tourism and user fee systems has been identified as an option for sustained, independent financing of Marine Protected Areas in many locations around the world. Some examples are explored in greater detail below.

Funding approaches

Tourism: **The Kubulau District Ridge to Reef in Fiji** has a Resource Management Committee, who, in collaboration with the Coral Reef Alliance, have developed a business plan for the Namena

Marine Reserve situated within the management area. The reserve forms part of a network of Marine Protected Areas which have been implemented as part of the Ridge to Reef project. The plan for the Namena Reserve aims to support management of the area which is independent from external funding (WCS, 2012). The area utilises Marine Protected Areas and designated tourist zones to help protect marine features that are of value to the tourism industry, including the international dive tourism industry (Jupiter & Egli, 2011). Following decisions to ban commercial fishing in order to protect coral reefs and preserve fish stocks into the future, user fees for tourists who wanted to dive, snorkel or swim in the protected area were introduced as an alternative means of income generation (Jupiter & Williams, n.d.). Revenue from user fees has been allocated to two separate funds, one a scholarship fund to assist in the education of local children, and the other, a management fund to support the work of the Kubulau Resource Management Committee (Jupiter & Williams, n.d.).

Increased value of sustainable fish: In **Lyme Bay Reserve, UK**, the use of a “Reserve Seafood” brand for the fish caught in the reserve using sustainable methods has increased the prices received for the fish. In an attempt to further increase the value of fish landed in the reserve by prolonging their freshness, investments have been made to improve the infrastructure available for icing fish as soon as they are landed. This process will also reduce the amount of waste arising from inadequate freezing facilities. Due to the consumer demand for sustainable products, higher prices can be charged for fish from Lyme Bay Reserve because they are a sustainable brand and their quality and freshness has been improved.

In the case of the **Madagascar Locally Managed Marine Areas Network (MIHARI)**, Blue Ventures, supported by the MSC Global Fisheries Sustainability Fund, is working to support a Fishery Improvement Project in an Octopus Fishery at a site in Southwest Madagascar (Long, 2017). The ultimate aim of the project is to improve fisheries management practices for increased fisheries sustainability in order to achieve Marine Stewardship Council (MSC) Certification. As there has been increased recognition of the importance of sustainable fisheries in the developed world, such a certification may help to increase income from sustainable fish exports for the area (Long, 2017).

Alternative Income Generation: In the **Nha Trang Bay Marine Protected Area** (previously known as the Hon Mun Marine Protected Area), alternative income generation activities such as aquaculture, small animal husbandry and alternative fishing capacities outside the protected area, were financed using dedicated funds to support community members whose livelihoods have been disrupted by Marine Protected Area management measures (GEF, 2006). Alternative income can help to support sustainable management of the Marine Protected Area in the long-term by ensuring that sufficient income can be generated from non-destructive and sustainable activities in close proximity to the Marine Protected Area. In addition, dedicated vessels and staff have been identified to collect ‘service charges’ from swimmers and divers in the Marine Protected Area, and there are additional plans to establish a ‘Sightseeing Fee’ for tourists visiting the bay which can provide financing for Marine Protected Area management beyond the lifetime of the project (GEF, n.d.).

3.5 Multi-Sector stakeholder engagement

The term ‘stakeholder’ covers a range of different groups and individuals that might be affected by, or have an interest in a management decision, as well as those with responsibilities for implementing the decision. Stakeholders can include government agencies, Non-Governmental Organisations, businesses and industry representatives, user and interest groups, as well as local communities, individual citizens and the general public. The identification of relevant stakeholders for engagement

in an area-based management process is dependent on the specific context. The type of engagement undertaken with the stakeholders is also context specific.

Many legal frameworks, strategies or action plans include provisions or requirements for stakeholder engagement in planning and management processes.

Stakeholder engagement is a key principle of many area-based management tools

The Mediterranean ICZM Protocol identifies stakeholder engagement as a key principle of Integrated Coastal Zone Management and requires appropriate involvement of stakeholders in the formulation and implementation of coastal and marine strategies, plans, programmes and projects (Protocol on Integrated Coastal Zone Management in the Mediterranean, 2009). For example, stakeholder engagement for Integrated Coastal Zone Management in the Mediterranean occurs via the identification of national focal points and the establishment of multi-stakeholder projects that support the implementation of the ICZM Protocol in the region, such as the PEGASO project (PEGASO Project, n.d.).

In order to facilitate effective and inclusive stakeholder engagement, the **Bay of Bengal Large Marine Ecosystem (BOBLME) Project** established national and regional coordinating mechanisms to ensure stakeholder participation in both the development and implementation of the project (FAO & GEF, n.d.). Stakeholders were identified at 3 levels (Regional, National and Local) and were closely involved in project development through participation in national consultations and workshops, meetings of national task forces, regional workshops and technical meetings, and meetings of the project Steering Committee (FAO & GEF, n.d.). Stakeholder participation was also an important component in the development of the Transboundary Diagnostic Analysis to identify shared issues and their causes and drivers, and was ensured through a series of regional workshops and national consultations (BOBLME, 2012). In addition, the **Bay of Bengal Large Marine Ecosystem Strategic Action Programme** further emphasises stakeholder engagement by setting out stakeholder engagement as a key principle for the management of the LME (BOBLME, 2015b).

3.5.1 How successful stakeholder engagement can support area-based management planning

Engagement processes can help stakeholders understand the rationale behind management measures such as area closures, regulations or other management decisions.

Argentinian ICZM process for the Patagonian Coastal Zone Management Plan.

The engagement of government bodies as well as the public sector and academia in the first GEF project to develop and implement a management plan for the Patagonian Coast enabled successful implementation of the plan. From the case study, it was identified that initially, working with multiple economic sectors was challenging and required innovative mechanisms through which buy-in from the private sector could be secured. One such mechanism was to highlight each of the benefits associated with the project and identify how they could benefit the private sector specifically, for example the benefits associated with developing high quality tourist destinations linked to protected areas. Collaboration over time is also an important consideration and the trust built between the project and stakeholders throughout the project lifetime helped to sustain engagement. The second GEF project that supported the planning process was also characterised by the strong involvement of the government who took ownership of the project.

Stakeholder engagement is relevant, to a variable extent, for all area-based management tools that involve multiple sectors and user groups, and local communities. Tools that often undertake wide

stakeholder engagement include Integrated Coastal Zone Management, Marine Spatial Planning, Marine Protected Areas, and Marine Protected Area Networks. Community-based approaches, such as Locally Managed Marine Areas, Ridge to Reef, or community managed Marine Protected Areas, rely almost entirely on the involvement and support of local community stakeholders.

Community involvement in area-based management planning processes

In the **Raja Ampat MPA Network**, Indonesia, local communities are heavily dependent on the marine environment for subsistence and therefore community involvement in the development and implementation of a Marine Protected Area Network was particularly important to ensure a balance between conservation and sustainable fisheries management objectives. The NGO, The Nature Conservancy (TNC) facilitated a community participatory mapping process through which local communities identified their local fishing grounds and preferred areas for conservation zones in each Marine Protected Area (TNC, 2012). In addition, an expert mapping process which included local government agency representatives and Marine Protected Area practitioners was also undertaken. Stakeholder participation in the development of a zoning plan for the Marine Protected Area Network allowed for the integration of local knowledge, ultimately helping to foster local ownership of management measures and encouraging compliance with Marine Protected Area regulations (Agostini *et al.*, 2012). For example, community patrols of protected areas to enforce shark and ray sanctuaries have been effective in moving away from shark finning and towards ecologically sustainable dive tourism as a source of income for the local community. Thus, stakeholder engagement is an enabler of better informed area-based management tools, effective implementation and improved delivery of marine and coastal policies.

In multi-sector approaches, stakeholder engagement enables the integration of different interests into one process. As such, it can help resolve conflicts between different groups and find consensus on management decisions.

Mechanisms of stakeholder engagement implementation

Steering committee: In the **Pacific North Coast Integrated Management Area (PNCIMA)** in Canada, stakeholder engagement was critical to the development of an integrated management plan. Engagement was facilitated through the establishment of a specialised, multi-sector advisory body with the explicit purpose of multi-sector engagement and communicating the results of that engagement – the Integrated Oceans Advisory (IOAC). The IOAC provided the project Steering Committee with advice and recommendations on the planning process, its outputs, and the implementation of the integrated management plan. Recommendations were based on input from multiple sectors and stakeholders, including *inter alia* representatives from industry, recreational groups, and environmental non-governmental organisations. The existence of the IOAC also provided an opportunity to resolve differences between sectors or stakeholders through consultations, thus helping to ensure buy-in or support from stakeholders.

Co-management: In **Lyme Bay Reserve**, the Fisheries and Conservation Reserve is co-managed with local stakeholders. Stakeholder engagement is essential in order to facilitate the delivery of fisheries and conservation objectives, by encouraging compliance with management measures, and in particular with the voluntary code of conduct that is in place (Marine Planning Consultants Ltd., 2014). For example, engagement of fishermen and conservation organisations in the management of the Reserve has helped to overcome long-standing conflicts between these two sectors.

Advisory council and working groups: Involvement of the local community and stakeholders plays a central role in the planning processes, regulatory review and implementation of management

measures in the **Florida Keys National Marine Sanctuary**. The Florida Keys Sanctuary Advisory Council, for example, played a central role in the review process of the zoning plan and regulations for the **Sanctuary**, supporting the identification of locally relevant topics and providing local expertise and knowledge input on potential changes to zoning or regulations. The Advisory Council meets six times a year and includes representatives from boating, conservation and environment, diving, education and outreach, South Florida ecosystem restoration, fishing (commercial and recreational), elected county government, submerged cultural resources, research and monitoring, tourism and the community at large (FKNMS, 2007) . Within the Advisory Council, working groups were created to address specific topics, gather information from community experts, user groups and scientists and develop recommendations.

Advisory committees: **In Belize**, Coastal Advisory Committees (CAC) played a central role in the Coastal and Marine Spatial Planning process. Through these Committees, a wide range of stakeholders were involved in the review of management scenarios and development of the zoning plan (Verutes *et al.*, 2017). Regional Coastal Advisory Committees made up of public and private sector, government and NGOs provided a mechanism for engagement and discussion (Verutes *et al.*, 2017). There were nine CAC formed, one for each of the coastal planning regions. There are significant variations in the major coastal resource users in each of the nine regions and these were represented by the dedicated Committee for each.

Stakeholder engagement can also be relevant for single sector area-based management tools, such as **MARPOL Emission Control Areas and Special Areas**. Consultations with relevant industries, including international and domestic shipping, the cruise sector, ports and ports facilities, as well as other interested parties can improve the effectiveness of management measures, secure industry buy-in and encourage compliance with emissions limits and other protective measures that are in place in these areas.

3.5.2 Participatory decision making

Stakeholder engagement supports participatory decision-making in area-based management processes, contributing to the delivery of Sustainable Development Goal **Target 16.7**.

Use of stakeholder knowledge in the planning process

In the planning process for the **Velondriake Locally Managed Marine Area Network, which is part of the Madagascar Locally Managed Marine Area Network (MIHARI)**, local stakeholders were involved in participatory resource mapping, identification of marine resource uses and pressures, as well as decisions about conservation objectives, closed areas and management measures (Cripps & Harris, 2009).

In **Lyme Bay**, the biological and socioeconomic objectives for the Fisheries and Conservation Reserve are determined by the Working Group of local stakeholders. As such, area-based management decisions are addressed through stakeholder processes.

In **Belize**, the planning process was supported by a series of scenarios created using InVEST, supported by the Natural Capital Project (CZMAI, 2016). InVEST is a software tool which includes models to support the mapping and valuing of ecosystem services. Models and scenarios, supported by this software tool, were used to help support decision-making and proved useful in designing regional development plans (CZMAI, 2016). Three possible future scenarios were provided, each with different levels of conservation and development. One scenario provided a ‘conservation only’ approach and, at the other end of the spectrum there was a ‘development only’ scenario, with a more ‘balanced use’ scenario in between (CZMAI, 2016). The Coastal Advisory Committees were engaged to support the scenario development so that they reflected stakeholders’ perceptions of

‘extreme options’ and to help identify stakeholder priorities. Public meetings were also held and in some cases, engagement and communication of management needs was facilitated using maps.

3.5.3 Partnerships

Area-based management tools often bring together multi-stakeholder groups that act in partnership to deliver marine and coastal management objectives, contributing specifically to the delivery of Sustainable Development Goal **Targets 17.7** and **17.16**. These partnerships encompass public, private and civil society institutions and bring together stakeholders from different sectors with an interest in, or particular expertise on, the specific area that is being managed. Partnerships enable the integration of different interests and knowledge into planning processes or strategies and help ensure that area-based management tool design is based on best available information. Partnerships can also facilitate liaisons between management teams and local communities, ensuring that local citizens and stakeholders are informed and engaged in area-based management processes.

Partnerships contributing to decision making

The community based Marine Protected Area Network which is part of Ridge to Reef management in **the Kubulau District, Fiji**, has built strong partnerships between the local community and external partners, government agencies with resource management responsibilities and enforcement authority, NGOs that provide funding, scientific research and capacity-building, and the private sector. An important partner is the dive operators, who promote protection and provide funding for the reserve management through a reserve user fee system.

In Indonesia, **the Raja Ampat** Regency Government formed strong partnerships with the Nature Conservancy, Conservation International and the University of Queensland which supported them in the zoning process for the Raja Ampat Marine Protected Area Network as well as with gathering data to inform effective management of the Marine Protected Areas (TNC, 2012).

The examples above illustrate the different ways in which the partnerships can support area-based planning. A summary of methods is provided below (Box 1).

Box 1 - Summary of Stakeholder engagement methods

There are different mechanisms for stakeholder engagement in area-based management. One engagement mechanism that have been described above are the advisory councils, committees or consultative groups. Partnerships often arise out of stakeholder engagement methods. Other mechanisms include:

- *Formal consultations on plans and strategies*: carried out in the Bioregional Planning case study in Australia; in the planning process for the Black Sea MPA network in Romania and Bulgaria; or throughout the policy development and implementation of the North American Emission Control Area in Canada;
- *Workshops*: action planning workshops for the development of the Strategic Action Plan for the Bay of Bengal Large Marine Ecosystem Project;
- *Public meetings*: for example those held during the ICZM process for the Patagonian Coastal Zone in Argentina;
- *Outreach and education programmes*: the Wadden Sea PSSA case study outreach was undertaken to raise awareness of the risks and environmental impacts of shipping and the

associated protective measures in the Wadden Sea area; and

- *Volunteering programmes*: used in the Florida Keys National Marine Sanctuary to provide opportunities for local citizens to get actively involved in the implementation of management measures or other Sanctuary activities.

3.6 Use of iterative/adaptive process

Adaptive processes allow for management plans and specific management actions to be amended if additional information becomes available, for example, information from monitoring programmes to monitor of the impacts of the plan. Monitoring results could be used by the management agency to adapt management measures, especially if those measures are proving ineffective, in order to progress towards achieving the desired outcomes of the plan.

3.6.1 Adaptability of planning documents

Many different types of management plan have been developed to facilitate the implementation of area-based management tools. The nature of management plans can be of fundamental importance in ensuring a tool is effective, in particular when considering adaptability. Adaptability is an important feature of area-based planning as it can enable more effective management by allowing amendments to specified actions if they are found to be ineffective.

Creation of a 'living document'

In response to alarming trends in marine and coastal resource use, in 2007 President Yudhoyono of Indonesia proposed the establishment of a new multilateral partnership between the six Coral Triangle countries to address unsustainable resource use issues: **the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)**. The CTI-CFF partnership was legally formalised in 2011 through a legally-binding Secretariat Agreement which resulted in a coordinating Regional Secretariat and the establishment of subscription costs for all six member countries to financially support the Secretariat, and formalised coordination procedures (Thomas *et al.*, 2017). Under this partnership, the six Coral Triangle countries worked to design and develop a Regional Plan of Action, which included the development of a framework for the Coral Triangle MPA System, in such a way that is considered to be a 'living' document (CTI-CFF, 2009b). This non-legally binding document collates six member country commitments to area-based management in the region and is designed to be adaptable, for example the document can be amended in response to the acquisition of new information or data for the region. It is also adaptable to situations such as political uncertainty, economic crisis or climate change, which can influence the ability of member countries to fulfil commitments.

3.6.2 Requirements for review

The requirement to review a management plan can enable its adaptation, and thus support more effective management. A review process can represent a mechanism through which evidence from indicator monitoring can be used to inform the adaptive management. Plan review processes can specify how frequently the plan should be reviewed (for example every 5 years) and detail provisions dedicated to inclusion of new information or monitoring results for plan updates.

Review process supporting change

A number of the case studies demonstrate regular review requirements as part of their management

plans. One specific example in which regular review is required and where findings have been integrated into existing management is that of the **Florida Keys National Marine Sanctuary**. There is a legal requirement to review its management plan every 5 years (FKNMS, 2007). In addition to review of the entire plan, various management actions implemented within the sanctuary are subject to periodic review to determine their effectiveness. The information in the condition report for the Florida Keys aids management action review and also supports sanctuary staff in identifying research priorities. For example, in response to damage to coral habitats by boating activities, additional mooring buoys have been installed to reduce harm from boat anchors. Additional outreach education is also being undertaken to try and reduce the adverse impacts of divers and snorkelers through increased awareness.

Adaptability has supported the implementation of management measures in the **Galapagos Particularly Sensitive Sea Area (PSSA)**. Within Particularly Sensitive Sea Areas, management occurs through the implementation of Associated Protective Measures – management measures that have been developed and approved by the International Maritime Organisation (IMO, 2006). Guidance from the International Maritime Organisation states that Associated Protective Measures, within a designated Particularly Sensitive Sea Area, are evolutionary. Measures can therefore be modified, supplemented or removed, with approval from the International Maritime Organisation. In the case of the Galapagos, this evolutionary provision allowed Ecuador (the proponent state) to request a new mandatory ship reporting system and a new traffic separation device in order to improve the effectiveness of the tool (IMO, 2013).

3.7 Data Collection & Monitoring

When considering area-based management tools, the selection and designation of an area is often based upon evidence or data showing the existence of a particular feature, species, habitat or phenomenon. Data collection, to support indicators, can enable implementation and enforcement of an area-based management tool as it can provide an indication of how effective a tool is. For monitoring, a baseline is required in order to track progress.

Requirements to collect data

In some instances, management plans may set out a requirement for data collection. For example, the **Mediterranean Integrated Coastal Zone Management Protocol** requires the collection of coastal zone data at a national level. In addition, the protocol requires member countries to agree upon both a process for data collection, and a data reference format. Coordination of these two factors facilitates a consistent approach throughout the region. The Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast (UNEP/MAP, 2017) provides a monitoring strategy to support the coordinated and consistent delivery of objectives set out by the Barcelona Convention and associated Protocols, including the Integrated Coastal Zone Management Protocol. The Monitoring Programme defines a list of common indicators for the state of the coastal and marine environment that are to be monitored by all Contracting Parties. These indicators require collection of a wide range of data, including species and habitat distribution, species population abundance, fishing effort and other fisheries related data, as well as pollution concentrations, nutrient levels and trends in the amount of marine litter.

Without a requirement for data collection, effective area-based management tool implementation can be hindered. Under the environmental management plan for the **Clarion-Clipperton Zone, Areas of Particular Environmental Interest (APEIs)** have been provisionally designated and are to undergo a review to assess their appropriateness (International Seabed Authority Legal &

Technical Commission, 2012). However, the plan does not set out an obligation for data collection within these provisional areas, resulting in significant data gaps (ISA, 2017). A 2016 review of the Environmental Management Plan, undertaken by the Legal and Technical Commission, noted that data has been collected in six APEIs by Contractors and Scientific Cruises, despite there being no obligation to do so (ISA, 2017). However, there remain three APEIs in which no data has been collected (ISA, 2017). It was also highlighted that, based on an assessment of existing data, it is not yet possible to determine if the suggested buffer zone of 100km would be sufficient to avoid plume impacts on the APEIs from adjacent mining activities (ISA, 2017). Consequently, the nine areas of particular environmental interest remain provisional as insufficient data has hindered the review process. Prolonged provisional status could eventually pose a challenge in the Clarion-Clipperton Zone. The EMP recognises the need for implementation of APEIs prior to increases in mining claims which may ultimately compromise the ability to develop a scientifically robust network (International Seabed Authority Legal & Technical Commission, 2012). In other words, as more and more contractor licenses are granted in future, there will be fewer locations that meet the required criteria, and so it may be difficult to move existing areas if found to be inappropriate, which may ultimately reduce the effectiveness of this type of tool.

3.7.1 *Monitoring*

The inclusion of provisions for monitoring enables the tracking of tool progress towards meeting management objectives, Sustainable Development Goals and Targets or its effectiveness at addressing pressures. Monitoring can therefore highlight problems, lack of progress and the effectiveness of management within a specified area.

A robust monitoring programme can facilitate adaptive management

In the **Florida Keys National Marine Sanctuary**, a number of monitoring programmes have been established to provide data on the health of marine habitats within the sanctuary, water quality and other socio-economic factors. A robust monitoring system such as this, has allowed the Florida Keys management measures to adapt under changing circumstances and has helped to ensure that the most appropriate, effective and scientifically sound management measures are in place (FKNMS, 2014). One such example is the designation of state waters within the marine sanctuary as a “no discharge” zone in 2002. This designation was justified using information collected by the Water Quality Monitoring Project and Coral Reef Evaluation and Monitoring Project (FKNMS, 2014).

A monitoring framework, allowing regular feedback, supports the delivery of tool objectives and targets. For example, the **Lyme Bay Fisheries and Conservation Reserve in the UK** is a local scale management tool, operated using an adaptive process. The extensive monitoring that takes place regarding the biological and socioeconomic aspects of the site means that there are regular feedback processes which enable regular adjustments to management measures. This enables the Lyme Bay Reserve to effectively support the delivery of its own objectives and targets associated with the Habitats Directive (Marine Planning Consultants Ltd., 2014).

A barrier to effective monitoring can be the number of parties involved in the process and the potential for divergence or inconsistencies in data collection methodologies. Multiple parties can be involved in monitoring and data collection activities under regional scale, transboundary or network-type area-based management tools.

Monitoring challenges and successes

In the case of the **Red Sea and Gulf of Aden Regional Marine Protected Area Network**, differences in national monitoring approaches or capacities within the region limit the availability of data to support the implementation of a Regional Master Plan (PERSGA/GEF, 2002). The standardisation of monitoring practices between the Red Sea countries could enable the collection of data that is comparable at a regional scale. Data comparisons could therefore help management practitioners to measure tool effectiveness and to identify additional management needs or management adaptation across the region.

3.7.2 Data sharing

Management plans may also require or advocate data sharing. A number of case studies provide examples of data sharing mechanisms, as outlined below.

Data sharing approaches

In the **Pacific North Coast Integrated Management Area**, First Nations have established and manage a regional monitoring system which enables data collection and sharing, analysis of regional trends, and information reporting in ways that meet the needs of their communities. Such an approach encourages stakeholder ownership of management tools and ultimately helps ensure continued support from community stakeholders.

In the **Coral Triangle Initiative (CTI-CFF)**, member countries are not obliged to share data, and do so on a voluntary basis. As a means of encouraging voluntary data sharing, the CTI-CFF has established a centralised online database for spatial data called the Coral Triangle Atlas (<http://ctatlas.reefbase.org/>). Online databases are just one means of facilitating data exchange and sharing of good practices within a regional management approach.

3.7.3 Data Types

The type of data required for area-based management tools is generally determined by the objectives or targets of a plan and any indicators developed to assess progress. A broad spectrum of data types have been found useful in assessing the effectiveness of area-based management tools. The types of data collected can also be influenced by the attributes of the tool, for example, extensive stakeholder engagement can allow for the collection of local knowledge and data regarding a range of activities. As such, effective implementation of area-based management tools can be enabled by the collection of data that specifically aligns with the attributes and objectives of the tool.

Examples of different data types collected

Data collection for **Ridge to Reef management in Fiji**, including the community based Marine Protected Area Network, involved the collation of a number of different types of data including ecological, biological, socioeconomic data and traditional knowledge (WCS, 2012).

In the **Baltic Sea**, pollution from sewage is a problem, causing health hazards for Baltic marine users, visual pollution in coastal areas as well as oxygen depletion from increased nutrient levels. The availability of a wide range of data for **the Baltic Sea Special Sewage Area**, including nutrient concentrations, sewage disposal methods and vessel traffic, has helped formulate the MARPOL Special Area, and will support in tracking its achievement towards minimising waste and addressing the aforementioned issues (contributing to Sustainable Development Goal **Target 12.4**).

Finally it is important to consider the scale for which data is collected. For example, scaling-up local data for one Marine Protected Area for use in a national network of Marine Protected Areas can prove challenging and inaccurate.

Data Scale

One example in which data scale presented a challenge is in the **Raja Ampat Marine Protected Area Network in Indonesia**. During the early stages of the development of a zoning plan, data used to inform the process had been collected at a number of different scales. As a result, it was difficult to compare potential sites for Marine Protected Area Designation and to also assess wider impacts on the network of Marine Protected Areas as a whole.

DRAFT

4 Conclusions & Recommendations

4.1 Conclusions

Area-based management tools have the potential to significantly contribute to the implementation of Sustainable Development Goals and Targets

The case studies demonstrate that area-based management tools can contribute to multiple Sustainable Development Goals and Targets. Contributions to Sustainable Development Goal 14 can be significant, but contributions extend further to many other Goals. The review examined the alignment between the objectives of each of the area-based management tools examined in the case studies and forty-five Sustainable Development Goal Targets. This analysis found that those types of area-based management tools can contribute to thirty-nine (87%) of the Targets assessed. The extent to which area-based management tools can support the achievement of Sustainable Development Goals depends on the effectiveness of their implementation, which can be determined by a spectrum of enabling conditions and barriers. Overcoming barriers to implementation and building upon lessons highlighted by the case studies will help improve the effectiveness of a tool and hence its ability to support the delivery of Sustainable Development Goals and Targets.

The attributes of area-based management tools determine their contributions to Sustainable Development Goals and Targets

The basic attributes of area-based management tools, as shown in Figure 2-4 determine their contributions to Sustainable Development Goals and Targets, for example:

- **The spatial focus of the tool.**
 - Large scale tools, such as the ICZM protocol in the Mediterranean, can inspire national level implementation and support regional consistency in approaches to multiple Sustainable Development Goals and Targets;
 - Area-based management tools can be used in areas beyond national jurisdiction as well as national waters which can help to incorporate entire ecosystems within management processes, which in turn contributes to the sustainable management of marine and coastal ecosystems (Target 14.2);
 - Planning for terrestrial and marine environments across the coastal zone and land-sea interface will work towards overcoming issues of marine contamination from terrestrial sources, thus contributing towards pollution-reduction targets, as well as a wide array of other Sustainable Development Goals and Targets.
- **The ecosystem approach** is an integral part of many area-based management tools and can facilitate their delivery of Sustainable Development Goals 14 and 15 which are both ecosystem-focused goals.
- **Stakeholder engagement** processes included in area-based management tools can:
 - Improve the connections between management approaches. Such connections are particularly important in the context of management across the terrestrial-marine interface, for example to control upstream plastic pollution inputs (Sustainable Development Goal 14.1);

- Support participatory decision-making and the creation of partnerships that can help to ensure that the needs of a wide range of stakeholders are considered (Sustainable Development Goal 17);
- Clarify jurisdictional and access rights, engage users of a system and increase compliance with management measures through mechanisms such as the inclusion of local knowledge to foster community ownership (Sustainable Development Goal 16.7).

An area-based management tool is shaped by its policy driver

It was found that single-sector tools can focus targeted actions on specific issues that are of particular relevance to a particular sector. Multi-sector tools can deliver against a wide range of Sustainable Development Goals and Targets through the design and implementation of a spectrum of management measures that are considerate of a range of sectoral objectives. A combination of tools can be utilised in order to address specific issues, depending upon the needs of an area and its stakeholders.

Management plans provide a framework for action

A key attribute of area-based management tools, which underpins their contribution to Sustainable Development Goals and Targets, is the existence of an associated management plan. **Management plans provide a framework for action** within a defined management area. In order to be useful, plans should provide descriptions of management actions, associated roles and responsibilities for delivering the actions, and provide indicators to measure and track effectiveness. This review has demonstrated that for many area-based management tools, there is strong alignment between the aims of area-based management actions and Sustainable Development Goals and Targets. Within the 25 case studies, most existing management plans make no specific reference to Sustainable Development Goals, yet there is discernible alignment between plan objectives and Targets.

4.2 Recommendations

The following recommendations are intended to support the future application of area-based management tools to enable their potential contributions to Sustainable Development Goals and Targets. The recommendations are derived from the analysis presented in chapters 2 and 3 and are grouped as follows:

- Spatial scale and transboundary considerations
- Legal basis of the area-based management tool
- Funding
- Institutional framework
- Stakeholder and multi-sector engagement
- Iterative and/or adaptive management process
- Data collection and monitoring

4.2.1 *Spatial Scale and transboundary considerations*

Existing regional or transnational structures can support area-based management approaches, for example, coordinating institutions set up under Regional Seas Programmes and Conventions have supported collaboration between countries. Coordination facilitates transboundary implementation of area-based management measures and enables these approaches to support and strengthen transboundary cooperation and partnerships. The marine environment is highly connected and ecosystems often cross jurisdictional boundaries and as such, application of an ecosystem approach will likely be facilitated by transboundary cooperation. Transboundary cooperation can identify areas of common interest, allowing regions to leverage economies of scale for management approaches where available. Transboundary partnerships or initiatives can provide opportunities to share best practices and experiences between neighbouring communities, institutions or countries that are working to address similar issues.

Bottom-up approaches can work. As demonstrated by the Belize Coastal and Marine Spatial Planning work, the nine coastal areas gathered information in the planning phase which was fed upwards into the national level planning process. Collaboration at local level supports the participation of different levels of society, supporting Target 16.7. Stakeholder engagement at the local level can also support increased compliance with management measures through the development of a sense of community ownership and responsibility, which can ultimately increase management effectiveness.

Area-based management tools that include land and sea areas can address terrestrial threats to the marine environment, for example land-based sources of pollution. Such tools can encounter challenges in the form of greater stakeholder and institutional engagement, which can require significant additional capacity, but the transboundary benefits are powerful. As the Belize Coastal and Marine Integrated Coastal Zone Management Plan moves into the implementation phase, and in the period following implementation, further lessons could be drawn as to how to address issues such as pollution. In situations in which management problems are entirely marine, tools covering marine areas only would likely be more efficient and therefore appropriate.

4.2.2 *Legal Basis*

A legal framework underpinning an area-based management tool can boost the effectiveness of implementation. However, in certain situations, a voluntary agreement is sufficient to support enhanced cooperation and communication. Legal measures are necessary to support compliance with management measures in most circumstances, such as fishery restrictions. An effective legal framework for an area-based management tool depends on the tool and the environmental, socioeconomic and institutional circumstances in which it is being applied – no one size fits all. The case studies showed that non-legally binding frameworks are also valuable in enhancing cooperation and communication between countries or different jurisdictional stakeholders.

Understanding of existing legal frameworks during tool selection, planning and implementation is important. Prior to tool development, scoping of existing national, regional or international legal frameworks should be undertaken to ensure the compatibility of a proposed tool with existing legislation. Scoping should also be used to identify policy or legal gaps that could be overcome with the creation of new legislation or policy in order to help ensure a coherent legal approach to area-based management.

4.2.3 *Institutional Arrangements*

The establishment of an independent authority, with a government mandate and long-term presence, has been shown to support area-based management tools. Where possible (depending

upon capacity), it is beneficial to establish an independent authority with a legal or governmental mandate to develop and guide planning and implementation of area-based management tools. Such an institution needs to have legal responsibility for area-based management, allowing sustained participation through changing circumstances, such as intergovernmental re-structuring.

Spatially overlapping mandates can support the delivery of complementary actions. Where multiple institutions with mandates to manage the activities of different sectors are present, they can coordinate to support the achievement of a common goal. A common goal may require management actions across different sectors, and each institution can manage their relevant sector to, for example, alleviate a variety of different pressures on an area.

A coordination mechanism (vertical and horizontal) supports coherent management decisions. Planning and implementation of area-based management tools benefits from the establishment of a coordination mechanism to facilitate cooperation and collaboration between different agencies (horizontal) and various levels of government and communities (vertical). Examples can include the establishment of a coordination committee, a secretariat to manage transboundary agreements, or a working group dedicated to coordination. The aim of such mechanisms is to ensure that management actions implemented under the auspices of a particular tool are coordinated between the different authorities and that they are aligned.

4.2.4 Funding

Long term financial support for an area-based management tool enables its effective application and delivery: Area-based management tools should include a long-term financial strategy and mechanisms that enable secure, sustainable funding. Particular funding options suitable for area-based management tools include:

- *User fees* can be levied to enable access to, or resource removal from, specific areas. For example, fees could be levied to allow tourist access to marine protected areas for kayaking or snorkelling. The user fees may provide revenue that can be used to support management measures.
- *Increasing the value of products derived from a managed system*, such as through premium pricing for products certified as originating from managed areas. This can provide increased revenue for local people, such as in Lyme Bay, and may also increase local support for management measures.
- *Alternative income generation initiatives* can support long-term sustainable management of area-based management tools. Such initiatives may also support the success and enforcement of management measures by providing sufficient income such that community members can afford to uphold management measures, for example adequate income from aquaculture can reduce the likelihood of violations of no-take designations.

Build mechanisms into the implementation plan to secure self-sustaining funding. A self-sustaining secure funding model, such as the “Reserve Seafood” eco-label in the Lyme Bay Marine Reserve, UK which generates local income by meeting consumer demands for high quality, sustainable seafood, should be part of the planning process for any area-based management tool.

Identify partners to provide in-kind support. For example, some universities that conduct research could generate data or evidence to populate indicators as part of a monitoring programme for an area-based management tool. Consideration of potential partnerships with universities, NGOs and managers of an area-based management tool, during plan development, may help to identify sources of in-kind contributions which could be used to help planning and implementation, e.g. mapping expertise in the development of zoning plans.

4.2.5 *Stakeholder engagement:*

Stakeholder engagement and expectation management supports effective plans: Involvement of relevant stakeholders supports effective implementation by ensuring those active in an area contribute to, and understand, management decisions. Stakeholders should be clearly defined, as should how they will be engaged, what their roles and contributions will be, and what outcomes they should expect from the engagement process. Setting out clear expectations is particularly important to ensure that trust and buy-in can be built and maintained.

Participatory engagement enables decision making at different levels: Participatory engagement, including the building of strong partnerships, among stakeholder groups and between stakeholders and institutions responsible for area-based management supports delivery and compliance. Local community involvement can support an enhanced sense of ownership, generate improved relationships, better knowledge for decision making, improved stakeholder trust, ownership, and compliance.

Stakeholder engagement can be integral at all stages of area-based management tool evolution: Stakeholder engagement should start early and continue throughout the entire area-based management process. Stakeholders can be involved at multiple stages of the process, from the initial definition of management objectives, planning and zoning decisions, identification and selection of management options, to the implementation, enforcement and review of management measures, plans and strategies. The level and intensity of engagement can vary across the different stages. Different mechanisms of engagement should be considered depending on the objectives at each stage. Options of engagement mechanisms include

- advisory councils/committees or consultative groups
- formal consultations
- outreach and education programmes
- participatory resource mapping
- public meetings
- volunteer programmes
- working groups
- workshops

Compliance with the plan is facilitated by stakeholder engagement and commitments (legal or voluntary): Compliance with management measures is frequently challenging to achieve. Mechanisms to increase likelihood of compliance can include legal frameworks supporting other forms of voluntary or customary management measures and community support and involvement in the planning and implementation of the measures.

4.2.6 *Adaptive Management*

Including an obligation to review area-based management plans supports adaptive management. Management plans should include an obligation to regularly review the plan based on evidence from monitoring programmes and data collection in the designated area. A framework for review of both

the management plan and individual management measures should be provided. Adaptive management promotes effectiveness through responsive measures. The framework could include:

- The required/suggested frequency of review;
- Provisions on collation and communication of results; and a
- Process for adapting management measures in light of review results. For example, if new measures are necessary, such as the ship reporting system in the Galapagos PSSA, they can be added.

4.2.1 *Indicators, data and monitoring*

An obligation for data collection assists robust monitoring: Management plans that include an obligation for data collection to support indicators that specifies the frequency of data collection, can facilitate tracking the effectiveness of area-based management tools. Identification of the extent to which a management plan is achieving its specified goals or targets through monitoring, allows for adaptive management where management actions can be amended. Monitoring programmes could, where possible, involve user group participation to encourage involvement in area-based management and to establish a sense of ownership and to foster support.

Data types needed for the plan will depend on plan objectives and indicators. In some cases, the data needed will be social, for example understanding food security, in others it will be chemical, such as in the MARPOL special areas. The type and scale of data collection needs to be planned, and appropriate to support the indicators proposed. For example, in order to assess the effectiveness of a fisheries management measure, data on catch, location and health of the stocks are important. In order to identify if area-based management tools are contributing to Sustainable Development Goals, data that supports the associated Sustainable Development Goal indicators would support national tracking towards their delivery.

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6 Annex

6.1 Case Study Analytical Framework

The first section of the analytical framework is a factual description of various components of the case study. These provide the factual basis for the analysis of the case study.

Question	Case-specific entries
Tool	
Region	
Implementation status	
Governance Mechanisms	
What is the legal basis of the ABMT?	
Is there government support for the ABMT?	
What is the institutional framework of the ABMT?	
What type of organisation is the Lead Entity?	
What policies are being implemented by the ABMT?	
What are the primary goals / objectives of the ABMT?	
What are the management measures associated with the ABMT?	
Does the ABMT involve cross sectorial cooperation?	
Which Sustainable Development Goals do the management measures support?	
Does the ABMT process follow an ecosystem approach?	
Does the ABMT process incorporate data and evidence?	
What type of data was used in the ABMT development process?	
Does the ABMT process include stakeholder engagement?	
Does the ABMT use spatial and/or scenario analysis to support decisions?	
What decision-support tools were used to support the planning process?	
What is the spatial focus of the ABMT?	
At what scale is the ABMT process implemented?	
What is the timeframe focused on for the management measures?	
Does the ABMT include an evaluation framework, and if so, what is the framework?	
Does the ABMT include performance monitoring, and if so, what is the framework?	
What indicators are used in the monitoring of the ABMT?	

This section of the analytical framework is focused upon answering more analytical questions. All components of this stage of the analytical framework are phrased as ‘to what extent...?’ questions. This phrasing is intended to generate reflective and analytical answers that provide insight into how each case study delivers area-based management effectively. Where possible, answers to these questions will identify links to Sustainable Development Goal targets. For each of these questions, the barriers and enabling factors are requested to be noted. The barriers are the factors that constrain the successful application of the ABMT (in the context of the relevant assessment question). The enablers are the factors that support the successful application of the ABMT (in the context of the relevant assessment question). The connection to Sustainable Development Goal targets will further enable the barriers and enablers to be linked to Sustainable Development Goal target delivery and therefore identify practices that can enhance the contribution of ABMT types to Sustainable Development Goal targets.

Assessment questions	Responses	Barriers	Enablers
To what extent does the legal basis of the ABMT support the delivery of the ABMT and associated policies?			
To what extent does the institutional framework associated with the ABMT support the delivery of the ABMT and associated policies?			
To what extent does the ABMT support the delivery of marine and coastal policies?			
To what extent does the ABMT promote transboundary cooperation?			
To what extent does the ABMT process emphasise multi-sector engagement?			
To what extent does the ABMT utilise an iterative/adaptive process?			
To what extent does the funding/resources of the ABMT support its delivery and associated policies?			
To what extent does stakeholder engagement support the effective delivery of the ABMT and associated policies?			
To what extent did data provision support the delivery of the ABMT?			

6.2 Sustainable Development Goals Assessed

Target	Target Description
SDG 1: End poverty in all its forms everywhere	
1.1	By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day
1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
1.3	Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
1.5	By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	
2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round
2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons
2.5	By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	
8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries
8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services
8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead
8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value
8.9	By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products
SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable	
11.1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

Target	Target Description
11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
11.4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage
11.5	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
11c	Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials
SDG 12: Ensure sustainable consumption and production patterns	
12.1	Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries
12.2	By 2030, achieve the sustainable management and efficient use of natural resources
12.3	By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses
12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment
12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse
12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle;
12.a	Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production
SDG 13: Take urgent action to combat climate change and its impacts	
13.1	Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
13.2	Integrate climate change measures into national policies, strategies and planning
13.3	Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
13.a	Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
13.b	Promote mechanisms for raising capacity for effective climate change related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

Target	Target Description
14.2	By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans
14.3	Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels
14.4	By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
14.5	By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information
14.7	By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism
14.b	Provide access for small-scale artisanal fishers to marine resources and markets
14.c	Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want
SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
15.9	By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts
SDG 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all	
16.7	Ensure responsive, inclusive, participatory and representative decision-making at all levels
SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development	
17.7	Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships
17.9	Capacity-Building: Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation
17.16	Multi-stakeholder partnerships: Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries