OECMs

In marine capture fisheries

Systematic approach to identification, use and performance assessment

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By

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PREPARATION OF THIS DOCUMENT

About the document

This document proposes a systematic set of actions that would be needed to identify and use OECMs in the marine capture fisheries sector, organized in a logical order. It has been prepared as a background to be used (and improved) in regional working groups to check the adequacy of these actions in various fisheries contexts. The document is to be considered as "work in progress" and comments and suggestions for its improvement may be sent to Serge. M. Garcia (grcsgm@gmail.com).

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The actions described in the document benefitted greatly from discussions in the various meetings on OECMs organized by the CBD, FAO (FAO, 2019) and FEG in 2018 and 2019, and for which FEG prepared background documents on OECMs in the marine capture fisheries sector (**Rice et al., 2018; Garcia et al. 2019**). The document benefitted also from valuable contributions and comments received from experts from the Fisheries Expert Group of the IUCN Commission on Ecosystem Management (IUCN-CEM-FEG), and from other institutions, to whom we express our most grateful thanks: Colin Atwood (South Africa); Gunnstein Bakke (Norway); Kim Friedman (FAO); Eskild Kirkegaard (Denmark, FEG): Amber Himes-Cornell (FAO), Alf Hakon Hoel (Norway); Kelvin Passfield (IUCN-CEM); and Kerry Sink (South Africa). We remain entirely responsible for any eventual errors or misinterpretations.

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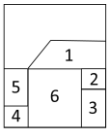

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ABSTRACT

Other effective area-based conservation measures (OECMs) have been defined by CBD COP in Decision 14/8 in November 2008. Since 2016, efforts have been made by the IUCN Fisheries Expert Group (FEG), in collaboration with the CBD and FAO Secretariats, to elaborate a specific guidance for their identification and management in the fishery sector. This document identifies a set of actions organized as a systematic approach to identify, and use OECM, integrating them into fisheries management plans, monitoring, evaluating, and reporting on their performance. The approach will be tested and finalised through regional meetings organized in close collaboration with national and international fisheries and biodiversity institutions. The set of actions have been extracted from the various background documents prepared by FEG in the CBD OECM process as well as reports of meetings on the subject organized by CBD and FAO in the past 4 years, and on the literature. The document : (i) Describes the elements of the enabling policy and legal frameworks needed at national and sector levels to incentivise and support OECMs; (ii) Provides a stepwise approach to identification of OECMs, from early quick-screening to decision making and reporting to WCMC; (iii) Examines the integration of OECMs in the fishery management plan, the fishery sector and surrounding seascape; (iv) Describes an effective Monitoring, Evaluation and Reporting (MER) system to support a recurrent performance assessment, including auditing; and (v) Considers the revision process that might be needed to maintain the OECM performance over the long term.

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ABBREVIATIONS AND ACRONYMS

ABFM	Area-Based Fishery Management
ABMT	Area-Based Management Tool
BACI	Before-After-Control-Impact
BIM	Biodiversity Impact Mitigation
CBD	Convention on Biological Diversity
CCFAM	Canadian Council of Fisheries and Aquaculture Ministers
CCRF	Code of Conduct for Responsible Fisheries
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of the Parties to the CBD
EAF	Ecosystem Approach to Fisheries
EBSA	Ecologically and Biologically Significant Area
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFS	Ecosystem functions and services
ES	Ecosystem Services
FAO	Food and Agriculture Organization of the United Nations
ICAM	Integrated Coastal Area Management
ILK	Indigenous and Local Knowledge
IUCN	International Union for Conservation of Nature
FEG	Fisheries Expert Group of the IUCN Commission on Ecosystem Management
LME	Large Marine Ecosystem
MCS	Monitoring, Control & Surveillance
MER	Monitoring, Evaluation & Reporting
MPA	Marine Protected Area
MSP	Marine Spatial Planning
NTZ	No-Take Zone
OECM	Other Effective Area-based Conservation Measure
OSPAR	Convention for the Protection of the Marine Environment of the Northeast Atlantic
PET	Protected, Endangered or Threatened (species)
RFMO/A	Regional Fishery Management Organization/Arrangement
PSR	Pressure / State / Response Framework
SAI	Significant Adverse Impact
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SCBD	Secretariat of the Convention on Biological Diversity
SDG	UN Sustainable Development Goal
SSF	Small-scale Fishery
TURF	Territorial Use Rights in Fisheries
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNGA	United Nations General Assembly
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stock Agreement
VME	Vulnerable Marine Ecosystem
WCC	World Conservation Congress
WCMC	World Conservation Monitoring Centre (UNEP)
WCPA	World Commission on Protected Areas
WDPA	World Database on Protected Areas

PREAMBLE

The detailed elements of action constituting this document are in line with CBD Decision 14/8 but, specially elaborated for marine capture fisheries, they are more detailed than the overarching Decision itself which applies generally to terrestrial and marine ecosystems, and to all economic sectors operating in these systems. These elements have been mainly extracted from the various background documents prepared by FEG in the CBD process on Other Effective Area-Based conservation Measures (OECMs) over the past four years, as well as the report on an expert meeting on the subject organized by CBD and FAO in 2019, and on the literature. The action needed for identification and management of OECMs, have been extracted, re-elaborated as necessary, and organised in a logical order. We acknowledge that the information available on real implementation is still quite scarce and the suggested points need to be further tested on the ground, in different contexts, to be progressively improved and revisited once a meaningful amount of experience and elements of "best practice" have accumulated.

There is a broad and diverse target audience for this document. OECMs –as defined in Decision 14/8– are a management instruments bridging sustainable uses of biodiversity with its conservation. The evidence providing the basis for selection, planning and management of OECMs includes the best science available and the knowledge of fish harvesters, and Indigenous Peoples and local communities. . The document tries to be accessible to all these audiences. Therefore, information provided may sometimes seem superfluous to experts in any of these perspectives, particularly experts in fisheries or biodiversity conservation, and aspects of fishery or ocean management.

For more detailed considerations on the matters addressed here, the present document should be considered and used jointly with the following documents: (1) The CBD Decision 14/8 on OECMs which is the foundational reference (https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-08-en.pdf); (2) The Background document prepared by the IUCN-CEM Fisheries Expert Group for the CBD Secretariat on "Identification, Assessment and Governance of OECMs in the Marine Fishery Sector (**Garcia et al., 2019;** https://www.openchannels.org/literature/24881; (3) The Report of the FAO/CBD/IUCN-CEM-FEG Expert Meeting on OECMs in the Marine Capture Fishery Sector, Rome, Italy, 7-10 May 2019 (**FAO, 2019;** http://www.fao.org/documents/card/en/c/ca7194en; and (4) the UNEP-WCMC User Manual for the World Database on OECMs (**UNEP-WCMC, 2019**; http://wcmc.io/WDPA_Manual). A more generic guidance on OECMs is also available in **IUCN-WCPA, 2019**).

1. INTRODUCTION

In 2010, in Nagoya (Japan), the 10th Conference of the Parties to the Convention on Biological Diversity (CBD COP 10) adopted a Strategic Plan for Biological Diversity 2011-2020 containing 20 targets (referred to as Aichi Targets) to be reached, in most cases by 2020. Target 11 states that: "*by 2020, at least…10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider … seascapes"* (emphasis added) (https://www.cbd.int/sp/targets/). In elaborating this Target, the CBD COP created *de facto* a new and undefined class of conservation

instruments, the "*other effective area-based conservation measures*" (hereafter referred to as OECMs), the spatial coverage of which should be considered as incremental and complementary to that of the specific area-based instrument - Marine Protected Areas (MPAs), in the achievement of Target 11. It is the *aggregate* conservation benefits from both MPAs and OECMs that was agreed to be considered in evaluating progress towards the overall intent of the Aichi Targets to deliver conservation and sustainable use of biodiversity, as specified in the Convention itself[4].

After a few years of discussions around the OECM concept, the CBD COP 14 adopted in November 2018 the Decision 14/8 (thereafter referred to as "The Decision") containing a formal definition this category of instruments and provided the foundations for an effective process of implementation of OECMs. The CBD COP Decision (§2) defines Other Effective Area-Based Conservation Measures by the outcomes produced by the area: *"a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio–economic, and other locally relevant values"* (**CBD, 2018c**). This definition does not specifically refer to economic sectors but a role of OECMs, clearly stated in many other parts of The Decision, is to acknowledge and possibly increase the positive, long-term biodiversity outcomes achieved through spatial management of economic activities. It is also to increase the use of sector-based spatial instruments to protect biodiversity features of concern[5] in areas where sectoral activities could have an excessive impact on such features, if not managed appropriately.

In the present document, the "biodiversity features of concern" are the specified elements of biodiversity for which protection from excessive impact of fishing is expected, and in relation to which the OECM performance is assessed. The area itself may well still be exposed to selected fishing activities, but in ways that significantly reduce or, when possible, eliminate the negative impact on these features, within the area. The Decision provides guidance about cross-sectoral coordination in relation to OECMs, e.g. In Annex I (See also **Section 5.3**).

The focus of the present document is on OECMs to be identified in the marine fishery sector, from existing area-based fisheries management measures (ABFMs, closed areas), including various forms of marine areas (TURFs, MMAs, LMMAs, etc.) managed mainly, if not only, for fisheries-related purposes (see **Rice et al., 2018** for a detailed inventory). Areas in which fisheries are limited or prohibited by other sectors (e.g. around oil rigs or renewable energy platforms, or for conservation (e.g. in Multiple use MPAs) are not considered.

The Decision (Annex III) provides also thirteen Guiding Principles listing the common characteristics to be shared by OECMs: e.g., the biodiversity values they protect; their complementary role in MPA networks; their demonstrable positive outcomes for *in-situ* biodiversity; their ecological representativeness and connectivity within broader ecological networks; the use of the best information available for their

[4] E.g. in The Decision paragraph 12 and Annex I, and in accordance with the objectives of the Convention (CBD Article 1) and related obligations including those related to in-situ and ex-situ conservation (Articles 8 and 9), and sustainable use (Article 10) of biodiversity and its components.

[5] i.e. the specified elements of biodiversity for which protection from excessive impact of fishing is expected, and in relation to which the OECM performance is assessed. The area itself may well still be exposed to selected fishing activities, but in ways that significantly reduce or eliminate the negative impact on these features, within the area.

identification, recognition, and effective management; and the need for equitable governance by a Legitimate Authority (see below).

The Decision also provides four Criteria for Identification, subdivided in 10 sub-criteria and 27 elements which reflect the Guiding Principles and, all together, characterise OECMs and hence frame their identification (cf. **Appendix 1**). Finally, The Decision provides also voluntary guidance on the integration and mainstreaming of OECMs in seascapes and across sectors (Annex I) and on effective governance models (in its Annex II) as well as relevant considerations for achieving Target 11 in marine and coastal areas (unique aspects of the marine environment; main types of area-based management measures used; approaches to accelerate progress in implementing Target 11; and lessons learned (Annex IV). Together, these elements represent a comprehensive framework for the identification and use of OECMs in the management of all economic sectors. Generic guidelines for implementation of OECMs, implicitly applicable to all environments within which OECMs may be used, have been drafted by **IUCN WCPA (2019**), but their comprehensiveness and robustness for specific economic sectors still need to be tested.

In this document, the "Legitimate Authority" refers to the institution or collaborative institutions having the formal governance mandate and powers needed to achieve in situ conservation of biodiversity within the OECM in the marine fishery sector. The term is intended to cover a diversity of governance systems in which the authority may be: (i) centralized at the State level, e.g. in the Ministry or Department of fisheries; (ii) deconcentrated in peripheral State offices; (iii) decentralized or locally devolved, e.g. to coastal communities and municipalities under co-management arrangement, or to Indigenous Peoples or local communities (IPLCs). Governance by IPLCs is self-identified in accordance with national legislation and applicable international obligations. The various forms of governance may be very important in terms of the process through which candidate OECMs are considered, assessed and implemented.

The practical implementation of OECMs in each individual economic sector will require "translation" of the generic guidance into operational guidelines for each sector. This translation should reflect each sector's particular situation:, technologies used, types of impacts on biodiversity, types of governance, current legal framework, jurisdictions[6] under which they operate, the specific types of area-based measures and instruments expected to contribute to conservation of biodiversity and how they interact with other non-area-based measures that may be applied etc. In each sector, existing areas currently managed using area-based management tools (ABMTs), such as existing conventional fishery closures, as well as new areas where new area-based measures may be brought in, might be considered, and assessed against OECM standards.

The Decision (Annex IV, B2c) refers to Area-Based Fisheries Management Measures (ABFMs) as *formally established, spatially defined, fishery management and/or conservation measures, implemented to achieve one or more intended fishery outcomes. The outcomes of these measures are commonly related to sustainable use of the fishery. However, they can also often include protection of, or reduction of impact on, biodiversity, habitats, or ecosystem structure and function*. Sustainable use of the target species by the fishery is usually the primary outcome expected of ABFMs. If the secondary outcomes on biodiversity conservation meet or exceed the standards established in The Decision, the existing (or new) areas within which the measures are (or will be) implemented may be considered as OECMs.

To foster mainstreaming of OECMs in economic sectors, The Decision 14/8 (§9) *Invites the International Union for Conservation of Nature, the Food and Agriculture Organization of the United Nations, and other*

[6]A "jurisdiction" is the power, right, or authority to interpret and apply the law. The authority having jurisdiction in fisheries and/or biodiversity management may be international, national or sub-national; public or private; exclusive or shared.

expert bodies to continue to assist Parties in identifying other effective area-based conservation measures for relevant sectors and in applying the scientific and technical advice. For the same reason, The Decision (§12) *Urges Parties to facilitate mainstreaming of protected areas and other effective area-based conservation measures into key sectors, such as, inter alia, agriculture, fisheries, forestry, mining, energy, tourism and transportation, and in line with annex I,* on the integration of protected areas and OECMs into wider landscapes/seascapes and biodiversity mainstreaming across sectors).

In response to this invitation, an Expert Meeting organized by FAO, the Secretariat of the CBD and the IUCN-CEM Fisheries Expert Group (10-12 May 2019, Rome, Italy) produced a first set of elements to be considered when developing guidelines for the use of OECMs in marine capture fisheries in the future (FAO, 2019). The background document prepared for that meeting (**Garcia et al., 2019**) contained a comprehensive set of considerations and advice about; (i) the foundations of the OECM concept; (ii) the implications for the marine capture fishery sector; (iii) the process of identification of OECMs; (iv) their monitoring and performance evaluation; (v) reporting; (vi) auditing; (vii) revision; and (viii) governance issues. The background document contained numerous explicit or implicit suggestions of the actions needed to recognize existing OECMs or establish new ones in that sector and use them in the long term.

Most of the considerations in this document are explicitly or implicitly considered for application at national and sub-national levels. However, States can decide to consider the relevant elements also for the use of OECMs under bilateral arrangements (e.g. for transboundary OECMs) or in regional organizations and arrangements of which they are Parties, such as in Regional Seas Organizations (RSOs) or Regional Fishery Management Organizations and arrangements (RFMO/As).

This paper organizes systematically all these actions elements, considering: (i) the enabling frameworks; (ii) the implementation process; (iii) the OECM identification process; (iv) the integrated management of OECMs; (v) their Monitoring, Evaluation, and Reporting (MER); (vi) their eventual revision as knowledge accumulates or if conditions change; and (vii) the auditing of the entire process.

2. ENABLING FRAMEWORKS

The Guiding Principles, Criteria for identification and other considerations contained in The Decision provide guidance on many potential components of the necessary "enabling frameworks" for governance, legislation, policy and management of OECMs. The effectiveness of mainstreaming OECMs in marine (and freshwater) capture fisheries sector depends not only on the way the areas are managed and the measures applying within them are implemented, but also, to a large extent, on the higher level enabling frameworks within which their identification and management will be undertaken. Importantly, such overarching frameworks once established, need to be internalised and operationalised within the capture fisheries sector.

Section 2.1 refer to the overarching national governance framework within which the use of OECMs is necessarily nested. **Sections 2.2 and 2.3** focus on the fishery sector implementation of OECMs, at national level and with some reflections on possible implementation also at regional level, in the fishery sector, although cross-sectoral issues will be mentioned.

2.1 The overarching national governance framework

Governance has been defined in many ways. A synthetic definition of governance is: *a systemic concept relating to the exercise of economic, political and administrative authority. It encompasses: (i) the guiding*

principles and goals of the sector, both conceptual and operational; (ii) the ways and means of organisation and coordination of the action; (iii) the infrastructure of socio-political, economic and legal instruments; (iv) the nature and modus operandi of the processes; and (v) the policies, plans and measures (**Garcia, 2009**). The term is used to cover two interconnected and partially overlapping levels of administration: (1) at strategic level, the institutions, processes, policies, strategies, laws, overarching rules, and oversight; and (2) at operational level, the regulations, measures, implementation means, monitoring control and surveillance (MCS), and performance assessment. This operational level is usually referred to as "management" and distinguished from policy and planning. The definition applies across jurisdictions, at global, regional, national, local/community, cross-sectoral and sectoral levels.

The success or failure of the OECM mainstreaming process in the fishery sector, in any jurisdiction (EEZ, RFMO/A, TURF, LMMA) will depend, to a large extent, on the overarching governance system in such jurisdiction. The governance processes that would affect OECMs implementation and their biodiversity outcomes are likely to depend *inter alia* on: (i) The political system in place with its economic development and biodiversity conservation policies; (ii) The mechanisms in place to facilitate collaboration between sectoral and environmental institutions and among sectors; (iii) The degree of decentralization and inclusiveness of decision-making power, in fisheries and in conservation; (iv) The implementation capacity available to the Legitimate Authority; (v) The history of the relations among sectors and between them and the conservation agencies and interests; and (vi) the willingness to make decisions for the greater public good rather than more selfish reasons. Points (i) to (vi) are potentially relevant both in central and local governance systems but may be approached differently[7].

In The Decision, governance is addressed in many different places, implicitly in the definition of OECMs, the Guiding Principles and the Criteria and, explicitly, in the Annexes. Annex I of The Decision provides voluntary guidance on the integration of OECMs into wider landscapes and seascapes and their mainstreaming in economic sectors, *inter alia* to contribute to SDGs. Annex II provides voluntary guidance on governance models for protected areas, addressing issues related to: (i) Legitimate authorities; (ii) Free and Prior Informed Consent (FPIC) and inclusiveness of Indigenous People and Local Communities (IPLCs[8]); (iii) Diversity of State and non-State governance models; (iv) Recognition of stakeholders' rights (including tenure rights) and responsibilities; (v) The broad range of ecological, economic, social and spiritual values to consider; (vi) Effectiveness achieving the expected long-term outcomes; (vii) Equity in representation, procedures and distribution of costs and benefits; and (viii) Flexibility for context sensitive implementation.

Most of these issues relate to the "good governance**"** principles that emerged in the mid-1990s in sustainable development strategies, at the United Nations level (cf. **Graham, Amos, Plumtre, 2003**) and have gained momentum. They are not new to fisheries management and biodiversity conservation but their degree of implementation is highly variable.

Assuming there is an overarching decision at the highest level of governance to start a process of identification and use of OECMs in all relevant economic sectors, key actions taken at that level, consistent with The Decision Annex II, would facilitate the identification of OECMs and their coherent and consistent implementation in those sectors, including fisheries. However, the process might also start with one pilot sector (e.g. fisheries) and be extended to all relevant sectors only progressively. Care would have to be

[7] For LMMAs, see for example Govan et al. (2008)

[8] The Convention on Biological Diversity does not define the terms "indigenous peoples and local communities." . The United Nations Declaration on the Rights of Indigenous Peoples does not adopt a universal definition for "indigenous peoples", and a definition is not recommended (cf. the 2018 CBD COP Decision 14/13).

taken, however, to avoid discriminating fisheries in that incremental approach, violating the need for equity. The overarching activities that would facilitate the OECM mainstreaming in the capture fisheries sectors include:

- **Developing of a vision** or policy statement for the OECM initiative to support implementation at the appropriate governance level(s), in a highly participative process, to frame sectoral initiatives;
- **Reviewing and strengthening of the sectoral policy, legal and regulatory frameworks** (gap analysis), particularly for empowerment of sub-national governance system and improvement of cross-sectoral coordination;
- **Mandating the "Legitimate Authority" and clarifying responsibilities** in OECMs, e.g. for decision-making, identification; management; monitoring, evaluation, and reporting (MER); as well as mechanisms for cross-sectoral collaboration, conflict resolution, and comprehensive reporting to the Legitimate Authorities and, as appropriate to WCMC.
- **Developing or strengthening the collaborative processes** among jurisdictions, economic sectors and at seascape level when relevant; In particular, **coordinating the fishery-MER systems**, including those covering large-scale and small-scale fisheries, and integrating them, as needed, with those of other sectoral management and biodiversity conservation agencies operating in the same area or in surrounding or functionally connected areas
- **Providing oversight and auditing** to check the effective contribution of OECMs (cf. **Section 6.3**)

Additional complementary activities that may be considered such as:

- **Diffusing, the generic guidelines on OECMs** that are available (e.g. in IUCN WCPA, 2019) in national and local languages, adapting and translating them as needed for local use;
- **Creating or updating of a national database** of all protected areas including MPAs, OECMs, LMMAs and other community-managed areas and sector-managed areas producing or likely to produce biodiversity benefits and co-benefits[9].
- **Establishing accessible sources of funds** and other implementation means, including for capacity-building at local level;
- **Adopting of a strategy and plan** and a reasonable timetable for sectoral submissions of OECMs proposals by the various sectors to the Government, if the OECM implementation process is deconcentrated at various levels.
- **Communicating on –and promoting– OECMs** as conservation mechanism that are complementary to other conservation measures, compatible with sustainable use, and that bridges and helps unify fishery and biodiversity conservation frameworks.

These actions require an implementation capacity which might be limited in many places, both centrally and locally, and cooperation may need to be developed or enhanced, at bilateral and regional levels. Following The Decision, all these actions and all the actions referred to in the following sections of this guide are intended to be taken and implemented in multi-stakeholder processes involving all Legitimate Authorities, including Indigenous People and local communities, with due consideration of their rights, responsibilities, institutions, and set of values.

[9] Following The Decision (Page 14) "benefits" are *intended* (hence related to explicit objctives) while "co-benefits" are *unintended,* i.e. ie obtained by accident or simply not considered as objectives.

2.2 The fishery governance framework

Many of the actions considered below "echo" at sector and sub-sector levels the actions listed above in the overarching national governance framework, which should incentivise and facilitate them. Because an OECM identified in a fishery sector by the Legitimate Authority would usually have been established earlier as ABFM, it has in many cases the sustainability of the target species fishery as primary objective[10], including the protection of habitats essential for that fishery. It is identified as OECM because it generates also broader conservation benefits, e.g. for non-target species including threatened species and the broader biodiversity. For mobile species, these benefits will spill-over to the outside ecosystem. Consequently, the set of measures taken within an OECM will affect the sustainability and conservation performance of management not only within the OECM but also in the whole fishing ground and possibly ecosystem. Conversely, the measures and activities around OECMs should not negatively affect the expected OECM conservation performance, as reflected for example in the fishery management plan (cf. **Section 6.3**). Consequently, appropriate measures applied within and around OECMs will need to be complementary, coherent with both fisheries and conservation objectives, and integrated in the fisheries management plans. Such OECMs should also be integrated with the relevant biodiversity conservation networks and strategies, at local, national, regional or seascape levels, as appropriate. The issue is addressed in **Section 5.4.**

The following actions expected from the fishery sector would allow a review and strengthening of the fishery policy, regulatory frameworks as needed, at the appropriate governance levels (the legal framework is examined in **Section 2.3**). The actions appear in an order that is as logical as possible, but the need for such actions, and the order in which they may be taken, strongly depends on the present level of development and sophistication of the fishery governance and management systems, justifying the implementation "flexibility" recommended in The Decision:

- **Mainstreaming OECMs in the fishery sector:** (i) Review and revise, as necessary, the existing legal, policy and budgetary frameworks of the sector to facilitate mainstreaming. This would be facilitated if a cross-sectoral enabling national framework (**Section 2.1**) is developed; (ii) Encourage the sector (economic and other incentives) to identify new opportunities and recognize the contribution of existing OECMs to sustain or improve ecosystem functions and services; (iii) Facilitate building-up of the capacities required to improve mainstreaming of OECMs, including in assessment and management, and under the diverse modes of governance of the sector.
- **Establishing or identifying an auditing authority and process.** Independent auditing of management performance is not yet as widespread a practice for most national fishery management regimes as it is for most RFMO/As. However, systematic, and regular performance evaluation improves performance of adaptive fishery management systems, and formal auditing (whether internal or third party) would add credibility to reports on OECMs performance. The use of OECMs is therefore an opportunity and incentive to establish or strengthen performance assessment for the fisheries and the sector and not only for OECMs (**cf. Section 8**).
- **Operationalizing equitable governance.** In line with the well accepted principles of "good governance" (cf. **Section 2.1**), The Decision recognizes the need for equity at three levels: (1)

[10] Some ABFMs are used to regulate access, allocating space to sub-sectors, to allocate resources or reduce sources of conflicts and accidents, e.g. separating artisanal from industrial fisheries or set gears from mobile ones. In VMEs, the biodiversity conservation objective is particularly prominent, but the link between that protection and the productivity of the target species is present.

Recognition of the Legitimate Authority and stakeholders, with their gender, identity, rights, values, knowledge systems, and institutions; (2) Procedures, giving effect to the "recognition" by ensuring inclusive institutions and mechanisms from data collection to decision-making and implementation; and (3) Distribution of costs and benefits (of the OECM and of the fisheries) among stakeholders. The Ecosystem Approach to Fisheries (FAO, 2003a) and the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (**FAO, 2015**: Chapter 5B) are good sources of guidance in that respect, stressing the link between the right to access resources and the responsibility to manage them and conserve biodiversity[11]. Particular attention will be needed to ensure equity in participation and distribution (of opportunities, costs, and benefits) among stakeholders with main interest respectively in sustainable use or in conservation of biodiversity. The main reason for this is that the values they attach to specific biodiversity features and benefits may be different.

- **Facilitating coordination/integration to improve performance.** Consider the needs, cost, and benefits of integration of sustainable use and conservation of biodiversity into the vision, goals and targets of fisheries and conservation policies and regulations at national and regional scale[12] It is important to note that parties to the 1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement or UNFSA) have the obligation to protect marine biodiversity (UNFSA, Art. 5 (g)). This provision is applicable in areas within and beyond national jurisdiction as per Article 3 of UNFSA. Foster integration of OECMs and their management: (1) within the fishery in which they are established, integrating them into its fishery management plan (FMP); (2) within the fishery sector, across the different fisheries using a given ecosystem; (3) between economic sectors potentially impacting the same OECM (e.g. fisheries, navigation, oil and gas, mining, tourism and renewable energy), e.g. through Marine Spatial Planning; (4) in national poverty eradication and sustainable development strategies (SDGs etc.), in relation to provisioning ecosystem services (food security, livelihoods); (5) across jurisdictional boundaries (e.g. for shared or straddling OECMs); and (6) at ecosystem or ecoregional level, in existing seascapes, Ecologically and Biologically Significant Areas (EBSAs), etc. Levels of integration (1) and (2) are achievable within the fishery sector. Levels (3) and (4) require action by the State. Levels (5) and (6) require international collaboration.
- **Identifying known negative impacts of other sectors** on fisheries and OECM outcomes in these fisheries. Seabed mining, oil and gas industries, land-based pollution, and navigation are examples of such threats. The best way to deal with such issues is within a cross-sectoral framework at an appropriate spatial scale, like integrated coastal zone management (ICZM), Marine Spatial Planning (MSP) or equivalents, to harmonize OECMs with spatial measures (and sometimes non-spatial measures) applied by other sectors or biodiversity conservation agencies in the same area, increase synergy and reduce conflict. However, such efforts are not yet widespread and, in their absence, the fishery sector could take the initiative towards improved sector-based conservation

[11] This is also consistent with CBD Decisions V/6 (2000) and VII/11 (2004) on the ecosystem approach and respective guidance for implementation.

[12] It is important to note that Parties to the 1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement or UNFSA) have the obligation to protect marine biodiversity in areas within and beyond national jurisdiction (Articles 3, 5g).

and be an example that other sectors might follow. In many instances, a bilateral collaboration between two sectors (encouraged by the State) may be enough to make an OECM operational and even to establish cross-sectoral OECM outcomes.

- **Ensuring that an effective fishery management system is in place.** In the fishery sector, the management of medium to large scale fisheries (e.g. access rules, gear regulations, and effort and catch limits) is usually undertaken fishery by fishery and can vary greatly in sophistication and effectiveness. The small-scale fishery sector, with its complex set of fishing targets, gears and strategies, tends to be considered "as a whole" (as a multispecies multi-gear fishery), particularly in developing nations. Its management can then be centralised in the capital, decentralised in regions or municipalities, or devolved to Indigenous People and local Communities (IPLCs) under various forms of co-management. The explicit integration of the biodiversity conservation objectives and expected outcomes of the OECMs in the fishery management plan (FMP) or practices with small-scale fisheries is a significant move forward in mainstreaming. The capacity of the sector or fishery-specific management capacity of OECMs must be ascertained.
- **Adopting or strengthening the Ecosystem Approach to Fisheries (EAF)** as the operational framework for managing fisheries and OECMs. EAF has already been adopted in FAO (since 2001) and all advanced countries and RFMO/As, recognizing the need to consider and limit the impact on non-target resources and habitats. The identification and inclusion of OECMs in EAF-based management plans should facilitate their expanded use in fisheries and this, in turn would strengthen EAF implementation, the priority given and the performance expected on biodiversity outcomes. The FAO Guidelines on EAF (FAO, 2003a) could be amended or supplemented to address the conservation aspects of OECMs explicitly.
- **Strengthening the monitoring and evaluation capacity.** Advanced systems that have scientific capacity for stocks assessment (e.g. in national fishery research laboratories), can be tasked and enhanced if needed to monitor and assess OECMs. Collaborative monitoring, research and assessment programmes between fisheries and biodiversity conservation agencies ought to be established or strengthened, at national and regional levels, and would be an enabling factor. In particular, the competence currently tasked with assessing and managing MPAs networks could be encompassed within these collaborations. Coordinating the different fishery-MER processes, including those covering large-scale and small-scale fisheries, and integrating them with those of other sectoral management and biodiversity conservation agencies operating in the same area or in surrounding or functionally connected areas might help mobilizing the additional resources needed.
- **Identifying the need for international collaboration** in the case of transboundary OECMs. Using the stocks-based terminology, OECMs might be "shared" (adopted in areas overlapping neighbouring EEZs), "straddling" (overlapping one or more EEZs and the High Sea), or implemented entirely in the High Sea. Effectiveness would benefit from collaborative action for assessment and management. Examples of formal shared stocks agreements (like between EU Member States, Norway and Russia, and USA and Canada) are relative rare, however, and OECMs may be an opportunity to improve the situation. At regional level, Regional Seas Organizations (RSOs) as well as RFMO/As and seascapes, are good examples of effective collaboration and channels that might be used to promote effective OECMs.
- **Matching implementation capacity to commitments** and vice-versa. The institutional, scientific, and management capacity-building required to deal with OECMs within fisheries may call for additional means in a sector where management is often chronically under-funded. In many cases,

ambitions will need to be tailored to means available, e.g. using a stacked approach to mainstreaming; using pilot phases to learn by doing; using local knowledge and expert knowledge instead of costly scientific programmes. However, the weaker the evidence available, the greater the risk aversion necessary in decision-making.

2.3 The fisheries legal framework

The international framework enabling the identification and implementation of OECMs in all ecosystems has been established by The Decision, complementing the overarching framework provided by UNCLOS for the oceans and seas. Under UNCLOS, States, in their EEZs or as members of a RFMO/A may adopt area-based management tools (ABMTs) such as closed areas, for the sustainable use of the resources or the protection of the environment, and hence identify OECMs. The ongoing United Nations process for the adoption of an international legally binding implementation agreement, under UNCLOS, on the conservation and sustainable use of biodiversity of areas beyond national jurisdiction (BBNJ agreement) will be relevant for the way (ABMTs, which include MPAs and OECMs) may be used in the future by any sector in the High Sea and the Area[13].

To become fully operational in fisheries, the implications of The Decision would need to be incorporated in or reconciled with the relevant existing legal frameworks, at national level (e.g. in the Fisheries Act) and at sub-national level (e.g. by IPLCs and in traditional management systems), specifically recognizing, if needed, the concept of OECMs in both fisheries and conservation. The same would apply in RFMO/As. Under all these legislative or regulatory frameworks, ABFMs have been used for centuries (e.g. in traditional fisheries management) and are present in most modern fisheries management plans[14] and regulations. Their purpose can be narrowly contributing to ensuring long-term sustainability of the target species, but often also contributing to reducing / avoiding bycatches and/or protecting sensitive[15] and essential[16] habitats. Some of the ABFMs may therefore be identified –or upgraded– as OECMs and implemented in fisheries with little modification, if any, of their present legal frames. The only change necessary might be to explicitly acknowledge the new concept of OECM as a legitimate fisheries ABMT, serving specific biodiversity conservation objectives. Complementary actions to further solidify the intended outcomes of OECMs may include:

- **Mandating the legitimate fisheries management authorities[17]**. For marine capture fisheries, the mandated authorities with the right to adopt and enforce measures (including area-based measures) are usually already defined in countries with some sort of Fisheries Act, either at central State level (Ministry, Department) or other levels (federal States, indigenous people, local communities, associations, etc.). In the High Sea, flag States, individually, of collectively through RFMO/As, jointly, have the required competence.

[13] "Area" means the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction (UNCLOS Article 1.1)

[14] Guidance for the elaboration of fishery management plans are available for example in **Hindson et al., 2005; Die, 2009; NOAA, 2017.**

[15] Sensitive habitats are habitats that are vulnerable to fishing activities and important for ecosystem functions and services

[16] Essential habitats are habitats that are needed to maintain the productivity of the fishery target species

[17] For coordination with the CBD, the legitimate authority is usually already established as a focal point in the Ministry in charge of biodiversity.

- **Including OECMs as management instruments in the Fisheries Acts (if needed),** with the related concepts such as "sustained management" and "long-term biodiversity outcomes" which intend to signal the formal intent to use OECMs and produce their expected biodiversity outcomes in the long-term (as long as needed). Although the concept of "long term" has not been specified in The Decision, the long-term intention of a fisheries OECM should be clearly stated. Simple and universal standards of management "sustenance" cannot be defined but evidence could be provided by, e.g.: (1) The nomination of a legitimate management authority with a long-term mandate; (2) A formal policy or legal provision stating the "long-term" intention and clarifying the process and conditions needed to change the OECM area or measures and the likelihood that this would happen; (3) Clearly long-term objectives; (4) Formal adoption of a management plan of traditional equivalent form in each fishery; (5) Showing that necessary financial and human resources are adequate and planned for the long-term; (6) Establishment of a MER system demonstrating the long-term monitoring and assessment capacities; (7) coordination of the OECM management with other conservation efforts of agencies with authority for biodiversity conservation. As an example, in Canada (CCFAM, 2017:20, §4), *the measures identified as OEABCM* [herein referred to as OECM] *will be managed using a long-term adaptive management approach and are expected to be in place year-round for a minimum of 25 years to support long-term biodiversity conservation benefits. This criterion should not be considered an expiry date for OEABCM. The underlying aim is for all reported OEABCM to be in place indefinitely and ideally in perpetuity*. The long-term intent of an OECM may be clearly stated in the form of a long-term management objective documented in an official publication from the Legitimate Authority.
- **Elaborating additional regulation on OECMs** that could protect fishery-OECMs from negative impacts on biodiversity from other human activities, or establish rules for elaborating cross-sectoral OECMs.

3. THE OECM PROCESS

Aichi Biodiversity Target 11 contains seven conditions –thereafter referred to as "properties"– required for any area-based measure (including OECMs) to be considered for reporting against the Target: (1) Importance of the conserved biodiversity and ecosystem services; (2) Effective management; (3) Equitable governance/management; (4) Representativeness and connectivity; (5) Effective conservation outcomes; (6) Area-based conservation; and (7) Integration in seascapes.

The definition of OECMs in The Decision (§2) provides that an OECM (1) is a geographically defined area; (2) is not already a Protected Area; (3) is governed and managed; (4) achieves positive biodiversity outcomes; (5) ensures such outcomes in the long term; (6) achieves *in-situ* conservation of biodiversity; (7) with associated ecosystem functions and services; and (8) applicable cultural, spiritual, socio–economic, and other locally relevant values (**CBD, 2018c**). These definition elements logically overlap with the Target 11 properties.

In addition, to facilitate consistency of the identification process, The Decision (Annex III) provided 13 Guiding Principles and 4 identification Criteria sub-divided in 10 sub-criteria (cf. **Annex I**), as well as

additional useful considerations, all to be considered and applied[18] in a *flexible way and on a case-by-case basis*[19].

Obviously, all the elements above constitute the foundation on which the initial identification and subsequent implementation process must be based. This process requires several activities which, for operational reasons, might be grouped into Steps that might, themselves, be subdivided. Such grouping and the flowchart of the process may be organized differently in different places and fisheries, particularly within different prevailing governance types. Therefore, the sequence of Steps described below is only indicative and intends to describe what activities are needed and how they logically relate to each other (cf. **Figure 1**). The relation between the content of every Step and the Criteria and Principles is shown in **Table 1.** The outcomes of the identification process should be the elements needed by the Legitimate Authority (as defined in **Section 1**) to formally identify and use OECMs in the marine capture fisheries sector.

The whole implementation process illustrated in **Figure 1** starts from the knowledge-based identification of potential OECMs among the existing ABFMs using the broad range of knowledge available. Potential "new" potential OECMs, other than "old" ABFMs, may also be tentatively identified as areas, within the fishing grounds, that have suffered limited impact from fishing, might be considered as "quasi pristine", and formally considered with a specific set of regulations. Those potential OECMs that adequately meet The Decision Criteria become candidate-OECMs that are proposed for formal recognition as OECMs by the Legitimate Authority. The OECMs are then integrated in the fisheries management plan which is updated for that purpose. The monitoring and evaluation needed in the OECM are integrated in the Monitoring, Evaluation, and reporting system of the fishery. Reports will be produced to allow adaptive management and archived. Auditing of the process is not required by The Decision but is an important good practice of modern effective management. To be effective, and in line with The Decision, the process calls *inter alia* for proper enabling and coordinating frameworks, the use of the best scientific and local knowledge available, a clearly defined Legitimate Authority with an equitable governance approach, and accounting for other (than biodiversity) locally relevant values.

To be effective, the process calls for involvement of key institutions of the fishery management system – such as the statistical service (for fishery data) or the Coast Guards (for compliance data) not addressed in this document. The process also involves the Monitoring, Evaluation, and Reporting (MER) system (addressed in **Section 6**). The process also call for collaborations with the conservation agencies, for specialized information and technical and scientific competences (see also **Section 5**).

The implementation process requires resources to: (i) Assess and identify potential OECMs among existing or planned ABFMs; (ii) Evaluate the extent of such benefits, existing or potential, on complex biodiversity components; (iii) Assess potential interactions (conflicts or synergies) with other existing spatial or non-spatial measures, to ensure management coherence; (iv) Integrate the OECMs and their updated conservation objectives into the existing management plans or develop such plans; and (v) Take actions necessary to ensure the measures are secure for long enough for the biodiversity benefits to have a high

[18] In principle, "*all Criteria are to be considered*", meaning that no Criterion is optional. A Criterion is considered to have been "met" when the relevant available information has been duly considered and that as a minimum the area does not violate the intent of the Criterion. But some Criterion might appear to be irrelevant for a particular area (e.g. traditional cultural values for areas located on a seamount of the Mid-Atlantic Ridge). This would not make the area non-eligible. The important is to have objectively *considered* the Criterion and to have a rational explanation for why it is considered irelevant in th case concerned.

[19] CBD Decision 14/8 (2018), para 3.

likelihood of being realized. Ways in which these tasks can be conducted are addressed in the following Sections, particularly **Sections 4 and 5**.

These Steps are examined in more detail in the next Section. They follow a logical and streamlined process of implementation **(Table 1**), from scientific and formal identification to integrated management, monitoring, and recurrent evaluation of performance (including the eventual revision and regular auditing of the process and of its outcomes).

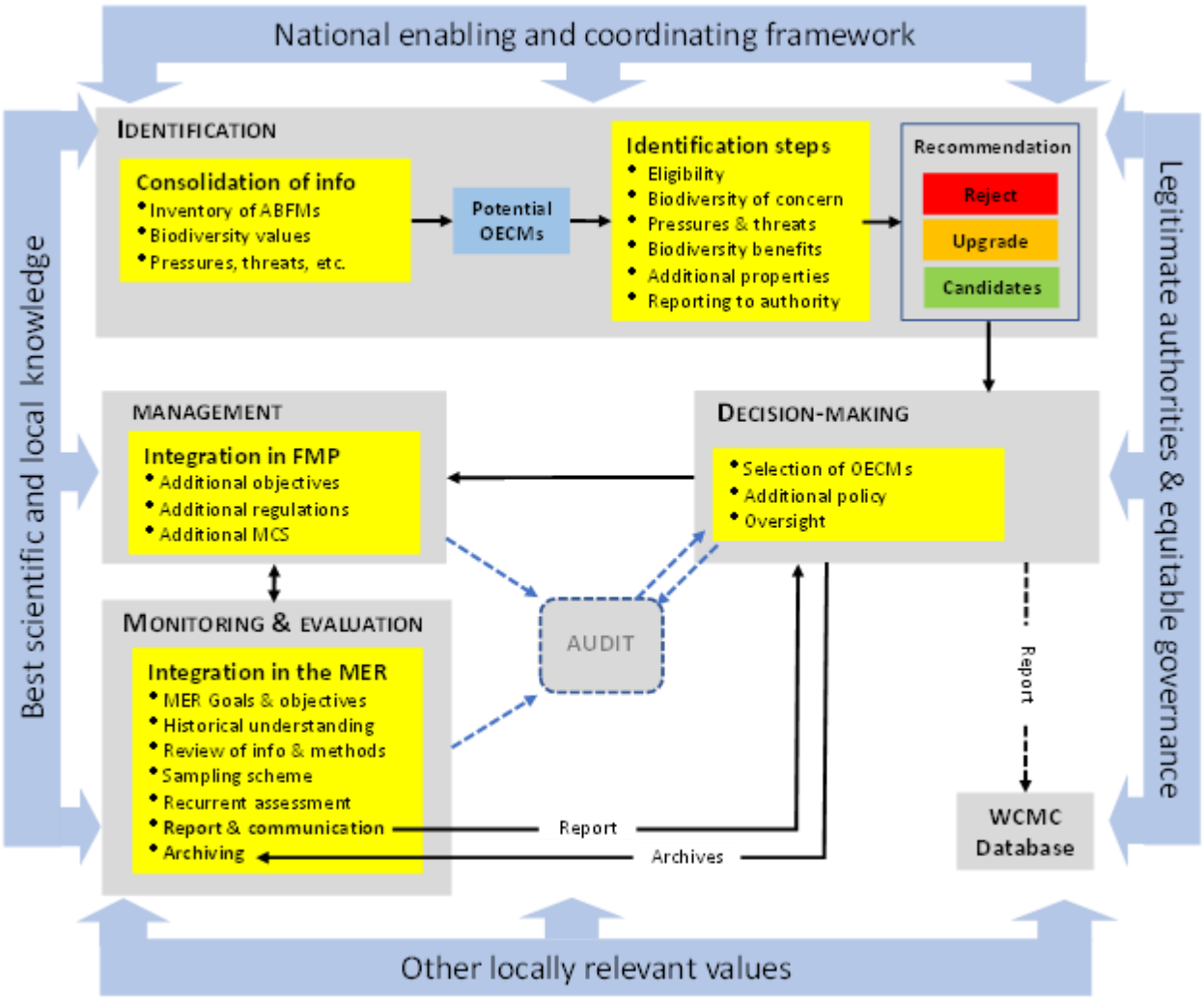

Figure 1: Suggested process for OECM identification, decision-making, management, and monitoring, evaluation, and reporting. The enabling context for the process requires a Legitimate Authority ensuring equitable governance, the use of the best scientific and local knowledge available, recognition and accounting of ecological, economic, social, and other locally relevant values, and a national enabling and coordinating framework. The audit is

not mentioned in The Decision but is part of good management practices (Modified from Garcia et al., 2019).

While the names of the Criteria and sub-criteria (cf. **Annex I**) appear fairly distinct, the commonality of many bullet points at their third level of resolution underscores their functional overlap and complicates the sequential assessment of the OECM properties criterion by criterion. Moreover, many of the key issues to be addressed during the OECM identification and evaluation are relevant for many Criteria. For practical reasons, therefore, a stepwise process is proposed through which information and expertise coming from different sources may be mobilized in a coherent manner. **Table 1** illustrates the fact that each Step provides information of relevance to many criteria and principles and that at the end of the process, all requirements will have been considered.

Table 1. Main activities needed for the OECM identification and management process, and their correspondence with The Decision Criteria (cf. Annex I for details on each Criteria, Sub-Criteria, and Principle)

Logical sequence of steps proposed in this document	Related guidance from Decision 14/8	
	Criteria	Principles
Premises:	None	All
Identification		
0. Consolidation of information	Not addressed in The Decision	
1. Establish ABFMs eligibility: Quick screening	A; B1; B2; B3; C1; C2	a; b; h; i
2. Biodiversity & ecosystem services of concern	C1; Ca; C3; D1; D2	a; b; g; i
3. Identify pressures and threats	B2; B3; C1; C3	
4. Describe expected biodiversity benefits	C1; C3; C4; C3	a; b; e
5. Assess the additional properties	C4; D1	I
6. Initial report to Legitimate Authority	C4	k;
7. Decision of legitimate authority & first report	C4	h; j; m
Integration of OECM management		
Integrate the OECM in the FMP	B3; C1; C2	b; c; g; k
Integrate OECMs within the fishery sector	B3; C1; C2	b; c; g; k
Integrate OECMs in MPA networks & seascapes	B3; C1, C2	c; f; g; j
Monitoring, evaluation and recurrent reporting (MER)		
Strategically plan and coordinate	C4;	g; h; i; k; l
Monitor and evaluate performance	C1; C4	a; e; g; h
Report to fisheries management/Legitimate Authority	C4	m;
Data & Information management	C4	m;
Revision		
Regular or ad hoc revisions	Not addressed in The Decision	
Auditing		
Regular auditing of the OECM, FMP and MER	Not addressed in The Decision	

4. IDENTIFICATION OF OECMS

The knowledge-based identification of OECMs among the existing or potential ABFMs is the first important task in the process needed to mainstream them and enhance biodiversity conservation in fisheries.

As illustrated in **Figure 1**, The first task is to examine briefly which existing ABFMs are most likely to meet the Guiding Principles, common characteristics and Criteria adopted in The Decision and hence be considered as potential OECMs. Potential OECMs are submitted to a full stepwise assessment and those that definitely meet the requirements are considered candidate-OECMs are presented to the Legitimate Authority for decision and formal identification as OECMs. Those ABFMs which satisfactorily meet many but not all requirements might be considered as upgradable OECMs and also presented to the Legitimate Authority for decision. In addition, new OECMs may be established from scratch. In all these cases, the identification would go through the same Steps proposed in **Section 4.2**. The process requires a series of activities which are grouped below in a sequence of Steps, the order of which may be flexibly adapted to the assessment context.

The process is guided by some premises that stem mainly from The Decision Principles and are examined below.

4.1 Premises

The Decision (§1) provides *voluntary guidance* that may be applied in a *flexible way* (cf. §3), recognizing that States may need to adapt the guidance to their specific circumstances (cf. §4) and to the availability of data and competences, clearly keeping with the spirit of The Decision. This is particularly important considering the large range of implementation capacity available in the world. No matter what resources are available the identification Steps are needed to systematically check the potential OECM against the Decision Criteria, but the data and methods used can only be the "best available". The complexity of the assessment needed depends also on the measures in place. If the features of concern are benthic, for example, and trawling has been banned in the ABFM, the expected impact on the benthos can be assumed, as long as the measure is enforced. The following considerations could be made before starting the identification process to facilitate and guide the assessment:

- **Identifying the institution(s) in charge of assessing OECMs**. A standing or *ad hoc* task force might be mandated by the Legitimate Authority, bringing together the competences needed. However, in well-developed fisheries management systems, the Monitoring, Evaluation, and Reporting programme (hereafter the fishery-MER) may already have substantial information and competence regarding the fishery, the target and non-target species, protected species, essential habitats, and of the ABFMs to be assessed. The MER is also responsible for recurrent assessment of the fishery management performance and it would have to also monitor the performance of fisheries OECMs, once identified and integrated in the fishery management plan (see **Section 5**). The fishery-MER would therefore be well equipped to lead the identification process, in close collaboration with the relevant conservation agencies, to facilitate information sharing and evaluation tasks.
- **Identifying the "ecosystem" within which the OECM operates**, with: (i) its key biodiversity features; (ii) the other area-based management measures (e.g. MPAs) with which the OECM might develop synergy; (iii) the specific fishery within which the OECM would operate; (iv) the other

fisheries with which its contribution to biodiversity conservation might have to be integrated; and (iv) the seascape or other regional framework within which the fishery operates and the OECM might have to be integrated (cf. Section 5).

- **Preparing convincing evidence of an effective governance process** will do all that is realistically feasible to keep the OECMs in place and ensure its positive outcomes for the long-term. This important requirement might be satisfied by formal commitments, e.g. in fisheries conservation policies, Fisheries Acts, and official communications.

- **Preparing convincing evidence of present outcomes and future ones**[20]. For existing ABFMs, demonstrating *actual biodiversity outcomes should* be possible if relevant empirical information has already been accumulated. For ABFMs in which this information is not (fully) available, or for new area-based measures, the *future intended outcomes* may be "demonstrated" either through (i) Formal statements of the Legitimate Authority (policies and strategies) regarding the intended biodiversity outcomes; (ii) Explicit objectives, targets and measures in the FMP and other marine spatial plan for the area, following an ecosystem approach[21], and accounting for current or reasonably foreseeable threats[22]; (iii) Evidence that recurrent monitoring and evaluation will ensure that the intended outcomes will be duly verified during implementation; (iv) Results of ecosystem modelling (including Management Strategy Evaluations); and (v) Positive outcomes obtained elsewhere in similar conditions.

- **Selecting an approach to identification**. The Decision has practical, scientific, economic, and political implications. The identification process may require significant resources and may therefore be undertaken using a "comprehensive" or an "incremental" approach. A comprehensive approach would be developed across the entire sector (and hence all the waters under national jurisdiction, or major portions of them), cataloguing all existing ABFMs, searching for those likely to produce significant biodiversity benefits (potential OECMs), and fully assessing the likely candidate-OECMs against the identification criteria established in The Decision. This approach may generate economies of scale and improve coherence within and across fisheries and at ecosystem level as well as add efficiency. However, it may overburden resource availability in a short time. It may also require too much time when rapid demonstrations may be needed to ensure fast buy-in by the sector or environmental critics. A comprehensive approach would be advisable also for RFMO/As managing only one target resource –such as International Pacific Halibut Commission (IPHC) or the Commission for the Conservation of Southern Bluefin Tuna (CCSBT)- ensuring integration of OECMs across the life cycle. An incremental approach might be appropriate, selecting one or a few fisheries at a time, with high sustainability and biodiversity conservation stakes, that are using (or could use) ABFMs reasonably likely to meet the standards for OECMs, and for which necessary information is more readily available. Then, the process

[20] The Decision uses an implict typology of outcomes related to: (i) their nature (biodiversity conservation, social economic, livelihoods), their direction (positive implicitly opposed to negative), their timing (actual/present, implicitly opposed to past or future), their relation to policy and management (intended versus unintended), and the way they are identified and, implicitly, their degree of "certainty" (e.g. actual, presumably observed and measured versus predicted by modelling r based on various sources of knowledge and expert views),

[21] The Decision (Annex III, Criterion B). Guidance for implemeting the ecosystem approach under the CBD is found in Decisions V/6 (2000) and VII/11 (2004), and with respect to the ecosystem approach to fisheries, guidance is provided by FAO (2003a).

[22] CBD Decision 14/8 (2018), Annex III, Criterion C.

described below may be followed on the limited set of candidate-OECMs identified, and implemented, monitoring consequences and developing understanding and capacity in assessment and management (learning by doing). The process might be slower to upscale to the whole sector but it might be more feasible in capacity-limited fishing nations, or in RFMO/As dealing with many fisheries and several species. Under both approaches, the participation of fishers' organisations and committees could usefully be involved.

- **Considering ABFMs case-by-case.** In line with The Decision (§3), the Introduction of Annex III, and Annex IV, D, d, and irrespective of the approach selected (comprehensive or incremental), ABFMs should be evaluated individually, case by case, against the definition, principles, criteria, and other voluntary guidance contained in The Decision. The reason is that the effectiveness of the different types of area-based measures at delivering biodiversity conservation outcomes –and hence their likelihood to meet OECM standards– depend on too many factors to be simply attributed *a priori* to categories of measures, or types of areas. The same consideration advocates against generalizing the results obtained in any single context to other contexts.

- **Considering all Criteria as relevant and all Principles as providing additional guidance.** The Criteria require that the area: (A) has not been formally designated as an MPA; (B) is well defined and sustainably managed by legitimate authorities, using, *inter alia*, area-based management measure(s) ; (C) produces long-term in-situ biodiversity conservation outcomes; and (D) maintains ecosystem functions and services, and upholds locally relevant values. Criteria (A) is absolute and, if not met, it is enough to disqualify the area. Criteria (B), (C) and (D) are inherently relative and thus open to a range of responses. The challenge is to determine what level of positive outcome the ABFM is generating or may generate, and which level of response is necessary or sufficient for identification of the area as OECM in Target 11. Some common characteristics mentioned in the Guiding Principles, such as "connectivity" and "representativeness" are desirable qualities of all biodiversity conservation areas, but their absence is not sufficient to disqualify an area if Criteria B to D are met, just as their absence is not a justification to exclude an MPA from Target 11 reporting.

- **Establishing a comprehensive and inclusive assessment team** able to address all the bio-ecological, socio-economic, cultural, spiritual, and other locally relevant issues involved in assessing OECMs and their potential outcomes. The team should comprise fishery and biodiversity conservation scientists, management practitioners and representatives of other stakeholders, with appropriate roles in the different phases of the process, to be clarified from the onset, based on the background and expertise of the individuals. The potential sources of expertise might be identified first, and specific people and experts be called in as needed for each case being examined.

- **Using the broadest source of reliable information possible.** The preferred source is empirical data collected from the area being assessed (e.g. in the case of ABFMs that have been in use for years). Including scientific data (from natural and social sciences), expert views, and local and traditional knowledge. When local information is not available for some properties relevant to the assessment, empirical information from other "comparable" areas may be used, taking into consideration the proximity to the site of concern and the similarity of ecological, socioeconomic and governance conditions, of fishery and other anthropogenic stresses, and of management regimes. For additional biodiversity benefits not previously considered for an existing ABFM and for which data are not available, or for a newly implemented OECM, the "evidence" may be produced *ex-ante* through modelling and simulations. The evidence available may vary greatly in

quality and quantity. Its costs are context-specific and depend on the ecosystem, the biodiversity features of concern, the complexity of the matter, the precision required, and the periodicity of the performance assessments. A large part of the information needed may already be archived in the recurrent MER system of the fishery or of the fishery research centre, and in the archives of potential collaborating agencies. It is therefore advisable to identify early in the process the possible sources of information and to establish the cooperation needed to access them. The specific information needed for each case may then be acquired incrementally, as the identification proceeds orderly, and specific questions are addressed by the experts.

- **Accounting for uncertainty inherent to social-ecological systems,** accounting for complexity and partial understanding of the fisheries, their resources and the ecosystem generate uncertainty, both in assessments of OECMs properties and forecasts of their evolution in a fishery context. This calls for risk assessment and precaution in decision-making as well as adaptive implementation in fisheries (e.g. **Hilborn & Walters, 1992**) and biodiversity conservation (e.g. **Halpern et al., 2005; Keith et al. 2011; Ouananian et al, 2018; Kenny et al., 2018**). Approaches to Ecological Risk Assessment for the Effects of fishing (ERAEF) are reviewed by **Smith et al. (2007**)**.** As the OECM has both fisheries and biodiversity objectives, hybrid approaches that emerged in both scientific fields might be needed (see next point).

- **Using the best available methodology.** The methods used for the initial assessment for identification of OECMs and the recurrent assessments of their performance in the MER programme will be largely similar (**cf. Section 6**). Scores of methods, conventional or non-conventional, depending or not on fishery data, simple or sophisticated, have been developed in fishery, conservation, and social sciences, for monitoring and assessing biodiversity components, ecosystem services and broader social and economic values. Methods keep evolving as technology improves and the potential toolbox is too rich to be described here. Complex ecological models may be used for simulations and scenario analyses when the data and the capacity to use them are available (**Fulton, Smith and Punt, 2005; Trenkel, Rochet and Mesnil, 2007; Smith et al., 2007; Plagàgnyi, 2007; Shin et al., 2010; Zhou et al., 2011; Collie et al., 2014; Fulton et al., 2015; Bayley and Mogg, 2019**). Alternatively, in data and capacity-limited situations –particularly in highly participatory assessment and management systems, using multiples sources of knowledge, discussion groups, expert views, questionnaires and qualitative indicators are practical and their use may be sufficiently reliable to provide management advice (**Pomeroy et al., 2004; 2005; Fox et al., 2014**; **Marnevick et al., 2019; Ivanie et al., 2020**). In some extreme cases, the assessment may be simple, e.g. if bottom-contacting fishing has been banned, it can be assumed that the biodiversity benefit is obtained, as long as the measure is effectively enforced. Management strategies based on the advice derived from these approaches might be tested, using both qualitative and quantitative methods, modelling, indicators, and expert opinion, using the Management Strategy Evaluations (MSE) (**Smith at al., 2007**). An abundant literature is also available on environmental and biodiversity impact assessment, in general (e.g. **Bagri & Vorhies, 1997; SCBD and NCEA, 2006; CBD, 2012; Watkins et al., 2015; Butsic et al., 2017; Mascia et al., 2017; Larsen et al., 2019)**) and in fisheries **(e.g. Chuenpagdee et al, 2003; FAO, 2009; Coll et al., 2014; Langlois et al, 2014**). In data/resources-limited areas, the review of available literature on such impacts and the use expert opinion (as in **Petza et al, 2019**), possibly using Delphi techniques, and local knowledge (as in **Coll et al., 2014**) might represent a reasonable burden that could be shared through collaboration with the agency in charge of biodiversity conservation in the area of concern.

- **Identifying pre-agreed available reference values (baselines or thresholds)** of indicators to be used for performance assessments. The Decision does not rank explicitly the identification Criteria. If these Criteria were to be ranked or weighted in the overall assessment, the priorities and relative weights should be agreed from the onset. While these pre-agreements would greatly facilitate the assessment process, such values may very well need to emerge from the assessment itself, in which case they will need to be also submitted with their rationale to the Legitimate Authority, for endorsement or otherwise.
- **Considering also cultural, spiritual, socio-economic and other regionally or locally relevant values.** Biodiversity values include *the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components* (Preamble of the CBD). These values can be identified through a participatory process, focusing on those that could be compromised by an OECM or would support its implementation. The importance of accounting for these values and incorporating them into management discussions is as important in OECMs as it is in MPAs or in fisheries management. It should be noted that some values may be of low priority locally but of high priority at larger scales… and vice-versa.

The Decision contains extensive guidance on the types of governance to be considered, and about the required effectiveness and equity – in recognition of stakeholders, procedures and distribution of costs and benefits. Logically, it has little guidance on operational aspects of management of the OECM as such aspects are very sector-specific. In the Steps below, however, fishery management considerations are briefly referred to in Steps 2, 3, 4 and 6, e.g.: (i) description of fleets and fishing operations; (ii) management measures, whether existing or needed; (iii) assessment and management of pressures and threats, uncertainties and risk; (iv) reference values and benchmarks; (v) enabling and impeding factors; and (vi) coordination of management in and out of the OECM. Management implementation aspects are also addressed in Sections 5 (integration) and 6 (Monitoring and evaluation).

4.2 Identification Steps

The identification process described below contains 8 steps (labelled from 0 to 7). Step 0 is a preparatory phase that might be needed to prepare the data and information required for the assessments. Steps 1 to 5 guide the reader through the assessment itself. Step 6 refers to the elaboration of a report to the Legitimate Authority. Step 7 refers to the decision by this authority.

Each identification Step requires its own mix of information and experts. The Steps intend to be in a logical order, such that (1) one proceeds to the following Step only once the current Step has been satisfactorily completed; (2) the information collected during the completion of one Step might also be useful for the following one; and (3) the Steps are undertaken in growing order of requirement complexity and (and assessment costs) in order to discover, as early as possible in the process, the point at which a potential OECM clearly fails to meet an important requirement to become a candidate-OECM. At that stage, a rapid examination of the next Steps might indicate how far the ABFM is, overall, from meeting the requirements, and whether it should be eliminated from the list of potential OECMs (and remain a useful ABFM) or be maintained on the list as upgradable to OECM standards. In the process, each individual Step only addresses a subset of the total requirements for an ABFM being recognized as an OECM. However, by the time all seven Steps are completed, all the requirements contained in The Decision and Criteria will have been considered (Cf. **Table 1**).

Assuming that the needed elements of the enabling framework (**Section 2**) and OECM identification process (**Section 3**) are in place, the identification could proceed through the Steps and actions identified below, with the degree of flexibility that the specific contexts may require. Depending on local

circumstances and for practical reasons, the process may need to move back and forth through the list. Some Steps might be undertaken in parallel or simultaneously –particularly when the same experts are involved. For similar reasons, some Steps may need to be subdivided, e.g. to deal successively with different types of biodiversity components or to accommodate the availability of different types of experts, including stakeholders. For pilot identification initiatives, e.g. to test the identification process and learn by doing, extensive preparations may not be necessary and the process may start without delay.

Because of the importance of the MER in implementing the recommendations of the identification process in case the ABFM is identified as OECM, it is important to ensure its full participation if not leadership in the process.

0: Information consolidation

The process of initial identification, management, and recurrent evaluation of OECMs require the compilation of diverse types of data an information, in part before the start of the multidisciplinary assessment and in part during it. The action needed includes:

- **Identifying the multidisciplinary expertise** and other forms of knowledge needed to assess the fisheries, the ecosystem, the biodiversity features of concern, the external threats, the ecological, social, cultural, and economic values, etc. Some of the expertise needed will exist already in the fishery agency. However, collaborations typically will be needed: (i) with agencies in charge of biodiversity, to get additional expertise and/or to recognize their jurisdiction on the biodiversity feature expected to benefit; and (ii) with social scientists to address human dimensions, particularly but not exclusively in small-scale fisheries. Many knowledge holders may wish to know the broad sequence of types of information that will be considered, both so they understand the context in which they will be asked to contribute their knowledge, and because they may wish to participate in key steps creating the context for or uses of the knowledge they contribute. This expertise can be used for the next two actions.
- **Identifying the data and information available** on the fisheries and the ecosystem, e.g.: distribution maps; fleets size and composition; fishing gears; target and non-target species; stock assessment; governance types; key stakeholders and participation processes; legal frames; management measures; compliance; catch; socio-economic parameters; biodiversity features of concern; ecosystem services (including food and livelihoods) and other relevant values affecting conservation; possible threats and pressures; existing MPAs (networks, seascapes) and other conservation measures. Data and information management are addressed in **Section 6.4**.
- **Identifying the methodologies** that might be used for the assessments, including manuals, software, etc. for the assessment of biodiversity and human dimensions of fisheries. The potential toolbox is large and cannot be reviewed in this document. Useful references are provided in **Sections 4.1 and 6.2.**

The information available will likely vary greatly in quality and quantity within / between countries and areas within them, and the task of assembling it before starting the identification process might be overwhelming, particularly if a comprehensive approach is selected (cf. **Section 4.1**). A practical solution would be to establish a rapid inventory of the sources of knowledge and data available, with the specific conditions for access and use. The identification process may then start with Step 1 (below) and the assessment competence and data will develop progressively as the process unfolds and knowledge holders are called in.

Step 1: Determine eligibility for assessment: quick screening

Places where (ABFMs)[23] are in use may be very numerous in an EEZ (e.g. >1000 in Canada) and can *a priori* all be considered potential OECMs for reporting. Their full assessment could be is very demanding of time and resources and a quick screening, based on the most "differentiating" Criteria, may eliminate the ABFMs less likely to be positively assessed, to focus available means on ABFMs with the highest potential to meet OECMs criteria. In the few examples of the OECM identification process found in the literature –e.g. **Petza et al. (2019)** in Greece or **Aften & Fuller (2019)** in Canada– few ABFMs areas have been considered as likely to be OECMs. For those areas, identified as potential OECMs, full assessment activities include:

- **Confirming that the area has not been designated as** MPA (or does not overlap with MPAs) to avoid confusion and double counting (Criteria A).
- **Confirming that the area is geographically defined**. Indicate its geographical boundaries, ideally creating a shapefile in a Geographical Information System. Ensure that all its spatial dimensions are specified (Criteria B), including depth profiles where relevant. Such specific details may not always be available for ABFMs but may be easily corrected to meet OECM standards, and would be useful for goof fishery management, whether the area is identified as an OECM or not.
- **Confirming that the area is under legitimate governance** and **managed** (Criterion B). This is usually assumed to be the case for commercial and large-scale fisheries generally covered by a central fishery agency even though management may not be effective. It may not always be the case in remote small-scale fisheries; community-based management of small-scale fisheries may be both legitimate and effective, consistent with the Criterion. It would be necessary to **indicate the source of "legitimacy",** e.g. national Act, treaty, policy, tradition[24], and to **identify management plans** or other less formal institutional or traditional supports to implementation, with measures, enforcement processes, etc.
- **Identifying the broad biodiversity conservation benefits of relevance** (Criteria C) obtained or expected in the area. Some of these benefits, including some **ecosystem services** (Criteria D), may be known or very likely. Others may not be documented, or even known to be occurring, without looking at case-specific evidence appropriate to the nature of the fishery and the ecosystem. . The inventory does not need to be exhaustive and identification of the most obvious biodiversity features of concern (e.g. protected and red-listed species, essential habitats) might be sufficient to underline the OECM intent. This information can be improved with time as information improves during the OECM implementation.
- **Checking whether cultural, spiritual, socio-economic and other locally relevant values** (Criterion D) are accounted for in the management of the area. The "values" to consider are those which may impact biodiversity benefits positively or negatively. Socio-economic values in ABFMs are not always explicit. Values particularly important in small-scale fisheries (SSFs) and coastal communities (e.g. culture, gender or ethnicity) may not be explicitly accounted for, particularly

[23] See the CBD COP definition of ABFM in the Introduction. When referring to ABFMs in this document, depending on context, we may refer to their spatial definition (the area) or to the specific management measures applying within them such as access rules, catch and effort limitations, gear specifications, and special bycatch regulations.

[24] In manybareas where areas are under the "responsibility" of local traditional authorities, the central States does not grant any legislative power to enforce regulations. A more effective decentralised governance would required a more generous devolution of the needed powers.

when the area is not under community-based management or co-management. Such values often get far less consideration in the deep sea and the High Sea, but still may be relevant for the acceptability of complementary or alternative management measures and fishery outcomes.

This quick-screening step is also the occasion to set-up and experiment with the cooperation among scientific and other knowledge system experts, identify key issues to be considered in the full assessment, identify useful sources of information and of additional expertise.

Step 2: Identify biodiversity features of concern

In this document, the "biodiversity features of concern" include the elements of biodiversity (other than the target species[25]) that are: (1) impacted by fishing operations and for which conservation measures are required to eliminate, reduce, mitigate the impact, restore healthy conditions, or compensate the residual impacts (e.g. following the biodiversity Impact Mitigation hierarchy, BIM)[26]; or (2) identified by a mandated agency, or widely supported social process, as a conservation priority, e.g. listed as endangered, threatened or protected in national or international legislation. If biodiversity features of concern for the fishery were also impacted in the same area by other sectors this should be documented as much as possible. Activities include:

- **Establishing an inventory of the biodiversity features of concern** in the potential OECM and in the wider area used by the fishery (sometimes referred to as its footprint). For example: biodiversity hotspots; communities of rare, protected, endangered or threatened species; representative productive ecosystems; range-restricted species; vulnerable essential habitats; vulnerable species; areas crucial for life history of species of special conservation concern or other priority; area important for provision of ecosystem functions and services (EFSs, see below); areas important for ecological connectivity. The task includes **identifying the relevant information** available, including in national and international inventories, and archived or available indigenous and local knowledge (ILK), as well as **the elements of concern** that the fishery may impact and available or feasible research or stakeholder capacity can monitor.
- **Identifying the sources of concern,** i.e. the origin of the impacts on the biodiversity features of concern, first in fisheries, and as possible in other sectors.
- **Identifying the impacts that the potential OECM would contribute to reduce/eliminate** (see also Step 3, below, on pressures and threats). Regarding the impacts of fishing, consistent with **FAO (2009)** guidelines on vulnerable marine ecosystems (VMEs), Significant Adverse Impacts are to be avoided[27]. Items to measure Significant Adverse Impact (SAI) in potential OECMs would include:

[25] The target species are also, obviously, "biodiversity features of concern" but their management and conservation is the primary objective of the OECM and it is already normally dealt with in classical management plans. The "biodiversity features of concern" addressed here are the other features (e.g. associated, dependent, protected, endangered, and threatened, species and biogenic habitats), which may or not be already considered in the FMP.

[26] The Biodiversity Impact Mitigation (BIM) hierarchy (**ten Kate and Crowe, 2014**) management objective may be to avoid, minimize, mitigate, or compensate (through offsets, where possible) a specific impact on biodiversity in order to either maintain status quo (No Net Loss objective) or restore the element to some reference state (Net Gain objective). Its parallel to conventional fisheries management objectives is described in **Squires and Garcia (2018)**

[27] Significant (or serious) Adverse Impact (SAI) were mentioned in UNGA resolution 61/105 on deepsea fisheries. The term was defined in the International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009) as impacts that compromise ecosystem integrity (i.e. ecosystem structure and function) in a manner that: (i)

(i) the intensity or severity of all impacts from fishing or – to the extent feasible – cumulative impacts from other activities on the area; (ii) the absolute and relative spatial extent of these impacts (compared to the area covered by the biodiversity features of concern); (iii) the sensitivity/vulnerability of the biodiversity features to the impact(s); (iv) the ability of the component to recover from identified harm (resilience) and the potential rate of such recovery; (v) the likely changes to ecosystem functions given the impacts in items (i) to (iv). Ideally, it would be useful to **consider also non-fishery impacts** as far as possible within the capacity, budgets and collaborations available, taking into account the relative magnitude of cumulative non-fishery impacts relative to the fishery impacts.

- **Establishing an inventory of ecosystem functions and services** (EFSs) delivered in the fishing area and around it that might be impacted by fishing –and to the extent possible by other activities in the area, and might be protected, and when necessary, restored, by the potential OECM. This action is directly related to the one just above as biodiversity features and the associated functions and services are intimately connected and interdependent. The ecosystem is usually considered as providing various types of services (**MEA, 2005; IPBES, 2016**), referred to also as "nature contributions to people" (**IPBES, 2019**): (i) provisioning services, e.g. for food and nutrients, shelter, related livelihoods and health benefits, contributing to poverty alleviation; (ii) regulating services, e.g. sequestering carbon, regulating climate, controlling hydrological and bio-chemical cycles and buffering impacts of coastal storms; (iii) supporting services, maintaining biodiversity (genes, species, habitats and ecosystems), primary production and trophic webs; and (iv) cultural services, human well-being, recreation, tourism, education, knowledge, scientific research and cultural heritage (**MEA, 2005**). Although mapping the extent of the EFSs would be useful to assess the relative impact of the fishery and the measure, it can be a complex, costly, and uncertain task, far harder than determining the boundaries of a species or habitat distribution. While direct services to humans –e.g. services (i), (ii) and (iv)– are obviously important, they depend on adequate supporting services. It is important to identify possible synergies and trade-offs among EFSs, in the short- and long-term), and the way in which a potential OECM would affect them.

  General guidance on assessment and management of ecosystem services has been developing rapidly in the last two decades, (e.g. **MEA, 2005; UNEP, 2014; Hattam et al., 2015; Salcone et al., 2016; IPBES, 2016)**. Information on specific areas is often scarce or absent, particularly in the marine realm and there is considerable uncertainty about the contribution of specific species, or habitats to the processes, functions, and services of the larger ecosystem. However, the regional and global assessments of IPBES and follow-on thematic assessments (references to be provided **IPBES 2018a,b,c**) are beginning to inventory and map such information in consistent manner.

- **Establishing an inventory of corrective measures already in place effective and of additional measures** that might further improve the OECM performance, preferably with some assessment of cost-effectiveness. Conceptually, OECMs may contain no-take zones, or be entirely no-take zones (as some VMEs).

impairs the ability of affected populations to replace themselves; (ii) degrade the long-term natural productivity of *habitats; or (iii) cause, on more than a temporary basis, significant loss of species richness, habitat or community types.*The term is also used in Aichi Target 6 to qualify undesirable impact on threatened species and vulnerable ecosystems.

- **Providing evidence of effectiveness of the measures and of significance of their outcomes**. Although local evidence of effectiveness is preferred, it is not always available. In all cases the performance of ABFMs or OECMs used under similar circumstances (similarity of vessel sizes and gears, target species and key bycatches, seabed and water-column habitats and biotic communities) could be considered as "evidence".
- **Advising on how to reflect the expected outcomes in the objectives** of the area and of the fishery management plan (e.g. in terms of targets and limits for pressure and threat levels as well as biodiversity outcomes).

Step 3: Identify pressures and threats on biodiversity

In its Principles, Criteria and additional voluntary guidance, The Decision refers repeatedly to threats with various qualifiers, e.g. *actual; current; existing; new; potential and reasonably anticipated; or pervasive*. It also refers to pressures once, as *emerging pressures* which generate *new threats.* Dictionaries (e.g. www.webster-dictionary.net) distinguish pressures (present, ongoing forces that have an impact) from threats (future, incumbent forces that are reasonably likely to have a negative impact). The clear intent of The Decision and of this step is to identify the forces, either present (pressures) or reasonably anticipated (threats) that affect or will affect biodiversity in the exploited ecosystem and to provide evidence that the potential OECMs have a reasonably documented capacity to reduce or eliminate the related risks to biodiversity. The magnitude of the impacts and the resulting risks depend on the nature and intensity of the anthropogenic or natural forces involved and how they are or will be managed[28].

The risk may be estimated in economic terms by multiplying the cost of the expected damage from the threat by the probability that it materialises. The limitations of this approach to quantifying "risk" are coming increasingly into focus as there can be threats to aspects of biodiversity providing social, cultural, spiritual, identity and relational benefits to people, the values of which may not always be captured with be usual economic metrics (**Pascual et al., 2017**). Activities include:

- **Establishing a first inventory of known or reasonably foreseeable pressures and threats on biodiversity features**, their nature, scale and source, and the range of societal and ecological values attached to the components**.** These values may be internal to the sector or external to it. Internal pressures and threats come from the fishery in which the potential OECM is present or from other fisheries operating in or around the potential OECM e.g., through destructive practices, bycatch of threatened or vulnerable species, or damage to vulnerable habitats. External pressures and threats originate from other sectors (adding non-fishery mortality), land-based or marine pollution (reducing productivity), and may originate from sources located inside the jurisdiction or outside it (transboundary threats). Climate change is a pressure on scales ranging from global to local (with measurable impacts such as displacement of stocks and coral bleaching) and a threat of more dramatic changes in the future if not mitigated.
- **Assessing the OECM-specific pressures and threats**, noting their sources and evaluate their potential significance in terms of the expected impact on biodiversity and related social and economic costs if they did occur. A range of methods are available for the assessment, such as such as biological and social surveys, time series analysis, community-level case studies (for that

[28] E.g. implementing the Biodiversity Impact Mitigation (BIM) hierarchy (ten Kate and Crowe, 2014) or/and the Ecosystem Approach to Fisheries (FAO, 2003a).

scale of OECM) and various other approaches (See **Section 4.1**). The pressure-state-response (PSR) framework (**Moldan et al., 1997; Chesson, 2013**) and the Multi-Criteria Decision Analysis (MCDA) (**Fletcher, 2008**) could be used to organize the data and guide a participative assessment. All threats identified in a broad consultation process are examined and assessed jointly as, e.g. unlikely, negligible, likely, significant and need to be registered together with the arguments leading to such qualifications (that qualification may change in the future when better information is available). If climate change is expected to be incremental, its impacts on effectiveness of the OECM can be included in periodic reviews of OECM performance (**Section 6**). When relevant and as much as possible, collect information about actions taken in other sectors or jurisdictions to reduce, mitigate and eliminate as appropriate such or similar threats and pressures (e.g. preparing cross-sectoral or regional action);

- **Advising on measures available with potential to contain, reduce, mitigate, or eliminate threats and pressures** on biodiversity, focusing on the most "significant" ones**.** Collect information on their effectiveness on the biodiversity features identified as priorities in Step 2. Propose measures, illustrating their purpose, likely impact, likely cost, and factors known to often impede or promote their effectiveness. These elements are important to consider when deciding whether additional measures are needed to meet OECM standards and whether the OECM would be cost-effective.
- **Designing contingency plans and decision rules, and applying precaution** to the fullest extent appropriate (**FAO, 1996**), balancing risks of misses and false alarms. Data scarcity and management difficulties call for raising the level of precaution in the risk management framework. Advice could also be developed on ways to integrate the action across fisheries and within the ecosystem (to prepare the integration addressed in **Section 5**).
- **Advising on the improvements eventually needed in the existing MER** to strengthen its capacity to monitor evolution of the OECM, evaluate specifically the performance of the measures applied into and around it (cf. **Section 6** for details) and also to ensure the long-term intent of the OECM.

Step 4: Assessment of biodiversity benefits.

IUCN defines a "benefit" as *an ecosystem value that provides direct gains or advantages to stakeholders, in terms of money earned, subsistence resources collected, or less tangible gains such as spiritual peace or mental wellbeing."* (**Ivanic et al., 2020**). Human well-being, in any complex social-ecological system, is a complex outcome with several dimensions/constituents such as: (i) Satisfaction of basic needs, e.g. secure and adequate livelihoods, enough quality food at all times, safe and comfortable shelter, adequate clothing, and fair access to goods; (ii) Health, e.g. feeling well in a healthy physical living and working environment; (iii) Good social relations, e.g. social cohesion, mutual respect; spiritual freedom; ability to help each other including elders and children; ; (iv) Security, e.g. in access to natural and other resources (tenure systems), ability personal safety, and protection from natural and human-made disasters; (v) Freedom of choice and action, e.g. though participative and equitable governance (based on **MEA, 2005; Ivanic et al., 2020**).

Wellbeing constituents are inter-connected, influencing each other. The degree to which they may be obtained depend in part on the way the human-subsystem is organized, i.e. the social, economic, and legal development and management frameworks; the type and quality of the governance in place; the access to financial and educational assets, welfare policies, information, markets and education; and the equity in the distribution of earning opportunities, costs and benefits. Most importantly, the capacity of biodiversity to provide or contribute to the expected benefits depends on the way the natural sub-system,

is conserved, e.g. in terms of environmental stability, nutrient cycling, trophic chains, and hence on the way the biodiversity is (sustainably) used and conserved, across time and space.

Each OECM may contribute to some of the benefits listed above, when fulfilling their primary objectives (on the fishery narrow "sustainability") of their secondary objectives (of reduction of their collateral impact on specific biodiversity features of concern. The latter are the focus on this section.

Use of ABFMs in support of sustainable use of the target species may also produce positive biodiversity outcomes regarding associated and dependent species and habitats, which may have been intended or unintended when ABFMs were established. Intended positive outcomes (possibly reflected in the primary or secondary objectives of the ABFM) are referred to as benefits. Unintended positive outcomes are referred to as co-benefits. For an ABFM to be considered an OECM, the evidence of the occurrence of these benefits or the action intended to generate such benefits, must be provided.

OECM benefits may include: (1) Stabilization or increase in biodiversity biomass, abundance and diversity, as well as habitats of concern (i.e. No Net Loss, or Net Gain)[29]. Areas identified as OECMs can serve as: (i) stepping stones between habitats; (ii) support for different life history stages and functions; (iii) corridors connecting key habitats; buffer zones to mitigate sectoral impacts; and (2) Reduction of threats and risk of biodiversity loss, e.g., reducing the potential damage and/or the likelihood that the threat materializes, or both. Benefits include also the ecosystem services derived from the biodiversity

As the biodiversity features of concern and the relevant ecosystem functions and services have been catalogued in Step 2 and threats are addressed in Step 3, Step 4 focuses on: (i) Determining the nature, likelihood and magnitude of actual or potential biodiversity conservation benefits of the potential OECM; (ii) Assessing the effectiveness of the potential OECM in producing the expected benefits; and (iii) Assessing the distribution of costs and benefits of the OECM if implemented (equity). Activities include:

- **Assessing the extent, condition and relative status of these biodiversity features** in the total area of the fishery (background) and in the potential OECM area. As far as relevant and possible, a comparison with the situation of the same biodiversity features in the ecosystem or the EEZ might be undertaken (broader background).
- **Assessing the actual (or future) biodiversity benefits or co-benefits** resulting from the measures in place (or planned) in existing (or new) potential OECMs, as well as around them (to prepare their integration in broader frameworks. The specific measures applying in the potential OECM area (from access and removal rules to gear regulations, economic incentives, etc…) need to be described with their intended effects. Whenever possible, benefits should be measured as the difference between the status of the biodiversity features of concern when the potential OECM is in place, compared to what the status would have been without it (a situation referred to as the counter-factual or the business-as-usual scenario)[30]. In line with the Biodiversity Impact Mitigation

[29] In the Biodiversity Impact Mitigation hierarchy (BIM) promoted by the CBD and IUCN.

[30] The ecosystem is dynamic, and the benefit is not simply the difference in the situations inside the area before and after the ABFMs are put in place. Moreover, no area with ABFMs in place -whether considered as potential OECM or not- is exactly comparable with another "similar" area, and assessing benefits by comparison of areas has to take into account both differences and similarities in their ecology, biodiversity, history, types of use, management systems, socioeconomic conditions, types of governance, etc., limiting the possibilities for reliable and informative comparisons. Benefits could be measured by, e.g. (i) the difference in biodiversity status inside and outside the OECM area, or with similar areas elsewhere, after some implementation time (particularly in the case of uncommon species for which little information is available), or (ii) comparing trajectories with or without the ABFMS by

(BIM) hierarchy, consider as "benefits" both (1) the increase in abundance, biomass or diversity[31] of biodiversity features in the area (and around it) and (2) established decreases in pressures and threats on such biodiversity features. Reduction of harm, No-Net-Loss, Net Gain, and compensations (for habitats) might be considered as benefits or co-benefits. The evidence of benefits may be based on empirical data or simulations and scenario analyses, including Management Strategy Evaluation (MSE). In data-limited situations, the guidance developed by IUCN to assess benefits of protected areas might be adapted to small-scale fisheries (**Ivanic et al., 2020**)

- **Identifying possible ways to improve the potential OECM** to produce positive biodiversity outcomes, such as modified size and other physical parameters of the area or use of additional measures, area-based or otherwise. inside the area, or around it. Note that not all biodiversity features can be simultaneously improved (**Rice et al. 2018: § 3.3**). Enhancing predators, for example will decrease abundance of their preys, and reducing discards may reduce seabirds' food and reproductive capacity. Consequently the "value" of the multiple biodiversity consequences of any OECM need to be considered, noting that "value" can have ecological, social, economic aspects for any biodiversity feature.

- **Identifying robust and feasible indicators** and scientifically determined reference values and benchmarks, allowing proper monitoring and evaluation of performance during implementation of measures within the OECM area. In this respect, the contribution of the MER in charge of the recurrent implementation is fundamental. Identifications and assessments based on limited data should be subjected to recurrent re-evaluations, with objectives of both evaluating performance of the OECM and strengthening the evaluation framework.

- **Demonstrating that the biodiversity benefits are (or intend to be) sustained in the long-term.** Give evidence of long-term formal policy frames, institutional arrangements, or legal requirements, or widespread stakeholder support for maintaining the measures in place.

- **Assessing the direct and main indirect consequences of the measures on the "other values"[32]) referred to in Decision 14/8,** in the potential OECM area as well as for the fishery or for the local socio-ecological system, e.g. in terms of social and economic costs and benefits and their distribution among communities, social groupings and economic interests affected by the measure.

- **Identifying potential enabling/impeding factors** likely to help maintain/reduce/cancel the expected biodiversity benefits or co-benefits of a potential OECM, stemming from fisheries or other sectoral and conservation activities in or around it, or from other likely imminent changes to the environment (see also **Section 2**).

- **Assessing the dependence of the OECM benefits on the conditions outside the potential OECM area**, e.g. on: (i) the complementary management measures in place in the fishery (in which the OECM is in place) or fisheries operating around the area; (ii) connectivity with other OECM areas or MPA network; or (iii) land-based pollution and other impeding factors (see also **Section 3**).

simulations (as in Management Strategy Evaluation). This difficulty is also a reason to make such data-limited "evaluations", subject to rapid re-evaluations.

[31] A dilema might emerge if, for example, biomass increases as diversity decreases.

[32] The expression "Other values" stands for the "cultural, spiritual, socio–economic, and other locally relevant values" referred to in the OECM definition (Decision 14/8; §2).

Step 5: Assessment of "additional" OECM properties

The Decision refers to interrelated properties expected from OECMs, such as: ecological representativeness, connectivity, complementarity, and integration.

Ecological representativeness is referred to in Annex II and Principles (d) and (f). It has been defined as *the degree to which the original extent of species, ecosystems and ecological processes characteristic of a realm or a jurisdiction occur within protected areas in sufficient quality or quantity to persist in situ over the long term* (**Willian, Harwood and Ferrier, 2016**). In fisheries OECMs this would translate as the extent to which the OECM contributes biodiversity features of concern, and particularly those of concern because of fishing activities, to the network of areas contributing to conservation. The extent may be measured in area coverage (e.g. for critical habitats) or importance in the lifecycle (for particular species)

Connectivity is referred to in Annexes I, II and III (Criteria C). It has been defined as *a measure of the extent to which plants and animals can move between habitat patches* (**Worboys, 2010**). Connectivity may be structural (related to physical connections, e.g. continuity in the habitat) or functional (related to movements between patches. It determines the level of exchange between distribution patches and affects gene flow, local adaptation, extinction risk, colonization probability, and the potential for organisms to move as they cope with climate change (Wikipedia). In fisheries, structural connectivity is particularly important for bottom habitats and resident species. Functional connectivity is particularly important for pelagic habitats and species and for highly migratory species with life histories extended across very different and distant habitats.

Complementarity is referred to in Annex I, and II as well as Principle (b) and (d). It relates to the complementary roles of OECMs and MPAs in strengthening conservation networks within a larger marine and coastal seascape. Complementarity is related to representativeness and connectivity. It occurs when the OECM fills a gap in the biodiversity features protected in the ecological network, strengthens the functional connections among the network's areas, or manages pressures or threats in ways that allow measures in other areas in the network to be more effective.

Integration is extensively referred to in The Decision operational paragraphs 1 and 4; in Annex I which is totally dedicated to the subject; in Annex III on OECM, particularly in Principle d; Criteria C; and management approaches; and in Annex IV. It refers to integration of the OECM within and between sectors and within ecological networks (including MPA networks and seascapes). Integration is addressed in detail in **Section 5**, and will be facilitated by the analyses regarding representativeness, connectivity, and complementarity.

These properties are highly desirable as they would enhance the OECM effectiveness at conserving biodiversity in the broader ecological network and would strengthen the rationale for their identification. However, alone, the absence or weakness of these properties would not disqualify an area from being an OECM when the essential properties referred to in Steps 1 to 4 have been adequately met. They could, however, point to possible improvements of the OECM in the future, to further improve its effectiveness. To our knowledge, absence of any of these properties have not been used to disqualify an MPA from Target 11 reporting either. For these reasons, in this document, we refer to them as "additional properties".

Related activities include:

- **Describing OECM's contributions to representativeness.** First take an acceptable biogeographic classification for the total area covered by the reporting jurisdiction (authority). If an MPA network is already under development for the jurisdiction, such a classification is likely to already

have been adopted for use (e.g. in **Rice and Houston, 2011**), and can be used for OECMs as well, facilitating the analysis of "connectivity" addressed immediately below. Look at the position of the potential OECM in this spatial classification. The more fully its boundaries lie within a specific biogeographic category that is underrepresented in the existing network of MPAs and OECMs, the greater the contribution to "representativity" within the network, and of the network relative to the total area of the jurisdiction. A similar "gap analysis" of the existing network relative to the full biogeographic classification of the jurisdiction can also contribute to identify new areas (not yet identified as ABFMs) that could be identified as OECMs and integrated into the fishery management plan.

- **Describing the potential OECM's contribution to connectivity,** identifying the relations between the biodiversity in the potential OECM and the surrounding fishing ground and ecosystem, e.g. through the distribution and lifecycle of key species, their migratory behaviour, continuities in bottom types and habitats, currents and trophic relationships. In particular, describing how the benefits provided by the OECM enhance or augment the benefits provided by other OECMs and MPAs in the surrounding area.
- **Describing the complementary role of the potential OECMs.** Identify the contribution of the specific OECM to the network of protected areas (including MPAs). OECMs should complement other existing area-based conservation measures, e.g.: (i) adding verified biodiversity benefits either through its own direct biodiversity outcomes or enhancement of the effectiveness of other network areas ; (ii) increasing the area coverage of the network; and (iii) improving or filling gaps in representativeness and connectivity.
- **Describing how the OECM is integrated in the fishery management plans** and the fishery monitoring, evaluation, and reporting as well as on other ecological networks when these are established (**See Section 5**).

Other important additional properties of OECMs relate to the existence and performance of a Monitoring, Evaluation, and Reporting (MER) and auditing systems (**Section 6**), and established revision procedures (**Section 7**). MER, auditing and revision are not explicitly considered in the decision but are necessary parts of the OECM management system to ensure long-term commitments, efficiency and effectiveness

Simple qualitative expressions of these qualifying inter-connected properties of OECMs may be elaborated, e.g. overlaying the fisheries and OECMs with ecological maps. More quantitative statements may require longer-term and expensive research. However, the development of MPA networks has often included assembling a large catalogue of regional biodiversity information to inform adoption of a biogeographic classification system for network design, and this information should be examined before undertaking additional work. Expertise may be drawn from the science of area-based conservation and sustainable use, including MPAs and the need for a strong collaboration among the experts concerned, the authorities, and the sectors ad people concerned cannot be overstated and is repeated in many parts of the document.

Step 6: Synthesis and reporting to the Legitimate Authority

1. Synthesis

The main outcome of the OECM identification process, is an assessment of the present or likely biodiversity conservation performance of an OECM and of the extent to which it meets the CBD definition and Criteria, overall. The assessment will be "positive" for those potential OECMs which satisfactorily meet the Criteria, identifying them as "candidate-OECMs", to be endorsed or otherwise by the Legitimate

Authority based on the best available evidence provided by the identification process. The assessment will be negative otherwise and the potential OECM will not be retained as a candidate-OECM. However, for ABFMs that do not satisfactorily meet the requirements but might do so if upgraded to meet OECM standards, proposals could be mode for upgrading. Details are given below and the overall assessment depends on the assessments conducted at every Step.

Step 1 is a binary assessment. The response is "positive" or "negative" and the second is eliminatory. Steps 2 to 4 determine if and how much the potential OECM fit to the required properties. The assessment undertaken on each bullet point and the aggregated assessment on each step and for the whole identification is unlikely to be wholly "positive or "negative" and highly likely to fall within a continuum between these two extremes of a continuum. Some parts of the assessment may result as "uncertain".

In data-rich situations, in which quantitative and probabilistic methods may be used, numerical scores might be obtained and combined for aggregated assessments. Therefore, the composite assessment of each step and the final assessment of the potential OECM performance, combining the assessments made at each step, requires some sort of Multiple Criteria Decision Analysis (MDCA) that might be more or less complex depending on the assessment context.

In data-limited situations, a qualitative scoring system following, for example, a "traffic light" approach[33] might be used to represent the degree to which a criterion is met in a potential OECM[34], and eventually track and represent their evolution over time. In such an approach, the assessors allocate a colour to indicate whether the match of each potential OECM property with the relevant criterion is deemed good (green), medium (orange) or poor (red) based on available guidance (e.g. in **Marnewick et al, 2019**). However, assessing the overall performance of the OECM, considering all Criteria together, requires guidance on the respective proportion of green, orange, or red, required to consider a potential OECM as meeting the set of criteria well (green), approximately (orange) or poorly (red). Alternatively, the qualitative traffic-light color-codes attributed to each Criteria need to be translated into forms that can be combined in various ways, e.g. through multi-dimensional scaling, or other integrated assessment methods.

In reality, it is likely that some assessments could only be qualitative while others could be quantitative and rules will therefore be needed for combining these assessments within and across steps.

An expert-based MCDA was used in the Aegean Sea by **Petza et al. (2019**) to assess over 500 broadly defined Fishery Restricted Areas (FRAS) against seven OECM criteria identified by experts with fisheries and environmental experiences (**Cf. Annex II, col. 1**). A MCDA using a decision tree has been used within the FAO framework as well as at national level in support of the EAF implementation, including in regional and national multi-stakeholder assessments in data-limited environments (**Fletcher, 2008; Fletcher and Bianchi, 2014**). A similar decision tree may be used to identify OECMs following the stepwise process described above to elaborate an aggregated score for potential OECMs.

Other approaches might be used for the same purpose, using a similar logic. In data- and capacity-rich areas, complex quantitative modelling might be used to simulate the impacts of pressures and corrective measures and possibly optimize the combination of measures taken within and around the OECM (cf. **Section 4.1**). Considering the range of actions points to consider, it is likely that both qualitative and quantitative assessments may need to be combined in an overall assessment of a potential OECM.

[33] i.e. the experts allocate a colour (e.g. green, orange or red) when the assessment leads to a good, medium or poor conclusion.

[34] e.g. in Garcia, Rey-Valette & Bodiguel (2009) for indicators of sustainability or Marnewick et al., 2019, for OECMs.

The assessment team being inclusive by design (**cf. Sections 4.1 and 4.2: Step 0**), involving a range of actors and using a range of knowledges, the process and method selected to reach the conclusion about a potential OECM should be understood by, and involve, all participants. It can be noted that, contrary to what is usually the case in MCDA, the criteria to be considered in each identification step are not contradictory but convergent towards significant biodiversity benefits.

As illustrated in **Table 2** a number of elements related to The Decision Criteria condition the assessment, e.g.: the list of properties to consider in each step, the scoring range (e.g. from 0 to 3), the number of scoring classes distinguished within that range and their boundaries (e.g. 0.0-1.0; 1.1-2.0; 2.1-3.0) (see another example in **Annex II**). In order to achieve coherence between assessments across a range of OECMs in a fishery, an EEZ or an ecosystem, and to maintain consistency over time (cf. **Section 6**), these conditioning elements and their rationale must be agreed and registered for reference and eventual adjustments if required. If the properties were given different weights, the rationale should also be made clear, and registered for future reference. Similarly, when using a traffic light approach, the rationale leading to the colour selection must be explicit, agreed and recorded.

In a "learning-by-doing" incremental identification process, the experience gained in the assessment of the first ABFMs examined can be used for the following ones. The structure of the MCDA, the process needed for running it in a participatory way, the scoring approach, and the eventual weighting factors, may become progressively part of best practices and reference scores might even be pre-agreed, facilitating the process.

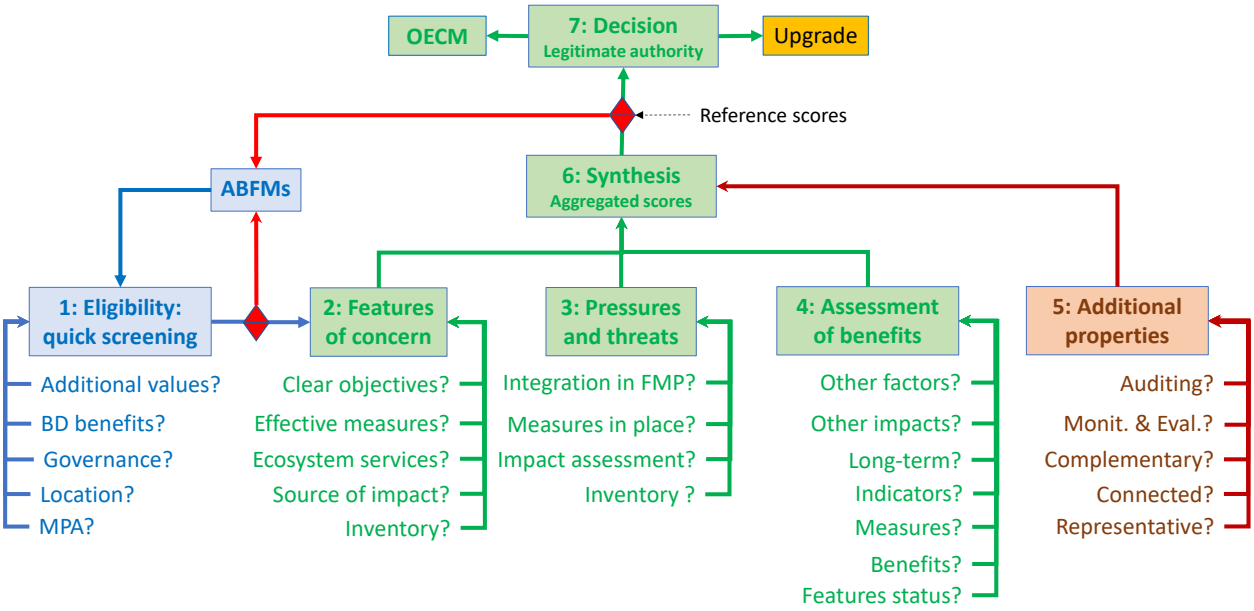

Figure 2: Graphical representation of the identification process, linking the conclusions reached on every element of every step (numbered 1 to 5) to the synthesis (Step 6) and Decision (Step 7). For each Step, the underlying elements may be qualitatively or quantitatively "scored", leading to an overall score for each step and, overall, for the potential OECM cores add qualifications to the determination assessment but do not determine it. The outcome of this process is reported to the Legitimate Authority for decision.

In the Aegean Sea case study by **Petza et al. (2019)**, for example, if it is considered that FRAs which scored between 70% and 100% in effectiveness generate sufficient biodiversity benefits, about 4% of the 516

areas examined would qualify as OECMs and, perhaps, those scoring between 60% and 69% might be considered as "upgradable" OECMs if their performance can be improved. Different results would be obtained if the "filters" used are different, e.g. reflecting more or less risk aversion.

Even when methods for consolidating information into simple scores are used to communicate results of OECM evaluations against the criteria, it is important to retain the full expert evaluation of the information used as the basis for scoring the area relative to the Criteria. The participants in the expert process bring a diversity of skills and perspectives to the evaluation, and they will review and evaluate information of various qualities about status of diverse constituent factors influencing the scorings.

Even if the most appropriate output for communicating results of the evaluation is a traffic light or similar "score", the assessment of experts of the information behind the scoring, including weight given to different types of evidence, differences among experts on the value of different strengths and weaknesses of the information based, etc. are likely to be valuable in subsequent steps to set or adapt objectives of the OECM, design the management strategies and plans, or to revisit the decision to accept or reject the area as an OECM.

Table 2: Theoretical and simplified example of scoring of OECMs properties. The properties to be assessed (col. 1) relate to action points listed for each Step (see text) and represented on Figure 2. Each property has been scored between 0 and 3 (Col. 2). A score of 0 is eliminatory for the first property. The overall score for each Step is given as percentage of the maximum possible value. The aggregated score for the OECM is given in percentage at the bottom of the Table.

PROPERTIES (Options: 0= none; 1= poor; 2= medium; 3= Good)	SCORES	
	Nb	**%**
Step 1: Determine eligibility		
Is the area designated as an MPA? Yes= 0; No=3. 0 is eliminatory	3	
To what extent is the area geographically located?	3	
To what extent is the Legitimate Governance identified?	3	
How well known are the potential biodiversity benefits?	2	
To what extent are additional values identified ?	3	
Step 1 score: OECM is eligible as potential OECM if score> 75%	**14/15**	**93.3**
Step 2: Identification of biodiversity features of concern		
To what extent are biodiversity features of concern identified?	2	
To what extent are the sources of concern/impact identified?	2	
To what extent are ecosystem functions & services known?	2	
To what extent have effective measures been identified?	3	
To what extent are expected impacts reflected in the objectives?	3	
Step 2 score:	**12/15**	**80.0**
Step 3: Identification of present and future pressures and threats		
How good is the inventory of sources of pressures/threats?	3	
How well assessed are the pressure and threats impacts?	2	
How effective are the related control or mitigation measures?	2	
Is the OECM integrated in the FMP (1), sector (2), across sectors (3)	3	
Step 3 score:	**10/12**	**83.3**
Step 4: Assessment of biodiversity benefits		
How good is the present state of features of concern?	2	
How important are the potential benefits?	3	
How effective are the mitigation measures likely to be?	3	
Are agreed indicators & benchmarks available? Yes? Soon? Not yet?	3	
How clear is the long-term nature of the benefits?	3	

How well assessed are the other (socio-economic) benefits?	3	
How well identified and accounted for are enabling/impeding factors?	2	
How well identified are the external positive & negative factors?	2	
Step 4 score:	**21/24**	**87.5**
AGGREGATED SCORE OF THE POTENTIAL OECM (STEPS 2-4)	43/51	84.1
Step 5: Additional properties (useful but not determining)		
How representative is the OECM?	2	
How connected is the OECM?	2	
How well established is the complementarity with MPAs	2	
How effective is the MER system?	3	
Is there an audit for the OECM, MER, FMP? Yes, coming, no.	2	
Sub-total score	**11/15**	**73.0**

There is no guidance in The Decision about the score or the amount of improvement or of security that may be required overall to decide whether an ABFM could be identified as OECM or not. The reply generated by a complex assessment is unlikely to be just binary (i.e. " Yes", or "No") except for the key eligibility Criteria. A good performance, justifying a positive identification could be when the OECM produces a strong positive outcome for a biodiversity value of concern considered as extremely important (e.g. endangered whales) even though other values might be less protected. Alternatively, the assessment might be considered positive if the OECM produces only moderate outcomes, but for a large range of biodiversity values of concern. The Legitimate Authority needs to have a good and faithful rationale for the decision. What is important is to clearly define the features of biodiversity claimed to benefit from the OECM and to provide evidence of such benefit. Such evidence can only be the "Best Evidence Available", whether generated by complex surveys, powerful simulation models, or local knowledge.

Following the Biodiversity Impact Mitigation (BIM) hierarchy, OECMs can be expected to: (i) "avoid" impacts on the biodiversity features of concern within OECM boundaries when possible; (ii) reduce/minimize such impact, otherwise; (iii) mitigate the residual impact or facilitate recovery to reference levels. The end result should be a stabilization or recovery of the biodiversity features of concern in the OECM boundary and, for mobile elements, possibly also in the surrounding fishery and ecosystem. This result would eliminate or reduce the probability of occurrence of Significant Adverse Impacts (SAIs)[35], taking onto account the value and vulnerability of the biodiversity feature of concern, their level of degradation, and the current and reasonably foreseeable future risks and threats. If such benefits were already provided in the ABFMs, granting an OECM status should better secure them for the long term.

2. Reporting to the Legitimate Authority

The potential OECMs which satisfactorily met the Criteria (i.e. the candidates OECM) as well as the potential OECMs which could be "upgraded" to meet the Criteria, should be presented to the Legitimate Authority for final decision in a coherent report (thereafter referred to as Identification Report), highlighting, for each candidate-OECM the rationale for its inclusion or exclusion with the information available. Because of the sectoral and potential cross-sectoral nature of OECMs in fisheries, the Identification Report might also be forwarded to the appropriate government level for oversight. It should be comprehensive and ideally present the possible options regarding the candidate OECM (adopt,

[35] The CBD Strategic Plan for Biodiversity 2011-2020 adopted the concept of Significant Adverse Impact as reference level for recovery plans and measures for threatened species and vulnerable ecosystems (in Target 6). FAO Guidelines for Deep sea fisheries define SAIs as: AAA

upgrade, or reject) and their consequences (e.g. integration in the FMP, upgrading costs). The Identification Report, elaborated through an inclusive identification process, may include:

- **An executive summary** of the comprehensive assessment process and its outcomes, i.e. elements in favour or against the identification as OECM. If requested the report will contain recommendations to the decision-makers. Otherwise, the presentation of options should be in a neutral style. If the steps, the determining elements, the scoring system, and the reference scores (represented in **Figure 2**) have been pre-agreed, the final decision would be well informed.
- **A general description of the OECM** providing: (1) Name of the area, if any; (2) Dates, when the measures making the area qualify as an OECM were implemented, and when the assessment against OECM criteria was undertaken; (3) Map and Geographical coordinates; (4) Extent (Nm^2); (5) Sub-divisions, zoning, if any; (5) Jurisdiction zone; (6) Main physical features like relief, depth range, bottom types; (7) Types of habitats like mud flats, mangroves, estuaries, lagoons, coral reefs, algal beds, seagrass beds, dynamic dunes, hot vents, sea mounts, canyons, deep-sea corals or sponge reefs); (8) Hydrography parameters of relevance to the biodiversity functions (e.g. tides, currents, gyres, stratification (thermocline), turbulence); (9) Relevant ecological processes and main biodiversity features of concern, in and around the OECM; (10) Known severe events like storms, hurricanes, earthquakes, tsunamis, and coral bleaching. Some description of the area (ecosystem) within which the fishery and the OECM sit, e.g. based on available literature, would be useful.
- **A brief inventory of the biodiversity concerns addressed in the OECM**. Describe: (1) Biodiversity features used and likely impacted by fisheries like vulnerable species (emblematic, protected, endangered, threatened, rare, crucial for key ecosystem processes or services, whether migrant or resident; species assemblages and structure of the trophic chain; essential habitats, vulnerable ecosystems; (2) Ecosystem functions like productivity and other biological processes; (3) Ecosystem services, their present state and historical and prospective trends, if any, from both (1) and (2). The descriptions should focus mainly on the biodiversity-related concerns in the OECM area and around it, considering the threats identified below, and on the improvements/benefits expected or observed from the measures applied in it. Species known to be potentially impacted in the area by other economic activities than fisheries could usefully be noted. Similarly, Biodiversity features such as species in the IUCN Red List, which are crucial to the conservation network in the larger system, might be noted even if not threatened by the fishery and in the OECM. If possible, their known trends trend and status (in relation to reference values and benchmarks) should be recorded.
- **A description of the type of governance of the OECM**, e.g.: (1) The type of governance, like centralized, decentralised, community-based management, co-management; (2) The competent authority for the fisheries, e.g., national fishery Department; Municipality; Indigenous community; RFMO/As); (3) The competent authorities for biodiversity conservation, if different from the competent authority for managing fisheries; (4) The mechanisms for coordination between legitimate governance systems and for cross sectoral management when relevant, e.g.: Marine Spatial Planning (MSP), Integrated Coast Area Management (ICAM), etc. For the purpose, it would be useful also to identify the competent authorities governing the other activities occurring in or around the candidate OECM and might generate pressures or threats to the biodiversity in the area.
- **The role/objectives of the OECM** including both (1) the primary objective of contributing to sustainable use of target species in the total fishing area, and (2) the ancillary and broader

biodiversity conservation objective[36] related to the features of concern described above in the OECM area and possibly around it. Specific objectives should be explicitly set for the OECM, harmonized with the general objectives set for the fishery in the fishery management plan and for the area in which the OECM and the fisheries occur. These objectives (and related indicators of achievement) will guide subsequent performance assessments. The regional role of the OECM may be relevant**,** e.g. (1) as part of regional Large Marine Ecosystems (LMEs), seascapes, networks, EBSA or Key Biodiversity Areas (KBAs); (2) as providing essential habitats critical for key resources as well as protected, endangered, threatened, endemic or emblematic species; and (3) as contributing to sustainability and conservation of straddling or international resources/fisheries or highly migratory species (regional connectivity).

- **A description of the fishing fleets and technology** operating inside and in the surroundings of the OECM: (1) Geographical range: local, EEZ, regional, ocean-wide, global); (2) Scale of operations: small-scale; large-scale; (3) Nature of the enterprise: artisanal, industrial, under fishing agreement; (4) Purpose: subsistence, commercial, recreational; (5) Technology: vessels, size, power, fishing gear, other equipment; (6) Target species; (7) Spatial footprint (map); (8) Economic and social importance (Catch, value, revenues, jobs).
- **A description of known additional pressures or threats** not originating in fisheries but affecting the performance of the candidate OECM. Such information would be based on information available in the literature or provided by other economic sectors. Reasonable effort should be expended contacting the legitimate authorities for the other economic sectors concerned, who may well hold relevant data on sectoral activities and intentions to expand or decrease activities in the near future.
- **A description of the collateral impacts on biodiversity features of concern** that have been observed or can be reasonably expected, e.g. on natural resources, habitats and non-target species, with their past or expected trends, within the candidate OECM and its surrounding, from fishing and, possibly, from other sources of impact, of natural or anthropogenic origin.
- **The management and protection regime of the OECM**: e.g. Management authority; supporting legislation; Jurisdiction; management plan and measures; monitoring, control and surveillance (MCS); integration of the OECM (in the fishery, fishery sector, seascape); oversight and auditing; spatial integration framework (if any), and more generally, evidence of sustained commitment to effective management, e.g. expected duration of the regime; specific conditions for termination of the regime; process and conditions to get the regime extended.
- **Expected benefits for the biodiversity features of concern and ecosystem services**: In terms of maintenance of the status quo when satisfactory (No-Net Loss) or, increases (Net Gain) to satisfactory reference values, through reduction or elimination of pressures and threats; (2) evidence regarding the long-term nature of the benefits; and (3) Other socio-economic benefits derived from ecosystem services.
- **Additional properties**: Evidence regarding the degree of representativeness, connectivity, complementarity, and integration with wider conservation networks (considering as appropriate both area-based and non-area-based measures). Presence and nature of cultural and spiritual

[36] The two types of roles/objectives are artificially separated to facilitate the assessment but in reality they interact very tightly as the target species are an integral part of biodiversity and conservation of biodiversity is a sine qua non condition for ecological sustainability and social license to fish.

values.

- **Enabling factors** that will facilitate the OECM's successful implementation can be mentioned if known although they are not mentioned in The Decision. For example: (1) Good reasons exist that indicate that biodiversity benefits are likely to be sustained; (2) The cost/benefit analyses available are favourable; (3) effective economic and social incentives are in place; (4) MCS is efficient and penalties are deterrent; (5) The sector is convinced and will collaborate, improving the probability of good compliance; (6) An effective management of fishing capacity is in place; (7) Strong legal, policy and institutional frameworks are in place; (8) Governance meets the "equitable governance" principles stated in Decision 14/8; (9) There are adequate human and implementation means for assessment and management; (10) There are no significant negative interactions with other sectors; (11) There are no problematic developments foreseen in the immediate future or those foreseen are under control; (12) All important trade-offs have been considered; and (13) foreseen climate changes are likely to be favourable.
- **Impeding factors**: All factors listed above as "enabling" have an opposite mirror image that is a potential impeding factor, e.g.: (1) There is no good evidence that the expected biodiversity benefits may be sustained in the long-term; (3) The cost/benefit analysis of the OECM implementation is not favourable; (3) There are no attractive economic incentives; and so on.
- **Synthesis** regarding the identification of the different areas and the rationale leading to the conclusions to be considered for decision by the Legitimate Authority. If explicitly requested by the authority, the report may include recommendations regarding areas to be formally identified as OECMs, upgraded or rejected. Otherwise, the presentation of options should be in a neutral style. If the steps, the determining elements, the scoring system and the reference scores (schematically represented in **Figure 2**) have not been agreed with the Legitimate Authority at the beginning of the identification (as suggested in **Section 4.1**) and have emerged from the process itself, they have to be clearly stated, with their rationale, in order to be endorsed in the final decision.

Step 7: Decisions by the Legitimate Authority

The Legitimate Authority receives the assessment report and has the prerogative to decide on the fate of the candidate-OECMs, based on the information received, and considering in addition any social, economic, and political dimensions of the decision. The identification process should appear effectively participative, in line with the principles of equitable governance. If the elements to be considered under each step, their scoring system, their aggregation, and the reference scores conditioning the decision options had been formally agreed with the Legitimate Authority at the beginning of the identification process, the decision will be facilitated. However, considering the little expertise available on OECMs identification, the rationale behind these elements might have to emerge from the assessment process itself, as proposals, and be formally endorsed together with the conclusions. Otherwise, parts of the assessment may have to be repeated.

Following consideration of the report and possible recommendations, the Legitimate Authority must take decisions regarding (1) The formal identification of OECMs (a formal record of such decisions should be registered at national level); (2) The integration of the recognized OECMs into the management plans of the fishery and/or the sector; and (3) Whether to report to WCMC for inclusion in the world OECM

database[37] and consideration for reporting on international targets. The WCMC manual foresees that OECMs and information on OECMs might be reported by the Legitimate Authority or a range of data providers, preferably with the consent of the legitimate authorities.

The decisions required include:

- **The decision on OECM identification.** This decision about the identification of an OECM, based on the evidence provided, will typically be taken by the Ministry or any other Legitimate Authority in charge of marine capture fisheries (e.g. in centralized or decentralized State management institutions, or in Indigenous people and local communities institutions), following good and equitable governance principles (as defined in The Decision Annex II). The decision should involve a collaboration with all main stakeholders, including Ministries or other legitimate authorities with responsibility for conservation of biodiversity. The decision should also consider its expected costs, benefits, and other social and economic implications. Because of their dual objectives (fisheries sustainability and biodiversity conservation) as well as possible cross-sectoral implications, a broader consultation and coordination may be felt necessary at this final stage of decision and, at the present time, there is neither experience nor guidance on whether this would add value or increase complexity of the decision. Such decision confirms: (1) Which candidate-OECMs identified in the assessment process as satisfying the Criteria are formally recognized as OECMs; (2) Which candidate-OECMs are not yet recognized as OECMs but are worth undergoing modifications (that need to be stated) to meet the OECM criteria; (3) Which additional management and conservation measures need to be considered and integrated in the fishery management plan to ensure the expected biodiversity benefits; and (4) Which candidate-OECMs are considered unsuitable for further consideration in an OECM approach and why.
- **The eventual decision on the need and means to update the FMP**, its objectives, measures, etc. to account for the new OECMs. This updating is fundamental for the integration of the OECM into the fishery management plan (cf. **Section 5**) and a comprehensive appreciation of its performances (cf. **Section 6.3**).
- **The decision on the report to stakeholders and the public at large** on the decisions regarding OECM status of the candidate area, providing rationales for decisions and feedback on the value of the assessment in informing the decision-making process.
- **The decision about reporting to CBD and the WCMC OECM database**. The Decision (§5b) *encourages* State Parties *to submit data on OECMs to the United Nations Environment Programme's World Conservation Monitoring Centre [UNEP-WCMC] for inclusion in the World Database on Protected Areas [WDPA].* It would be logical for a State to do so to have its OECMs area accounted as part of its contribution to international biodiversity Targets (e.g. in the Post 2020 Global Biodiversity Framework) or in the Sustainable Development Goals (SDGs), but it is not an obligation, under current CBD Decisions. Good governance practices would suggest that the Legitimate Authority would make policy that recognized OECMs would either be consistently registered in the WCMC OECM database, or not, depending on national legislation and practices, rather than on a case by case basis.

  Incentives for reporting to WCMC include: (1) Assistance provided by WCMC for coherent

[37] Like the WDPA, the OECM database is a joint product of UNEP and IUCN, compiled and managed by UNEP-WCMC, in collaboration with governments, non-governmental organisations, and other data-providers. The database has been in development since 2019, in response to a request from parties to the CBD in November 2018 (CBD 2018).

recurrent reporting; (2) Availability of a unique inventory of protected areas of different types and origin with regrouped and checked metadata, accessible on maps, providing also *de facto* a national observatory; (3) Capacity-building opportunities offered by UNEP-WCMC; (4) Contribution to research and spatial management; (5) Re-use of geolocated data at regional level, e.g. in RFMO/As or LMEs (regional observatories) (modified from **UNEP-WCMC, 2019**).

The elements needed for such initial reporting are indicated in the WCMC manual (**UNEP-WCMC, 2019;** https://www.protectedplanet.net/c/wdpa-manual/wdpa-manual-v16) and assistance for the reporting task may be obtained from the programme (at protectedareas@unep-wcmc.org). The first obvious overriding requirement is that the OECM must meet the CBD Definition of OECM which implies having check that the CBD Criteria are met. The "*minimum attributes*" that are absolutely required for registration of an OECM (hereafter underlined) and the "*complete attributes*" which the data providers are only encouraged to submit are explained in detail in the manual, e.g. : (1) Area category (MPA or OECM); (2) Name of the OECM in local or native language and English; (3) Designation name (e.g. refugia, closed area, fishery reserve); (4) Designation type, e.g. national, regional, international, transboundary); (5) Marine area covered; (6) Total area covered (marine and terrestrial); (7) Status (e.g. proposed, established, candidate); (8) No-take areas included?; (9) Status year (when the OECM was proposed, established, etc..); (10) Type of governance and evidence of consent by all legitimate authorities; (11) Type of ownership; (12) Management authority; (13) Management plan; (14) Supplementary info, e.g. full identification report showing how criteria are met. This could be a summary of the national identification report; (14) Conservation objectives; (15) location codes: ISO alpha-3 codes. Additional (optional) information can also be submitted. The sources of the uploaded data must be provided. The intellectual property rights must be specified in the Data Contributor Agreement which must be signed and states *inter alia* how the data provided will be used and that redistribution or use of the data by third parties will be subject to the WDPA Terms of Use.

The UNEP-WCMC manual provides also information on: (1) Who can report to WCMC; (2) The intellectual property rights on the data; (3) the rules of access and use of the data; (4) The process of uploading into the OECM database and related data standards38; (5) the data verification processes (in case the data is not provided by a government); (6) Revisions of the data (at the data provider initiative or on call from WCMC (e.g. every 5 years).

The eventual reporting by Regional Fishery Management Organizations (RFMO/As) has not been specifically considered in The Decision. The issue is sensitive as the CBD does not have a management mandate on biodiversity beyond national jurisdiction. However, nothing impedes States Parties to the CBD to seek to implement their commitments under this Convention (e.g. on OECMs) in another convention to which they are also Parties, such as a RFMO/A. Indeed, many RFMO/As already have adopted measures, including spatial measures, to manage the impact of fisheries on biodiversity in their areas of jurisdiction. RFMO/As usually make their assessments and management performance reports available on their websites. They could perhaps report on OECMs to the WCMC database, as most competent data providers, on behalf of their member governments. Indeed, the WCMC manual indicates that data providers include (i) Secretariats of international conventions and (ii) Regional entities. Precedents exist in relation to other Decisions. For example, FAO and regional fishery bodies have been invited to share information with the

[38] at https://www.protectedplanet.net/c/other-effective-area-based-conservation-measures

CBD Secretariat, in support of achieving Aichi targets (CBD Decision XIII/3, Paragraph 68) and as input for the fifth edition of the Global Biodiversity Outlook (Decision 14/10, paragraph 10).

It is strongly advisable, for reasons of long-term data safety, effectiveness of the assessment process, and institutional memory to register all the information and advice leading to decisions regarding OECMs in a national repository (or, if not available, in a sectoral repository) to facilitate data retrieval, assessment updating, and adaptive management (cf. **Section 6.4**).

5. INTEGRATION OF OECM MANAGEMENT

The Decision (in paragraphs 1 and 4 and in Annexes I, III and IV) stresses the importance of integrating OECMs into seascapes and mainstreaming them across sectors. The Decision also refers to "management" of OECMs in its paragraph 7, extensively in Annex II (governance and management), as well as in Annex III (in the Guiding Principles and Criteria for identification) and in Annex IV (on achieving Target 11). Attention is given specifically to the management parameters (e.g. authority, diverse approaches, objectives, measures, respect of spiritual and cultural values) and management performance (e.g. effectiveness, consistency with EAF, equity, adaptability, and integration).

The effectiveness of the OECM operating within a fishery depends to a large extent on the quality of the management of the fishery operating in and around the OECM itself and the need for effective integration of management measures used in and around the OECMs cannot be overemphasized. The best way to mainstream OECMs across sectors while avoiding "paper OECMs" as much as possible, is therefore to formally integrate the appropriate OECMs within the management system of such sectors (with the necessary responsibility and accountability) , creating synergies and incentives for their identification and long-term maintenance.

It should be clear that fisheries without an effective management system (at centralized or decentralised level) and hence with no control on pressures and threats, are most likely to generate paper OECMs. It should also be clear that the case-by-case and flexible approaches called for in The Decision allow this mainstreaming and integration to be adapted to the local context and means available (e.g. using qualitative and quantitative assessment methods; centralised or local enforcement systems; formal or informal management plans).

OECMs need therefore to be explicitly integrated: (1) In the management plan of the fishery within which they operate; (2) With all OECMs used within fisheries and other economic sectors, at the EEZ level; and (3) Within the protected areas network, seascape, etc., at ecosystem/regional level. When relevant, the latter would include the integration with conservation measures of other agencies responsible for conservation of the biodiversity features of concern, such as in fisheries OECMs in which measures to control fishing impacts on seabirds are implemented.

These three levels of integration call for different governance arrangements and levels of capacity, with growing degrees of complexity. Item (1) is dealt with in detail below. Items 2 and 3 fall outside the scope of this document. They will only be superficially addressed below and the reader is advised to look at The Decision Annexes I and II, and to existing guidance on the subjects, e.g. on MSP, ICAM, and Strategic Environmental Assessment (SEA). However, it is likely that a lot of the information and activities needed to integrate OECMs within the fishery sector and across economic sectors and the ecosystem are already needed for their integration at fishery level, and that "only" the additional interactions and connectivity of interest at higher levels of governance need to be better documented.

5.1 Integration of OECMs within the fishery management plan

Abundant guidance is available for the management of responsible fisheries, in the Code of Conduct for Responsible Fisheries (**FAO, 1995**) and the related guidelines on management, on the precautionary approach and on the ecosystem approach to fisheries (EAF) (**FAO**, **1996; 1996a; 1996b; 2000; 2003; 2009a; 2009b; 2009c; 200; 2015; Cochrane and Garcia, 2009**). Consequently, the following sections focus on the management issues directly related to the OECM and its integration in the fishery management plan (FMP).

The enabling frameworks of relevance to OECMs' management effectiveness were reviewed in **Section 2.** The enabling or impeding factors have been considered in **Sections 4.1** and **4.2** (Steps 3, 4, and 6). Several of them are also factors of performance of the overall fishery management itself, for example: a Legitimate Authority; a formal fishery management plan or equivalent traditional set of rules[39]; equitable governance, as specified in The Decision; enabling international instruments particularly when resources and biodiversity features are transboundary, straddling, or in the High Sea. and adequate management capacity including deterrent enforcement. Some factors are particularly important for OECMs such as, knowledge of current or likely threats from other economic sectors or natural drivers of system dynamics and their impacts; identification or foresight of climate change impacts on biodiversity and related responses; knowledge on the biodiversity features of concern, pressures (past, present and future), and likely threats on biodiversity, as well as the potential benefits realized or expected (**Section 4**). In addition, the introduction or reinforcement of a recurrent Monitoring, Evaluation and Reporting (MER) programme, an important component of OECM management implementation and performance assessment, is addressed in detail in **Section 6.** We will therefore not dwell further on these factors below.

The formal integration of the OECM(s) into the FMP aims to increase coherence between the fishing and conservation regimes implemented inside and outside the OECM and hence the overall efficiency of the FMP. It is likely that the means available to monitor and assess an OECM will be commensurate (and indeed will share) the resources available for monitoring the whole fishery. In some small-scale fisheries, the means available may be limited but the spirit of integration ought to be present. In the occasional cases when the biodiversity features expected to benefit from the OECM are themselves subject of conservation measures or management plans of other agencies (e.g. possibly seabirds, marine mammals or marine turtles), coherence with the species conservation plans, monitoring and assessments programs is also valuable, even if active integration (e.g. merging some sectoral and environmental institutions) is not feasible.

The integration in the FMP of the OECMs and the upgradable ABFMs identified by Legitimate Authority, with the new measures eventually needed to be applied within them, requires as appropriate:

- **Noting formally the OECM(s) and upgradable ABFMs to be covered by the FMP** in the scope of the management planning document. The descriptions of the OECM(s) and upgradable ABFMs may usefully be annexed to the FMP, with their specific characteristics (see below).

[39] A management plan ideally specifies already: (1) The primary management objectives; (2) Related indicators and reference values; (3) Fishery management measures; (4) Financial and human resources available for implementation; (5) Responsibilities for implementing the different management tasks; (6) Collaborations; (7) Expected outcomes for fisheries sustainability and, often, reduction of collateral impact; and (8) timelines for data collection and assessments. In many small-scale fisheries and coastal communities, a formal plan may not exist but the same types of information, in a simpler form, can often be assembled and shown to fulfil the OECM identification criteria regarding governance and management. Absence of evidence of *sustained management* is a serious impediment to recognize an OECM.

- **Updating the FMP objectives and targets** to better reflect the specific biodiversity conservation objectives and expected outcomes of the OECM(s) described in the identification process (**Section 4**). In line with the Biodiversity Mitigation Hierarchy, action may aim at No Net Loss (NNL) or Net Gain (NG) of biodiversity or restoration to some historical level considered adequate.
- **Specifying the indicators and reference values or trends** and other performance benchmarks or standards related to the above objectives, that are needed for the future recurrent assessment of the OECM performance. Adjusting the MER sampling and assessment accordingly (cf. **Section 6**).
- **Specifying the measures taken in the OECMs to reach the objectives**. These might be area-based or not and their objectives may be, e.g.: (1) Reduce impact on non-target species, protected species and vulnerable habitats below SAI[40] (See **Section 4, Step 2** for details); and (2) Maintain a functional ecosystem structure (e.g. trophic chain). Special measures might modify: (i) The existing rules of access to the area; (ii) fishing gear specifications; (iii) catch and bycatch regulations (particularly on threatened species); and (iv) habitat protections and restoration measures; (v) logbooks and on-board observer manuals; (vi) Electronic navigation and vessel monitoring systems (VMS). These modifications should also improve the **coherence** (complementarity and synergy) between the measures applied in the OECM and around it. For traditional fisheries lacking a formal FMP, the prevailing local management rules may need to be upgraded (if needed) by the local Legitimate Authority. The recurrent reporting to WCMC would imply that although informal, these measures be somewhat registered at least at the level of the Legitimate Authority, with any evidence that they are effectively applied.
- **Strengthening participation of environmental stakeholders**, in addition to fisheries stakeholders, in the development of the FMP. Active stakeholders' participation in fishery management is already an established best practice and the management of the OECM will therefore likely follow the same process. If this was not yet the case, the implementation of an OECM might be a good opportunity to establish or strengthen it, considering that fishery stakeholders are a source of knowledge on the environment and biodiversity. However, if the location of the OECMs is likely to impact particularly a specific coastal community or other societal groups (e.g. environmental and sectoral NGOs), their participation needs to be ensured to improve effectiveness and equity (see below).
- **Broadening the target audience of communication campaigns** to inform interested parties about the presence of OECMs in the fishery and their implications for the fishery itself; for other fisheries operating in the same ecosystem; as far as possible, for other economic sectors that might , help promote the OECM (e.g. ecotourism) or might have to revise their policies or practices to allow the desired OECM biodiversity outcomes to be fully realized. The objective is to promote a good understanding of the new measures, call for increased collaboration, inform of the consequences of non-compliance and hence improve OECM performance.

[40] Significant (or serious) Adverse Impact (SAI) was an impact qualifier used in UNGA resolution 61/105 on deepsea fisheries. It was defined in the International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009). These guidelines define SAIs as *impacts that compromise ecosystem integrity (i.e. ecosystem structure and function) in a manner that: (i) impairs the ability of affected populations to replace themselves; (ii) degrade the long-term natural productivity of habitats; or (iii) cause, on more than a temporary basis, significant loss of species richness, habitat or community types*. The CBD Strategic Plan for Biodiversity 2011-2020 adopted the SAI as reference level for recovery plans and measures for threatened species and vulnerable ecosystems (in Target 6).

- **Checking new equity issues** potentially created by the OECM in addition to these already addressed in the old ABFM, e.g. (1) Additional disruption of traditional livelihoods or sharing arrangements among geographically dispersed fishery participants; (2) New or increased violations of cultural of spiritual values; and (3) New or increased relocation from a traditional fishing area or exit from the sector, significantly altering distribution of benefits and costs. As far as possible also **introducing measures to correct such new issues** by, e.g.: (1) adapting fishery measures in and out of the OECM to mitigate the distortion; and (2) introducing alternative measures that, if possible, would still maintain the OECM status, such as additional income-generating activities; compensations, etc. This would be particularly important when the resources are used both by small- and large-scale fisheries.

- **Evaluating risk of non-compliance** with OECM measures and **strengthen MCS** around and in the OECM. Also, **identify impeding factors** and **corrective measures** taken to mitigate their effect, as well as **opportunities** to incentivize improved compliance.

- **Addressing impending internal and external threats to OECMs** and clarify contingency measures and monitoring activities and benchmarks, with the view to ensure resilience, detect and respond quickly to emerging threats, and optimize the long-term total biodiversity benefits and co-benefits**.** This activity also requires fisheries managers to: (i) **Identify the elements at risk** in the natural and human components of the fishery system, and the sources of threats, in the environment, the fishery or in other economic activities; (ii) **Improve foresight and predictive capacity:** developing the needed threat-specific competences or bringing in the relevant experts (e.g. through collaborations), and collecting the relevant information through the MER system; (iii) **Assess the related risks** (e.g. cost of damage x likelihood) for the natural components, the ecosystem services and the related livelihoods; (iv) **Identify responses to threats** that are robust to uncertainty[41]; (v) **Develop contingency plans** and associated triggers for action, and update them regularly; **Display transparent information on uncertainties** and their potential consequences for decision-making and implementation; and (vii) **Identify/strengthen the regional collaborations** needed to address transboundary threats.

- **Ensuring that the fishery management plan is adaptive,** i.e. that (i) it foresees potential changes that might occur in the OECM and/or in the fishery system, and that would affect OECM's performance; and (ii) it includes procedures for their early detection and, possibly, their mitigation. **In that respect,** when adjusting decision rules to improve performance assessment, it is important to avoid over-responding to small oscillations in performance due to natural variability in the social-ecological system. It would be ideal to **define thresholds** (e.g. in pre-agreed decision rules) of indicators' change beyond which management responses would be justified and cost -effective. The central role of the MER system in this regard is stressed in **Section 6**.

- **Archiving and maintain information on FMP provisions and implementation.** This function is best undertaken by a well-equipped MER system (cf. **Sections 6 and 7**).

It should be reiterated that, as for the identification, the integration of OECMs in FMPs may be approached with different levels of means in different situations, but in each case the integration needs to be explicit and credible.

[41] e.g. using Management strategy evaluation (MSE) –if the capacity and necessary information are available or accessible– or develop risk-based decision rules based on available information including expert opinion and local knowledge.

5.2 Integrating OECMs within the fishery sector

As one of the intents of OECMs is to contribute to biodiversity conservation at the ecosystem level, their identification, management, and performance assessment should be coordinated and harmonized among fisheries that exploit the same ecosystem and food chain, contributing to integration of biodiversity concerns and measures into the sector.

The Decision (§12) *urges Parties to facilitate mainstreaming of … other effective area-based conservation measures into key sectors, such as, inter alia, …fisheries.* Mainstreaming and integration of biodiversity concerns into the fishery sector was addressed specifically in 2016 in Decision XIII/3, which: (i) in paragraph 62, encourages fisheries management organizations to further consider biodiversity-related matters in fisheries management in line with the ecosystem approach, including through inter-agency collaboration and with the full and meaningful participation of IPLCs; (ii) In paragraph 63, re-emphasizes the importance of collaborating with FAO, RFMO/As and regional seas conventions and action plans in addressing biodiversity in sustainable fisheries; (iii) in paragraph 68, urges parties to use existing guidance related to EAF and calls for further collaboration and information-sharing among the CBD Secretariat, the FAO and regional fishery bodies regarding information on EBSAs and VMEs, in support of achieving Aichi Targets (https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-03-en.pdf).

The "integration" of the fishery-specific OECMs within the entire sector would be institutionally simpler and less expensive in interaction costs, than integration across sectors or MPA networks (cf. **Section 5.3** and **5.4**), as it could be undertaken within one line-ministry and legal framework with additional collaborations with environmental agencies. It would also give to EAF a further boost away from the single-species, single-fishery approach.

However, limited progress has been made in the effective integration of single fisheries' management at whole sector (or ecosystem) level despite the rising awareness of the systemic nature of fisheries in the last 50 years (e.g. **Walters and Hilborn, 1976; Walters, 1980; Allen and McGlade, 1987; Charles, 2001; Garcia and Charles, 2007; Link, 2018; Link et al, 2020)** and the adoption of the ecosystem approach to fisheries (EAF) at FAO, in 2001 (**Garcia et al, 2003; FAO, 2003a**). The integration has been substantially addressed from a theoretical scientific angle, focusing on the fisheries impact on the tropic web, e.g. on issues such as multispecies MSY, ecosystem-wide MSY, system-level optimum yield and the portfolio approach (**Link, 2017**), ecosystem-level Balanced Harvest (**Garcia et al., 2012; Zhou et al., 2019**). In operational management, this has led to considering multiple fisheries on several target-species or assemblages as "single" multispecies multigear fisheries (like most small-scale fisheries), albeit with little real management. This has led also to innovative management approaches such as: (i) implementing harvest caps on by-catch of protected, endangered or threatened (PET) species; (ii) implementing an overall cap on total ecosystem catch in the Eastern Bering Sea and Gulf of Alaska LMEs (Link, pers. Comm.); (ii) limiting removals from prey (forage) species stocks in the Antarctic (**Constable, 2011**).In practice, however, the management plans of single fisheries operating in the same region or ecosystem are still rarely integrated and there is little information on best practices for such integration, administratively and operationally. An exception might be in Western Australia where the various fisheries (métiers) using a common species assemblage (referred to as a "resource"), are considered together for management (**Fletcher et al., 2010, 2012**).

Part of the challenge may be that: (1) the "integration" of the bio-ecological and socio-economic dimensions of different fisheries in an ecosystem could go to a variety of depths (e.g. from information exchange and effective coordination, to full integration of the management plans), representing growing workloads and costs that may vary within the same fishery "system"; (2) The integration of all species, both target and non-target in a more or less structure total catch cap, may be easier to achieve, with

reasonably stable or adaptive strategies, than that of the different fleets and their constant dynamic adaptation to external social and economic drivers. Fishery sectors including small-scale fisheries (SSFs), large-scale ones (LSFs), national and foreign face particular challenges[42].

Activities towards integration of OECMs at the fishery sector level would include:

- **Mapping all fisheries footprints** (spatial distribution of fishing effort) **and OECMs**.
- **Looking for potential synergies among the OECMs** used in various fisheries in terms of geographical and functional connectivity.
- **Harmonizing or, where feasible, merging management plans** and measures of strongly overlapping or complementary OECMs, to facilitate their management (e.g. economies of scale in MCS) and possibly optimize their biodiversity outcomes. The merging of two candidate-OECMs may be an effective way to upgrade them to OECM standard.

5.3 Mainstreaming OECMs across economic sectors

Mainstreaming is the general *process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that it is conserved and sustainably and equitably used* **(Huntley and Redford, 2014**). A definition suggested specifically for fisheries is *the progressive, interactive process of recognizing the values of biodiverse natural systems in the development and management of fisheries, accepting full accountability for, and effectively responding to, the broader impact of fishing and fishery related activities on biodiversity and related structure and function of ecosystems*" **(Friedman et al., 2018).**

The Decision (Annex I, Section IIB) provides guidance about the integration of OECMs across sectors. Paragraph 2 of the Annex indicates that such integration could be achieved *by applying the ecosystem approach and taking into account ecological connectivity and the concept, where appropriate, of ecological networks*. It refers also to other Decisions of the CBD calling for integrating biodiversity in national poverty eradication and development plans. This higher level of integration is beyond the scope of the present document but the guidance provided above (in **Sections 5.1 and 5.3**) for single-fisheries and integration across the fishery sector would provide a good basis on which to build the participation of the fishery sector to cross-sectoral coordination frameworks, when established at the appropriate level of the government. This type of integration is more demanding and would usually require some overarching national framework such as ICAM (**United Nations, 1992**), Integrated Coastal and Ocean Management (ICOM; **Belfiore et al., 2004**)[43]; Integrated Ocean Management (IOM; **Freestone at al., 2010**)[44] and MSP (**Jentoft, 2017**; **Wright et al., 2018)** that have been advocated and meeting implementation problems in the last 3 decades. Actions, based on suggestions in The Decision (Annex 1,B), include:

- **Identifying, mapping and prioritizing areas** important for biodiversity features of concern and essential ecosystem functions and services.

[42] LSFs management tends to follow a ”western” quantitaive, reductionist, and science-driven approach, while the management of small-scale multigear multispecies fisheries rests on a deeper understanding of multiple detailed sources of knowledge on resources and socio-cultural aspects. Integrating them is a challenge.

[43] See also: (1) https://globaloceanforum.com/areas-of-focus/integrated-ocean-and-coastal-management/; (2)

[44] See also: (1) http://www.beaufortseapartnership.ca/integrated-ocean-management/integrated-oceans-management-plan/; (2) https://www.oceanpanel.org/blue-papers/integrated-ocean-management

- **Considering merging of strongly overlapping areas** (pros and cons) and harmonizing sectoral legislation to enhance complementarity
- **Reviewing and updating sectoral plans as necessary** to ensure that they recognize and incorporate the many values provided by protected areas and OECMs in a synergetic manner.
- **Developing targeted communications campaigns** aimed at the public and private sectors that lay out the biodiversity and ecosystem functions and services provided by protected areas and OECMs with the objective of increasing awareness of the value of nature for the private sectors and societal well-being.
- **Reviewing and revising existing policy and finance frameworks** to identify opportunities to improve the enabling policy and financial environment for sectoral mainstreaming. Modern guidance in that matter **encourage innovative finance –**including investors, insurance companies and others– to identify and finance new and existing protected areas and OECMs and restoration of key degraded areas, to deliver on essential ecosystem functions and services, and to promote financial models for long-term sustainability.
- **Assessing and updating the capacities required** to improve the synergetic mainstreaming of protected areas and OECMs, create enabling policy environments, undertake spatial mapping of essential ecosystem functions and services, and their multiple values.

In addition, if the sectors considered have their own MER systems, some **coordination between them would be extremely useful,** both in terms operational synergies, common databases, joint assessments, etc.

5.4 Integrating OECMs in seascapes

The Decision Annex (I) also refers to integration of OECMs into seascapes. Conservation International defines seascapes as "*Large, multiple-use marine areas, defined scientifically and strategically, in which government authorities, private organizations, and other stakeholders cooperate to conserve the diversity and abundance of marine life and to promote human well-being* (**Conservation International; Atkinsons et al., 2011:2).** IUCN Type V MPAs are referred to as "seascapes" i.e. "*areas where the interaction of people and nature over time has produced … distinct characters with significant ecological, biological, cultural and scenic value, and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values*[45] (see also **Dudley, 2008; Day et al. 2019**). Seascapes may be created to contribute to broad-scale conservation and other values created by interactions with humans through traditional management practices, provide natural products and environmental services, and to act as models of sustainability[20]. The Seascape approach is aimed at building coalitions among government(s), corporations, and civil society to improve ocean governance, and highlights the importance of achieving effective governance across sectors and at all levels, from local to regional. It calls for bringing in the necessary science and knowledge, and empowering local governments and communities. Seascapes may be national such as the Bird's Head seascape in Indonesia or the Abrolhos seascape in Brazil. They can also be international such as the Eastern Tropical Pacific Seascape of Costa-Rica, Panama, Colombia and Ecuador, or the Sulu-Sulawesi Seascape of Philippines, Malaysia, Indonesia. Paua New Guinea, the Solomon Islands, and Timor Leste.

[45] See also: (1) https://www.biodiversitya-z.org/content/iucn-category-v-protected-landscape-seascape; (2) https://www.conservation.org/priorities/seascapes-large-scale-marine-management

This level of integration of OECMs is also beyond the management mandate of a fishery's Legitimate Authority and the scope of the present document. However, the elements of guidance provided in **Sections 5.1 and 5.2** and the preparation of the fishery sector would assist it in such broader engagement across sectors. Many actions required are similar to those required for cross-sectoral integration in the EEZ, with governance systems depending on the seascape scale and context.

Guidance on seascape establishment, governance and management is available, for example in **Ervin et al. (2010)** and **Atkinsons et al. (2011).** The integration of OECMs in seascapes is explicitly addressed in The Decision (Annex 1, A) as a strategy to combat ecosystem fragmentation and to optimize the functional performance of individual MPAs and OECMs through improved connectivity. Suggested action includes:

- **Reviewing national visions, goals, and targets** to ensure that they include elements of integration of protected areas and OECMs for increasing habitat connectivity and decreasing habitat fragmentation at the seascape scale.
- **Identifying key species, ecosystems, and ecological processes**, including those vulnerable to climate change, for which fragmentation is a key issue and which can benefit from improved connectivity;
- **Identifying and prioritize important areas** (including OECMs and MPAs) to improve connectivity and to mitigate the impacts of fragmentation of seascapes.
- **Conducting a national review of the status and trends** of seascape habitat fragmentation and connectivity for key species, ecosystems and ecological processes, including a review of the role of protected areas and OECMs in maintaining connectivity.
- **Identifying and prioritizing the sectors responsible for habitat fragmentation** and develop strategies to engage them in mitigating their impacts on protected areas networks including OECMs.
- **Reviewing and adapt seascape plans and frameworks,** including marine spatial plans, and sectoral plans, integrated marine and coastal area management plans.
- **Prioritizing and implementing measures** to decrease habitat fragmentation and increase connectivity, including the creation of new protected areas and the identification of OECMs, as well as indigenous and community conserved areas (ICCAs).

6. MONITORING, EVALUATION & REPORTING

6.1 Premises

All fisheries ought to be monitored for management purposes, to continuously collect data and generate information regarding the fisheries, the natural resources they use, their impact on target species, as well as their compliance with management measures, providing the advice needed for adaptive management. Monitoring systems might be more or less sophisticated depending on the national or local governance capacity, the fisheries' size and economic value (See **Section 6.1.1**) and the additional variables to be monitored in OECMs may require strengthening of budgets, active fisher's participation, and external collaborations (see following sections). In general, the monitoring, evaluation, and reporting (MER) process should also reflect the principles of equitable governance and informs the Legitimate Authority on, e.g.:

a. Whether the management plan is being implemented effectively (as designed). Ideally, the MER could also indicate whether this was done at the lowest possible cost;
b. Whether the expected impacts of the measures on the fishery and on the biodiversity feature of concern are being achieved or can be reasonably expected to be achieved;
c. Whether emerging or unanticipated issues are arising that could affect performance; and
d. The possible options to improve performance in (a) and (b) and prepare for (c), ideally with cost/benefit estimates.

Most if not all fisheries management strategies use ABFMs within which access and fishing practices are controlled to conserve elements such as the target species, protecting essential habitats and/or vulnerable life stages and, increasingly, to reduce bycatch of unwanted or protected species. Once introduced, ABFMs are very rarely assessed individually and recurrently[46] and the fishery-MER usually assesses only the overall performance of the management of the entire fishery looking at trends in these elements. The deep-sea fisheries VMEs may be an exception, related to the high level of attention given to these ABMTs following the United Nations General Assembly (UNGA) Resolution 61/1052, in 2006, and the adoption of the FAO International Guidelines for the Management of Deep-Sea Fisheries in the High Seas, in 2008.

However, when ABFMs are identified as OECMs (**see Section 4**), each area, with the specific measures applying into it, needs to be assessed individually (case by case) and recurrently (to ensure that it continuously produces the expected biodiversity benefits. The need for continuous monitoring of an OECM performance is stressed in The Decision (Annex III, § C,1,f). The frequency of these checks is a decision of the State and may depend on the biodiversity of concern, the means available in the MER, etc. However, for the OECMs that have been reported to UNEP-WCMC and uploaded in the global OECM database (se **Sections 6.4, 6.5 and 7)** , the WCMC Secretariat will ask the States for an update of their OECM information every five years (**UNEP-WCMC, 20190** (see **Sections 6.4, 6.5 and 7**). The role of the MER system cannot therefore be overstated.

Section 6 is mainly about the process of monitoring, evaluation and reporting on actions and outcomes in the OECMs areas (referred to hereafter as the OECM-MER) after they have been formally identified and as they are used. Because of the dual function of OECMs –on fisheries sustainability and biodiversity conservation– the OECM-MER process is logically likely to be functionally connected to the broader Fishery-MER process with which it has to actively interact, for competence, means, interaction, etc.

6.1.1 MER at the fishery level

Usually financed by the authorities responsible for the management of fisheries or fishery research, the fishery-MER collects (from other sources) or generates (from scientific surveys) the information needed to track the broad performance of the fisheries and of their management. The process is often “anchored” in a fishery research institute or equivalent institution with a more or less sophisticated structure. In developing areas, particularly in island countries with limited population and capacity the supportive role of regional organizations cannot be overstated. The fishery-MER informs the fishery management unit of the Fisheries Department or of the Ministry, and involves cooperation with other fishery authorities (e.g. in charge of enforcement and fishery statistics) as well as environmental research institutes and the University.

[46] In practice, the interactions between the different measures, in and out of the ABFM, the predator-prey relationships, the environmental and socio-economic forcing, etc. are such that the effect of a single spatial measure on the fishery can often only be ”demonstrated” by modelling, under a demanding set of assumptions

The way fisheries are monitored and fishery management performance ranges from minimal to extremely sophisticated, depending on the capacity available to undertake the tasks. This capacity depends *inter alia* on the country, the size of its maritime domain, the number, size and importance of its fisheries (in terms of economic value, employment, social impact, etc.), the level of development and breadth of fishery research, the fishery management approach adopted, etc. In an RFMO/A, the MER characteristics reflect necessarily the capacities of the member countries. Except when specifically mentioned, **Section 6.1** refers to MER in well-managed fisheries with reasonably functional monitoring, evaluation, and reporting processes (hereafter, the fishery-MER). To some extent, the considerations made may be adapted to capacity-limited situations, keeping with the spirit and expectations of a proper MER and conscious of the implications of simplifications on implementation costs but also on robustness and credibility of the conclusions.

The purpose of a conventional fishery-MER process is to collect data and information in support of the management of the fisheries including the evaluation of the management system effectiveness. The Fishery-MER provide continuous information on (i) the fishing activity and its outputs; (ii) the status and trends of the target species; and (iii) the implementation of management measures and level of compliance. Increasingly since the adoption of EAF, the fishery-MER provides also information on: (iv) the collateral impact of the fishery on dependent and associated species –particularly protected species, and on essential habitats; and (v) selected aspects of the ocean and climatic environment of importance for the understanding of resources movements and productivity, fishing operations dynamics, and management performance.

The individual tasks of a fishery-MER can be described as:

- **Monitoring**: to regularly collect data and information on the living resources used and impacted by fisheries ; the natural and anthropogenic pressures that affect them; and the management measures (e.g. measures, costs, compliance). This requires measuring change in key indicators of: (i) fishing activity and pressure (e.g. areas fished, timing, gear used, fishing effort); (ii) fishery outputs (e.g. amounts and composition of catch, landings, bycatch and discards); (iii) Environmental conditions that might also affect the resources (e.g. temperature, rainfall, river outflows, climate change, environmental degradation); and (iv) management measures. In general, the cost-effectiveness of the management system, an important factor in the long term[47], is not routinely monitored. Monitoring may be achieved using fishery-dependent data (e.g. on catch amounts and composition) as well as fishery-independent data (e.g. collected using research vessels). Effective monitoring of these elements requires an early identification of informative, affordable and robust 'indicators', easy to communicate to a wide range of stakeholders as well as an effective system of data archiving and management (see **Section 6.6**). Moreover, data are also collected about the MER activity, data collected, costs, outcomes, etc., to audit the MER performance (see **Section 6.7**).
- **Evaluation**: to systematically analyse monitoring records, to: (i) Develop an understanding of the status and trends of the living resources used and impacted by fisheries ; (ii) Provide a measure of progress towards fisheries management and conservation objectives and targets, with related indicators and performance measures; and (iii) Improve management foresight on emerging threats. A key challenge is on identifying and accounting for uncertainty and related risks in the

[47] Only very well developed and endowed Fishery-MER processes would regularly collect information on the wider environment and socio-economic aspects of fisheries. But the information may be obtained from other institutions (e.g. environmental agencies) or though occasional studies.

assessments and management advice. In addition, the performance of the MER process itself, in terms of meeting the objectives assigned to it, may be conducted (see **Section 6.3**).

- **Reporting**: to inform: (i) The legitimate management authorities for development and management decision-making, raising of internal awareness of the management challenges, successes and uncertainties and proposing eventual corrective measures for adaptive management; (ii) The fishery sector and other stakeholders, including, the cooperating agencies and funding bodies; and (iii) The public at large, as part of the broader public accountability regarding the state of the resources and the management actions, costs and benefits.

The reports may also go to the internal or external audit offices, for use in future evaluations of performance (see **Section 6.7**).

The feedback from reporting consists of the response of the Legitimate Authority after considering the report, its conclusions, and its advice, in terms of new objective and targets and/or new measures. This last step of the process that completes the management cycle is considered to be not specific to OECMs and will not be discussed in any detail in this document

These three main tasks require a continuous or occasional capacity to collect statistics, deploy observations at sea, use remote sensing technology, and use assessment methods and models; to assess the economic and social conditions of the fishery and the state of the resources and related biodiversity in the fishery-MER competence area. Participation of key stakeholders and knowledge holders in the establishment and functioning of the MER is an asset, particularly in capacity-limited situations such as in small-scale fisheries and remote coastal communities. The description of the fishery-MER process and methods should be well documented, as part of the documentation on the fishery management system and specific fishery management plans (cf. **Section 5**).

An abundant literature is already available on MER processes for fisheries and conservation (e.g. for MPAs) e.g. in **Hockings (1998), Pomeroy et al. (2004; 2005), Fancy et al. (2008), Field at al. (2004, 2005, 2007), FAO (2003a, 2009a, b), Cochrane and Garcia (2009),** and **Lindenmayer and likens (2010)**[48] in which more operational guidance can be found.

6.1.2 MER at OECM level

To maintain its status, the OECM must continue to meet the definition and identification criteria adopted in The Decision regarding the biodiversity benefits and additional properties (see **Section 4.2, Step 5**). This implies their translation into management objectives and targets, specific to the OECM but integrated in the fishery management plan (see **Section 5**). Indicators of pressure, status, and trends of relevance to the biodiversity features of concern are then collected by a specific MER (hereafter the OECM-MER) to provide the necessary evidence of OECM performance (cf. **Section 6.3**) and inform its adaptive management.

In a given fishery and fishing area, the OECM-MER and the fishery-MER need to be clearly distinct because of the particular requirement to monitor, evaluate and report on individual OECMs' performance to

[48] See also; California, MPA monitoring action plan: available at https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Management/Monitoring/Action-Plan: MPA Watch at http://www.mpawatch.org/

maintain their status. However, because of numerous operational and ecological interactions, the two MERS need to be integrated. For example:

- Many biodiversity features of concern in the OECM are likely to be also present or migrate outside it, and some biodiversity benefits may spillover from the OECM to the surrounding ecosystem, calling for integrated assessments;
- Collection of similar data with similar means inside and outside the OECM would facilitate assessment of the level of protection provided by the OECM as well as the level of impact of the fishery;
- Even though the biodiversity conservation objectives are fundamental for OECMs, their primary objective is to contribute to the fishery sustainability, a major concern for the fishery-MER;
- Conversely, in an EAF approach, fisheries management already applies conservation measures for non-target species and protected species (e.g. gear regulations, bycatch excluder devices, by-catch quotas, seasonal or permanent closures), calling for integrated assessment of conservation performance;
- Both MER systems need similar services: the MCS system, to ensure compliance; the statistical office, to collect, process and maintain fishery statistics; the research vessel, to collect fishery-independent data; and the fishery research laboratory, the university and environmental agencies, to undertake multidisciplinary assessments;
- The two MER processes report to the same Legitimate Authority, preferably though the same channels, to ensure an excellent integration;
- The fishery-MER and OECM-MER processes are confronted with many common external drivers and pressures (including climate change) and seeking similar outcomes for status, trends and performance; and
- Because of these numerous interactions, the fishery-MER may need to be strengthened to respond to the new or reinforced biodiversity conservation objectives of the OECMs.

As a consequence, the fishery-MER and OECM-MER need to be integrated, just as OECMs need to be integrated in the fishery management plan (FMP) (see **Section 5**). The higher the complementarity and overlapping the fishery-MER and the OECM-MER (e.g. in terms of objectives, targets, management activity and resources), the more integrated they should be. Particularly, in an EAF approach, and for greater efficiency within limited budgets, the OECM-MER may be best conceived as a component of the fishery-MER with specific reporting requirements (see **Section 6.4**). For the same reasons, MER systems covering various fisheries operating in the same "ecosystem", EEZ or transboundary area, or developed in other economic sectors that have spatial or functional areas of overlap, would benefit from coordinating information exchange, and even from some level of integration.

In the OECM-MER, attention is given to those tasks and elements of biodiversity that are additional to those that would have been expected by the fishery-MER from the original ABFM in terms of sustainability of the target species use and eventual broader conservation concerns. The new needs depend on how well the existing fishery-MER programme, under an EAF approach, was already covering broader elements of biodiversity such as non-target species (including threatened and protected species), essential habitats and other biodiversity features of concern. The OECM performance in terms of equitable governance (see **Section 2.2**) might be facilitated in modern fisheries where principles of good governance are already applied unless local adjustments are needed, e.g. in fisheries across overlapping jurisdictions.

A good part of the background information needed to develop the OECM-MER programme[49] is likely to have been already compiled during the identification process (see **Section 4; Table 1**) and a good part of this information may indeed be provided to the identification process by the existing fishery-MER. However, additional information is likely to be needed to better address the specific biodiversity features of concern and other locally relevant values of the OECM. These may be: (i) either collected directly by the OECM-MER through its specific activities (e.g. on-board sampling programme; scientific surveys cruises, special working groups; collaborations; governance process; reports; or (ii) obtained through collaborations with partner-agencies. The new information generated by the OECM-MER may be stored and managed in the data and information system of the fishery-MER, for efficiency reasons. Conversely, the requirement for OECMs to address future threats to biodiversity (including climate change) and issues of representativeness and connectivity (networking) of OECMs, may lead to a need for additional monitoring data and tasks at higher geographical scale, in the fishery-MER itself and at EEZ or ecosystem level (See **Section 5** on integration).

The actions required for developing and running an OECM-MER within the fishery-MER are considered in some detail in the following section in relation to three domains: (1) Strategic planning and coordination; (2) Monitoring and evaluation; and (3) Data and information management.

6.2 Strategic planning of the OECM-MER

Strategic Planning is a systematic process of translating a vision (a desired future) into a strategy (a direction), with broad goals, specific objectives, a sequence of steps, explicit resources for implementation and, possibly, the control mechanisms guiding and controlling the implementation of the strategy (e.g. governance, oversight, management, reporting, and audit cycle). Many elements needed for strategic planning of an OECM-MER –such as governance, goals, objectives, targets, and means of implementation– would usually be "inherited" from the strategic planning of the fishery-MER itself, the FMP and higher-level planning processes. These elements need to be tailored for the OECM specific circumstances, in collaboration with the actors concerned, aiming at coherence in fishery management, inside and outside the OECM, across OECMs and, ideally, within the ecosystems where the fishery operates.

The OECM definition contained in The Decision provides the overarching goal of OECMs as: *to achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and, where applicable, cultural, spiritual, socio–economic, and other locally relevant values*. Other objectives more directly related to the strict sustainability of the fishery of the target species might well be the primary objectives of the OECM but they are not considered in this document as the guidance on conventional fisheries management and monitoring is already abundant. The more specific biodiversity conservation objectives may be set in terms of the desired (i) Status and trends of the biodiversity and other values of concern; and (ii) Performance of the OECM-MER process itself in delivering its expected output (effectiveness and efficiency). Both sets of objectives may be materialized by targets, indicators, and reference values (or benchmarks).

The specific upstream activities needed to plan the work of an OECM-MER include:

- **Describing the types of outputs expected from the OECM MER on biodiversity conservation**. This will help planning efficiently the MER biodiversity conservation-related activities, in addition

[49] e.g. historical information, surrounding ecosystems; geolocation; sources of data and information; stakeholders and potential collaborations; species; habitats; biodiversity features of concern; assessment methods, fishing activities; management measures in and around the area; and bibliography.

to the activities regarding the fishery sustainability itself[50]. The main outputs relate to the assessment of the OECM performance in meeting the biodiversity conservation objectives that justify the OECM status,[51]. A second important output is an assessment of the performance of the OECM-MER in delivering its monitoring, evaluation, and reporting tasks. Both require monitoring and evaluation of partly overlapping elements of the fishery and the ecosystem in which it operates. The MER report to the Legitimate Authority on OECM performance is expected to contain: (i) Data and information on the evolution of fishing operations and other drivers (including external drivers if available); (ii) The evolution of status and trends of the biodiversity features of concern, including the relevant ecosystem services; on the benefits (including harm-reduction) the costs, and their distribution among stakeholders; (iii) The evolution of external drivers (e.g., the global economy, markets, climate change, price of fuel) and on early warnings on impending threats, if any; and (iv) Based on the above, synthetic conclusions on the performance (effectiveness and efficiency) of the measures taken, in the OECM and its surroundings, with eventual considerations or recommendations on mitigation measures.

- **Describing the specific types of tasks assigned to the OECM-MER.** The expected outputs determine the types of tasks which might include: (i) To monitor the biodiversity features of concern and other values of relevance to conservation as well as fishing activities and other pressures and threats, in the OECM and surroundings (in coordination with the fishery-MER); (ii) To assess their status and trends in relation to the specific conservation objectives, indicators and reference values and trends; and (iii) To elaborate management options to maintain good trajectories or correct unsatisfactory ones, based on known or assumed cause-effect relations between status and drivers; and (iv) To assess its own performance as a monitoring process against international reporting and advisory standards (e.g. cost versus benefits; effectiveness; efficiency; timeliness; relevance; accuracy and treatment of uncertainty).

- **Identifying and documenting the additional biodiversity elements to monitor and evaluate**. These elements might include: (i) Biodiversity features of concern such as vulnerable species, communities and habitats; areas important for life cycles, ecological representativeness and connectivity; ecosystem functions and services including food and livelihoods; and (ii) Other features of social, economic, cultural and spiritual importance, contributing to a sense of community and stewardship; (iii) Fishery pressure current and projected (catch, effort); (iv) Other pressures and threats, with their degree of significance and likelihood, possibly getting information from non-fishery sources; and (iv) Governance ensuring equity in the identification of stakeholders, their involvement in the governance process, and the distribution of costs and benefits. These elements (including their historical review) should have been already identified and documented during the OECM identification process (See **Section 4**) and endorsed in the identification decision. They may only need to be initially confirmed in the MER documentation and, as necessary, updated as the OECM and its drivers evolve. The elements to monitor are numerous and the budgets limited. Context-sensitive priorities may therefore need to be explicitly established, based on the relative ecological, social (cultural) and economic importance of the

[50] The performance of the OECM in relation to the fishery and target resources sustainability (usually its primary objective) is of great relevance for the fishery sustainability and Aichi Target 6 and successor targets and for SDGs. An abundant guidance is available for the purpose and this subject is not addressed here.

[51] Secondary important out puts are produced in the process, such as: (i) a data and information management system to maintain records in the long term;

elements, resulting in a subset of elements being highlighted as "key performance elements" for the OECM[52].

- **Identifying the additional biodiversity conservation objectives and targets.** For each of the biodiversity features of concern identified above, the specific objectives and related targets need to be credible for both the fishery and conservation communities. They need to be decided at management level (e.g. when integrating OECMs into the management plan (see **Section 5**) and to be specified in the fishery-MER programme. If additional ones are identified in the OECM-MER process, they will need to be endorsed formally by the Legitimate Authority and retrofitted in the fishery-MER programme and the FMP. Following the Biodiversity Impact Mitigation (BIM) hierarchy[53] (**ten Kate and Crowe, 2014)** the management objective may be to avoid, minimize, mitigate, or compensate (where possible) a specific impact on biodiversity, to either maintain status quo (No Net Loss objective) or restore the element to some reference state (Net Gain objective). Following the Law of the Sea, the reference state for dependent and associated species might be the biomass *below which their reproduction would be threatened* (UNCLOS Art. 61.4). With very similar implications on biomass, the CBD, in Target 6 ,requires that these species *should not be affected by Significant Adverse Impact (SAI)*. As an example: if the element of biodiversity of concern is the trophic chain (as a proxy for ecosystem structure), the goal might be to maintain such structure (with the hope to maintain the ecosystem functions). One objective might be: to maintain the diversity of the apex predators' community.
- **Identifying the related indicators baselines, and reference values and their priority.** Values may be qualitative or quantitative and correspond to each objective and biodiversity features of concern. Most of these might have been determined during the identification process (**Section 4**). Arguments to consider include: (i) Priority given by the Legitimate Authority to the various objectives; (ii) Cost of data acquisition compared to budgetary resources available; (iii) Data versatility (usability across many objectives and OECMs); (iv) Complexity of the indicator elaboration pathway; (v) Ability to communicate status and change; (vi) Precision of the possible assessments compared to that needed for effective dynamic management (signal/noise ratio); and (vii) Support and trust of stakeholders. A large literature is available on the use of indicators for policy development and management both in fisheries and conservation (see for example **Garcia et al., 2009; Pomeroy et al., 2005; Addison et al., 2018**). For the trophic chain example used above, the variables would be the abundance of the apex predators' community species. The related indicator[54] would be a diversity index (species richness and/or abundance or evenness) of the community. The relative target (reference value) would be some adequate value of that diversity index observed at some time in the past or projected by simulation. The performance measure would be the ratio between the observe diversity index and the reference value for that index in well-functioning communities of the same type or in the same areas sometimes in the past. The indicators could conveniently be organized along the Pressure-State-

[52] The concept of "Key Performance Measure" is not foreseen in the Decision 14/8 but would reflect the degree of "flexibility" that the Decision provides for States in implementing the Decision.

[53] The use of the BIM hierarchy is recommended in CBD Decision 14/8, Annex IV,C, §5e),

[54] Indicators should ideally be institutional (part of the decision system), relevant, consensual, up-to-date, timely, representative, responsive, accurate, tested, precise, robust, stable overtime, affordable, practical and functional, cost-effective, optimized, flexible, easy to integrate or aggregate, commented(explained) and communicable (understandable) (**Garcia, Rey-Valette and Bodiguel, 2009**)

Response framework (PSR) and its variants (**Moldan et al., 1997; Chesson, 2013**) and the MER would track the current pressures and impending threats (P) on the status and trends (S) of assets; and the management responses (R), clarifying cause-effect relationships between P, S and R. Priorities among baselines, indicators and reference values may be determined on the following arguments: (i) Priority given by the Legitimate Authority to the various objectives; (ii) Cost of data acquisition compared to budgetary resources available; (iii) Data versatility (usability across many objectives and OECMs); (iv) Complexity of the indicator elaboration pathway; (v) Ability to communicate status and change; (vi) Precision of the possible assessments compared to that needed for effective dynamic management (signal/noise ratio); and (vii) Support and trust of stakeholders. A large amount of literature is available on the use of indicators for policy development and management both in fisheries and conservation (see for example **Garcia et al., 2009; Pomeroy et al., 2005; Addison et al., 2018**).

- **Listing the additional management measures applying in the OECM.** Some of the measures to be applied in the OECM might have been in place already in the ABFM before becoming an OECM and should be already integrated into the overall fishery management plan and monitored. Additional measures, or modification of existing measures, may be needed, to reach the additional biodiversity conservation objectives. These measures might have been considered already during the identification process and proposed to the unit of the Legitimate Authority in charge of management. Following the trophic chain example above, the actions needed to achieve the objective of maintaining (or rebuild) the apex predators' community could be to eliminate the gillnet fishing mortality on the species concerned, e.g. by (i) banning the gear in the OECM or (ii) changing the gear specifications to modify its selectivity and avoid such species. The measure of performance (in terms of harm reduction) would be: (i) confirmation that all gillnets have been eliminated (and no alternative source of mortality was introduced) or (ii) the reduction of the apex predators' species bycatch. It should be noted that if these apex predators are also taken by the same or another fishery outside the OECM, as they migrate in and out of the OECM, coordinated bycatch reduction measures will be needed outside the OECM to avoid reducing or losing the net conservation benefits[55]. Such outside measures are not part of the OECM management responsibility but should be considered by the fishery-MER and the management authority to improve the overall biodiversity conservation performance in the fishery.
- **Listing the elements to monitor in order to assess the OECM-MER performance.** It is important, to check not only whether the OECM-MER is effective (obtaining the expected outcomes) but also efficient (in obtaining them at the lowest possible cost. Consequently time series of records should also be collected concerning the OECM-related investments in management, e.g. : (i) Collection of the broad range of monitoring records, processing and managing them; (ii) Assessment of status and trends (research costs); (iii) Control and surveillance, to assess compliance with the regulations applying into the OECM; and (iv) Administrative and other costs of running the OECM-MER. These costs might be directly supported by the OECM-MER budget –likely a subset of the fishery-MER budget)– but may also be incurred by collaborating services and agencies

[55] If the same species were affected negatively inside the OECM, by pressures from other sectors, e.g. by collision with tankers, and the expected biodiversity benefits from fisheries measures could not be ensured, the OECM ought to be delisted or, better, a cross-sectoral agreement could be sought (with the lead or support of the State as necessary) to eliminate, reduce or mitigate the external impact. In case of climatic unfavourable events or trends (e.g. in the case of reduced productivity, coral bleaching), efforts should be made to proportionally reduce the fishing pressure in the OECM and possibly in the fishery itself.

contributing to the OECM-MER. It is important to note that in well-managed fisheries the cost of OECMs management represents a marginal and hopefully affordable cost increase of the fishery-MER system.

- **Selecting monitoring and assessment methods specific to the OECM-MER (if any)** e.g. to describe the change in the status of the biodiversity features of concern or the pressures exerted on them. Following the example above, how will the species diversity, abundance, or biomass of apex predators as well as the fishing pressure and its impact be measured over time? Again, some of the methods used in the process of identification of OECMs to assess pressures, threats, risks and biodiversity benefits are likely to be used also for the recurrent assessments conducted in the OECM (see **Section 4.1**). The methodology could improve with time as the MER system collects more data, masters new methodologies, or acquires new competences. The flexibility foreseen in The Decision, regarding the identification process, also applies *mutatis mutandis* in the MER functioning, for the same reasons, including objective limitations in the data and capacity available. The methods to be used in each national and ecological context need to be explicitly defined, e.g. as Standard Operating Procedures (SOPs), in order to ensure a level of standardisation, consistency and coherence across fisheries, time and space, in data collection, processing, analysis and interpretation of changes in the indicators. In areas where capacity is sufficient, the Management Strategy Evaluation (MSE) process used in advanced fisheries management programmes, modified to deal with broader biodiversity values (cf. **Smith at al., 2007**) could be used test the robustness of SOPs to uncertainties in data, assessment methods and decision processes. Methods for quick or in-depth assessments, using local knowledge, expert views, or sophisticated simulations may be combined to deal with different features, varying budgets (to optimize costs) or account for sensitivities or needs of the evaluators and decision-makers.

- **Identifying and strengthening the competences and collaborations available.** Possible activities in that direction include: (1) To identify the potential participants of a collaborative process; (2) To establish formal collaborations with institutions and organisations monitoring the ocean environment, biodiversity and social and economic parameters; (3) To identify additional sources of data and assessment competence (e.g. on seabirds, marine mammals, turtles, seahorses, snakes, depending on objectives and expected biodiversity outcomes) and as partners in MPA and OECM networks (increasing mutual trust). These collaborations should be taken into account in the fishery-MER.

- **Describing the types of outputs expected in the MER report** on the biodiversity features of concern[56]. Identifying the specific outputs expected from the OECM-MER, in its three major programme areas (monitoring, evaluation and reporting) on the situation and performance of the OECM and of the OECM-MER, will help planning efficiently the MER activities in these areas. The MER report to the Legitimate Authority is expected to contain: (i) Data and information on the evolution of fishing operations and other drivers (including external drivers if available); (ii) The evolution of status and trends of the biodiversity features of concern, including the relevant ecosystem services; on the benefits (including harm-reduction) the costs, and their distribution

[56] The performance of the OECM in relation to the fishery and target resources sustainability (usually its primary objective) is of great relevance for the fishery sustainability and Aichi Target 6 and successor targets and for SDGs. An abundant guidance is available for the purpose and this subject is not addressed here. See for example: **Hockings (1998), Pomeroy et al. (2004; 2005), Fancy et al. (2008), Field at al. (2004, 2005, 2007), FAO (2003, 2009a, b), Cochrane and Garcia (2009),** and **Lindenmayer and likens (2010)**

among stakeholders; (iii) The evolution of external drivers (e.g., the global economy, markets, climate change, price of fuel) and on early warnings on impending threats, if any; and (iv) Based on the above, synthetic conclusions on the performance (effectiveness and efficiency) of the measures taken, in the OECM and its surroundings, with eventual considerations or recommendations on mitigation measures. This last part of the report should be drafted so as to facilitate the elaboration of the report to be submitted to WCMC. A separate report might also provide an appraisal of the performance of the MER programme itself (self-evaluation) with suggestions for improvements.

Having undertaken the upstream activities indicated above, the MER tasks may be undertaken as suggested below (**Sections 6.3 to 6.5**)

6.3 Monitoring and evaluation of performance

As stressed earlier on, two aspects of performance need to be considered: (i) The performance of the OECM area (with the measures applied into it) in delivering the expected biodiversity outcomes; and (ii) The performance of the OECM-MER system or programme, in discharging its monitoring, evaluation and reporting tasks. These two inter-connected aspects are examined below.

Because this is an important point in The Decision, we should stress that the consent of the Legitimate Authorities that is needed for the identification process would necessarily imply a consent to monitor and evaluate the OECM performance in the longer term, with the means available and, as appropriate, support from the State and/or collaborating institutions.

6.3.1 Ongoing assessment of the OECM performance

The performance of the OECM is assessed in terms of its effectiveness, i.e. its capacity to inform management on the extent to which it reaches its fishery and conservation objectives and targets (**see Section 6.2**). It may also be assessed in terms of efficiency, i.e. its capacity to do so at the lowest possible cost.

In this document we consider only the performance in relation to biodiversity conservation objectives and targets, on which a decision to maintain, improve or delist an OECM may be taken. Following the Biodiversity Impact Mitigation (BIM) Hierarchy, the performance may be taken to relate to the degree to which the area-based measures succeeded to successively : (i) avoid collateral impact of fishing on the biodiversity features of concern; if not possible, (ii) reduce the residual impact of fishing to the extent possible and in any case below the level at which it would be considered a Significant Adverse Impact (SAI); (iii) rebuild the biodiversity features when the impact is too high; or else (iv) compensate for the impact, usually elsewhere (off site). The result is to maintain the biodiversity values of concern (No Net Loss) when they not under SAI, or otherwise to increase such values as needed (Net Gain). The rebuilding, performance may also relate to the speed at which the OECM benefits are improved compared to expectations. It must be stressed, that compensation is not foreseen in UNCLOS as all impacted resources must be maintained *in situ* or rebuilt at their safe level[57] (**Squires and Garcia, 2018**). The extent to which this would apply to essential or vulnerable habitats, however, is not clear.

Such performance reflects necessarily the quality of: (i) The OECM area, e.g. the fit between the area boundary (its location) and the biodiversity features of concern it intends to protect); (ii) The measures applied in the OECM area and, possibly, around it (e.g. access rules, gear regulations, and fishing

[57] Be it the level at which their maximum sustainable yield (MSY) can be obtained, or above the level at which their reproduction would be threatened.

practices); and (iii) The degree of participation of the actors directly impacted by the measure and the related enforcement effectiveness. The data and analyses required are similar to these undertaken during the initial identification process (see **Section 4, step 4**), albeit more focused, and conclusions will be updated.

A comprehensive OECM performance also requires a check on the "additional properties" of the OECMs, i.e. their representativeness, connectivity, complementarity with the other protected areas around them, and their integration in broader networks (**Section 4, step 5**), even in circumstances where these properties may not be expected to change much with time. The eventual evolution of governance in terms of identification and participation of actors and equitable distribution of costs and benefits among them needs also to be checked. Performance with regard to these properties would not threaten the OECM status but could affect its performance on biodiversity conservation.

As stressed a few times in this document, the benefits expected from OECMs relate both to usual ABFM primary functions on the narrow "fishery sustainability"[58], and to the broader biodiversity conservation even though some of these biodiversity benefits are already expected under an Ecosystem Approach to Fisheries management (**FAO, 2003a**). Because of ecological interconnections, the benefits of the measures applied inside the OECM might be measurable inside the OECM (e.g. for resident species and habitat) but also outside it, in the fishery and beyond, in the surrounding ecosystem with which the OECM biodiversity interacts, e.g. through passive transport of propagules (e.g. of eggs, larvae, juveniles), active foraging movements in and out of the OECM by resident or external fish, or live cycle migrations.

A rich assessment methodology exists, developed in fishery and conservation science (**cf. Section 4.1**) and will not be described here. The assessments must be conducted in a timely manner, facilitating a rapid management response, or fulfilling the commitment to legislated reporting frameworks. A capacity to respond also to ad hoc questions from the authority (e.g. in case of unexpected events) would also be essential.

The necessary tasks rely on the information collected during monitoring and include:

- **Selecting indicators.** For each OECM objective and target, a range of indicators might be considered. A selection could be made based on their: (i) Measurability; (ii) Affordability, i.e. data acquisition costs, relative to budgets available; (iii) Versatility, i.e. usability across many objectives or OECMs; (iv) Elaboration complexity, relative to research capacity available; (v) Precision, relative that needed for effective dynamic management (signal/noise ratio); (vi) Clarity, of the relation between the changes in the indicators and in the feature of concern; and (7) Easiness of communication and trust/support of stakeholders. A large literature exist on the use of indicators of fisheries sustainability (e.g. **Chesson and Clayton, 1998; FAO, 1999**; **Garcia, Rey-Valette and Bodiguel, 2009; Anderson et al., 2015;)** and for biodiversity conservation **(BIONET and IUCN, 1997; Ablan et al., 2004; Pomeroy et al, 2004; 2005; CBD, 2005; Biodiversity Indicators Partnership, 2010; 2011**). We will not address the subject in any detail in this document and only advise to use the best practices corresponding to the data and competences available focusing on the properties the OECM has asserted to have and what consequences it was expected to produce.

[58] The primary purpose of an OECM in fisheries is to contribute to the sustainability and economic viability of the fishery on target species. This aspect of its performance is central for the Fishery-MER but it is not addressed in this document, although the performance of the OECM in fulfilling its broader biodiversity conservation objectives reflects on the performance of the Fishery-MER within which it is integrated and, to some extent, on the performance of the integrated fishery management plan, in which the biodiversity conservation objectives are listed.

- **Analysing trends in:** (i) fishing operations as the main source of pressure, inside and around the OECM, which impact the various elements of concern; (ii) **external drivers** such as the global economy parameters of relevance; markets demands; climate change; fuel price; and their observed or potential impact on the elements being assessed; (iii) **impending threats and related risks** (potential impacts) from the fishery sector and as much as possible from other sectors[59]; and (iv) **status of biodiversity and other values of concern, including ecosystem services**, updating the archived historical records and improving the understanding on causal relationships between changes in pressures and biodiversity values. Understanding trends and their changes is important to assess the effect of a measure and to correct it if necessary. To be able to understand trends and their changes, it is essential to understand the "natural" variability of indicators, so as to distinguish a reliable signal of change (e.g. due to the introduction or change of a measure) from the ambient "noise". This is not easy to achieve in complex ecosystems with numerous interacting variables, but the thorny problem may be mitigated by integrating the related risk of error in the definition of the performance measure (the higher the variance of the indicator, the more precautionary the benchmarks).
- **Assessing the OECM performance with regard to biodiversity conservation** is a central product of the OECM-MER, needed to verify that the OECM status of the area has been maintained. Performance is assessed by comparing the status and trends of the biodiversity features of concern to the related objectives and targets. If the fit is good, the measures in the OECM might be operating as expected. If not, the measure may need to be changed. If the trend is right but slow, the measure may need to be adjusted, or the reaction time might have been underestimated. As stressed above, however, success and failure may always be due entirely or in part to a contrasting environment. In addition, the OECM performance is related to numerous indicators corresponding to the different biodiversity values of concern and their trends are unlikely to be perfectly synchronized (e.g. trends in predators and preys may be opposite and with different response times). Consequently, definitive conclusions on performance will require sufficient time for the cause-effect relations to be stabilized and understood. Comparisons with similar types of OECMs elsewhere would be useful. The conclusions reached in the OECM, eventually complemented by conclusions obtained in the fishery-MER, should show how effective management is in maintaining or improving the biodiversity features and other values of concern and in controlling fishing pressure in the OECM area.
- **Assessing the "additional" properties of the OECM.** These properties were described in **Section 4, Step 5**, and refer to: (i) representativeness, (ii) connectivity, (iii) complementarity, and (iv) integration, as well as governance. They may enhance the OECM effectiveness and strengthen but do not condition the rationale for their identification. Hence, they can affect the improvement of the performance of the OECM but do not threaten their status unless serious mistakes were made in the identification. Properties (i) to (iii) relate to the relations between the biodiversity inside and outside the OECM, and may change with time as biodiversity evolves and knowledge improves. Property (iv) may change if the integration of the OECM in the management plan and the OECM-MER changes. The effectiveness of this integration would also be an argument for the assessment of the OECM-MER performance (see **Section 6.3.2**).

[59] I cannt be expected that the fishery sector will be able to face the cost and have the competence to assess trends in threats emanating from other sectors, but the MER might be able to at least inform itself on such threats, as far as they may be foreseable, and report on what is known about them, based on external sources..

- **Elaborating options for new or improved measures** in the OECM or around it, is essential in case on unsatisfactory performance, to improve it, e.g. for additional harm reduction and faster recovery, better cost optimization or improved distribution of costs and benefits among sub-sectors and coastal community groups. Depending on the governance system, the OECM-MER may be asked to recommend a particular option, with the rationale for the preference.

The activities above are presented in sequence but they are likely to be undertaken in parallel, interacting with each other. The results might be highly technical but need to be expressed in a way comprehensible for all stakeholders. For a more intuitive understanding, the results can be used to elaborate a dashboard for the OECM, ideally integrated in the fishery-MER dashboard (see **Figure 3** and its legend for explanations; see also **Garcia, Rey-Valette and Bodiguel, 2009** for more details and illustrations).

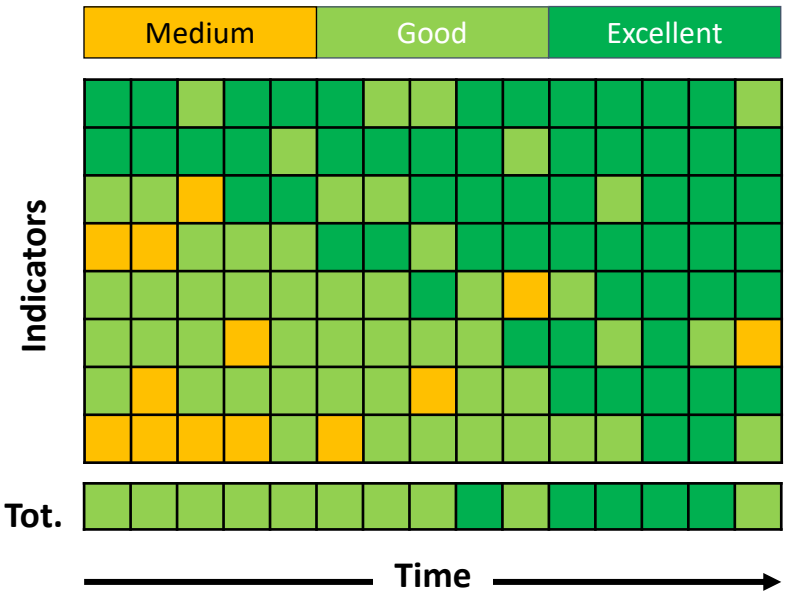

Figure 3: Theoretical intended evolution of a set of indicators (of biodiversity values and or pressures) with time, in an OECM, and overall score (Tot, bottom row) using a standard color-coding. The medium, good, and excellent performance (and related scores) may be defined for each indicator as the time series develop) by comparing the observed state at each time interval to the reference values adopted for the OECM. In this example the overall trend is positive as the proportion of indicators being scored as "excellent" increases with time. An opposite trend would call for corrective measures.

6.3.2 Ongoing assessment of OECM-MER performance

The performance of the OECM-MER system or programme can be judged by the extent to which it functions according to operational objectives and plans when : (i) Collecting the data needed for the assessment of the OECM and OECM-MER performance; (ii) Undertaking the assessments required for both, including responsiveness to unexpected situations; and (iii) Timely and accurately reporting on both to the Legitimate Authority (see **Section 6.4**) with adequate recommendations for its improvements through adaptive management. The performance of the OECM-MER reflects necessarily on that of the fishery-MER into which it is integrated and, by extension, on that of the whole fishery management plan.

It would be part and parcel of the activity report of the OECM-MER, likely integrated in the activity report of the fishery-MER. Such a report would contain a detailed compilation of e.g., the scientific surveys, sampling plan, and other data collection activities; data processing and storage; assessment activities including working groups; methodological developments in data collection and assessments; collaborations and participation; funding and expenses. The comparison between planned and effectively undertaken activities will provide an assessment of performance.

Many elements condition the performance of the OECM-MER, as any MER, e.g.: (i) Quality of its sampling programme, its continuous optimisation and adaptation over time ; (ii) Access to modern technology (e.g. research vessels, remote sensing, digital mapping, underwater video, data management, and assessment software); (iii) Its success in establishing institutional collaborations and active participation of stakeholders e.g. in collection of information and assessments and communication; (iv) The quality of its reports, their accuracy, timeliness, accessibility to all stakeholders; (v) The quality (safety, durability) of its data and information management system; and (vi) Its responsiveness to unexpected negative events and auditing recommendations. These issues are not vastly different from what they are for fishery MER itself, and often must be resolved at that level. They are not addressed further here.

The performance of the OECM-MER and that of the fishery-MER are inter-dependent as the two programmes share financial, technical, and human resources, produce overlapping or complementary outputs, and their respective contribution to ecosystem-level outcomes is hard to separate[60]. Moreover, OECM-MER programmes may be organized differently in different countries but, usually, would have to rely on external services for part of their work (e.g. for some categories of data or assessments regarding landings, compliance or climate) on which the OECM-MER does not have control, but may influence through collaboration and feedback. It is therefore important to clearly define the specific responsibilities of the OECM-MER in order to correctly measure its performance and conceive corrective measures when needed.

The performance of the OECM-MER ought to be assessed internally (self-evaluation, internal audit) and could be supplemented by an independent third-party auditing process, if so desired, probably at a lower frequency. The OECM-MER may be assessed alone, but for practical reasons should rather be assessed together with that of the fishery-MER with which it is integrated.

6.4 Reporting through the legitimate Authority

The Decision (Annex IV, Section 4) refers to “reporting” on OECMs, asking Parties to:

- Improve the frequency and accuracy of reports, maximizing use of existing mechanisms;
- Enhance the reports’ visibility and encourage their broad multidisciplinary analysis;
- Ensure that management is well informed to facilitate adaptive management;
- Build the capacity to report and analyse management effectiveness analyses;
- Build the political support to timely and effective reporting;
- Engage indigenous peoples and local communities in assessment and reporting;
- Develop and foster communities of practice

Regular reporting on the performance of fishery management measures –whether area-based or not– is one the most important purpose of the fishery-MER. These reports are needed by the Legitimate Authority primarily, for adaptive management of the fishery but are also often a requirement to inform

[60] Because of the numerous interactions between the OECM ”ecosystem” and the broader ecosystem aound it and in which the fishery operates.

the Government and justify the budget. For broader accountability and in appropriate formats, these reports may also be made available to the public at large. Such reporting requires procedures, standard, schedules, and formats established at the sector level (see **Section 6.4.1**).

At international level, The Decision (§6) *encourages the relevant authorities to …submit data on OECMs to UNEP-WCMC for inclusion in the World Database on Protected Areas on OECMs (WDPA-OECM-)* so that they can be taken into consideration when reporting on Aichi Target 11 and, presumably, in the Post 2020 Global Biodiversity framework as well as the 2030 Sustainable Development Goals. The implications are discussed in **Section 6.4.2**.

6.4.1 Recurrent reporting

The suggested structure of a Recurrent Report is similar to that of the Identification Report detailed in **Section 4, step 6.2.** The descriptions of the fishery and the OECM may be relatively stable across years, requiring little or no updating. The evolution of the biodiversity features of concern and their drivers is the central part of the recurrent performance report and will show whether features have been maintained (No Net Loss) or improved (Net Gain), as expected, or degraded (net loss). The negative outcomes will obviously require more comprehensive information, including the possible causes, e.g. changes in pressures and threats in and around the OECM (including climate change), poor management, or weak compliance. Specific advice and –if requested– recommendations for corrective action will be essential for an effective adaptive management, possibly indicating the related costs and benefits and their distribution among stakeholders.

Considering the complexity of cause-effect relationships and feed-back loops in complex social-ecological systems, the causal linkage between the changes observed in the OECM (or the fishery) and the various potential drivers of such change may not always be straightforward. In any case, the measures that may be considered to counter negative trends may range from minor tweaking of the management regime (which can be done without affecting the status of the OECM) to its complete revision (cf. **Section 8**).

The frequency of the Recurrent Reports will be a local/national decision, based on the degree of urgency of the features restoration, the features expected rate of change, the evolution of the drivers of change, and the means available. This frequency will in most cases be at least as frequent as the frequency of revision of the Fishery Management Plan[61], so that the implications of any changes in the FMP are considered in the OECM report and vice-versa. A less frequent reporting scheme may be needed when multi-annual management plans are implemented. Some lag time can be expected between the implementation of measures in an OECM and the detection of their impact in the ecosystem monitoring. Notwithstanding, the urgency of some of the OECM objectives (e.g. in relation of threatened species), may justify more frequent reviews than determined by the timing of FMP revisions. The necessary scope of reviews undertaken to address urgent objectives can be decided on a case by case basis, depending on the nature of the objective and the threats and pressures addressed by the OECM, but should be agreed when the MER is established. A short report may also be needed in case of significant change in management around the OECM, e.g. in the size of TACs and quotas, or when the results of new research programs may significantly affect the understanding on the basis which the OECM was identified and managed.

Reports should be made publicly available, with due considerations of confidentiality rights.

[61] FMPs tend to be increasingly multi-annual

As a separate document, or as a clearly separate section (not necessarily transmitted to WCMC), the OECM-MER system should report on its own implementation process, e.g. (1) Financial, human and technological resources mobilized; (2) Participatory processes; (3) Sampling schedule; (4) New data collected; (5) assessment competences mobilized; (6) Extent to which the OECM-MER implementation plan was respected; (7) Lessons learned and improvements suggested, including an analysis of their costs and benefits (cf. next section). Similarly, the interaction, synergies, or conflicts between the OECM-MER and the fishery-MER should be reviewed.

6.4.2 Reporting to UNEP-WCMC

The Decision (§5) *encourages the relevant authorities to… (i) submit data on OECMs to UNEP-WCMC for inclusion in the World Database on Protected Areas on OECMs (WDPA-OECM* (§5b) so that they can be taken into consideration when reporting on Aichi Target 11 and, presumably, in the Post 2020 Global Biodiversity framework as well as the 2030 Sustainable Development Goals.

Reporting to WCMC about the initial identification of an OECM has been examined in **Section 4, step 7**. This report can be updated as often as decided by the Legitimate Authority and, in any case, every 5 years in response to calls from WCMC for updating the country information (**UNEP-WCMC, 2019**). The recurrent reports indicate any change in the formal characteristics of the OECM (location, name, status, size, governance and management system, conservation objectives, etc.) and, if so desired, in the detailed evidence that the OECM still matches expected Guiding Principles and Criteria, i.e. all or a summary of the OECM-MER report. When circumstances require it, revisions of the OECM status might be necessary (cf. **Section 7**).

The specific issue of the possible reporting of RFMO/As on their OECMs has been addressed in **Section 4, Step 7.**

6.5 Archiving and communication

The data collected and information generated by the assessments represent a significant cost as well as an asset of significant economic value for the adaptive management system. As such, they need to be preserved (archived and maintained) and communicated broadly to all interested stakeholders, including auditors.

6.5.1 Archiving

The reports and all related numerical or narrative data and information, including local knowledge, should be safely stored in an information management system established in an accessible archive of an appropriate governmental agency, carefully considering the information standards (e.g. formats, software, languages) and rules, to ensure proper data input and consistency checks, workflows, data access and exchange protocols (confidentiality) and integrity of the databases. This is important for historical and institutional memory, retrospective reviews and long-term performance appraisal, consistency in monitoring and evaluation, adaptive management, etc. Because of the degree of flexibility granted by the CBD Decision for the assessment and management approaches used, systematic archiving allows maintaining the "pedigree" of each OECM (e.g. date of creation; Legitimate Authority responsible for the creation; data available; time period covered; methods used; measures applied in the OECM; results obtained, etc.) which allows an objective opinion on the relative robustness of the OECM and an informative track of its evolution.

As the OECMs identified in fisheries will usually have a sustainable use as a primary objective, and will be integrated in the FMP, they will need to be archived in the same information repository as other related

and interconnected measures taken in the sector. However, as they also contribute to conservation and may have strong cross-sectoral dimensions, they may need to be archived also with other Ministries and/or at State level, reflecting national policy and practice.

The task of keeping all national repositories synchronized is not to be underestimated but, as stated above, the WCMC database represents de facto a unique inventory of protected areas of different types and origin with regrouped and checked metadata, accessible on maps as a proxy national observatory. The national (and WCMC) registry serves as institutional memory and can be used for recurrent monitoring and evaluation of long-term performance assessment.

6.5.2 Communication to a diverse audience

The practice to broadly communicate on governance decisions and performance is part of equitable governance good practices. The results of the OECMs identification process, their performance and corrective decisions, should obviously and officially be communicated by the Legitimate authority to the auditors as well as all fisheries managers and fishers and other stakeholders such as the scientific community and conservation and fisheries advocacy groups. In particular feed-back information will be appreciated by all those who have contributed time, information, and competence to the process, using adequate communication means (e.g. governmental channels, social media, beach radios and TV news). This might be done also in local languages where appropriate, catering for a diverse audience in both fisheries, conservation and other sectors. This process will be facilitated if, consistent with principles of equitable governance, a high level of active participation has been provided throughout the entire process. It may require specific efforts to tailor the information communicated to different types of recipients, with different levels of formal education, and in local languages.

6.6 auditing

Auditing is part of the general task of evaluating performance of any programme, particularly when using public funding. Auditing is not explicitly addressed in Decision 14/8 and is therefore not formally required for OECM identification and management. However, auditing would be important to reassure the fisheries and conservation stakeholders of the quality of the OECM management and of its alleged outcomes and it could be undertaken at national level if so decided by the Legitimate Authority or the State, for oversight and accountability. Auditing may also be undertaken by an accredited third party. In such a case, MER reports should systematically be submitted also to the auditors.

Ideally, for practical reasons, OECM auditing should be undertaken as part of the auditing of the broader fishery management of the fishery/sector within which the OECM(s) operate, unless decided otherwise, e.g. because of the urgency required by some threatened biodiversity features. In the context of OECM performance, an audit would seek to ensure that: (1) The indicators of performance of the OECM in relation to the biodiversity features of concern fairly reflect the performance of the OECM as required in the CBD Decision 14/8 Principles and Criteria; and (2) The MER Programme is conducted in an economical, efficient and effective manner (adapted from **INTOSAI WGEA, 2007**).

The action needed would include:

- **Defining the auditing protocol.** This may be done by the auditors with the Legitimate Authority and in collaboration with the MER authority, so that the MER is well informed and can collect and archive all the necessary information.
- **Audit the performance of the OECM(s)** against OECM Principles and Criteria, possibly in connection with the audit of the FMP itself.
- **Audit the functioning of the OECM MER itself** to certify the wise use of funds and resources.

- **Communicate the non-confidential conclusions of the audit**, through all available communication means, to all fishery and conservation managers and to the public.

There is no detailed guidance yet on how to conduct such an audit of an OECM but there is broad guidance on auditing and particularly on auditing biodiversity (e.g. INTOSAI WGEA, 2007), environmental auditing (INTOSAI WGEA, 2007a) and auditing in the perspective of Sustainable Development Goals (SDGs) (INTOSAI WGEA, 2019).

7. REVISION OF THE OECM STATUS

If a periodic OECM-MER Report indicated significant and sustained reductions in the effectiveness or outcomes of an OECM, requiring more than a simple tweaking of the management regime, the Legitimate Authority could logically consider (i) a major revisions of the OECM (its characteristics and the measures applied into it as appropriate) to improve the performance and outcomes, or (ii) dropping the area from being reported under global biodiversity targets/ and from the WCMC or other archiving sites. The exact processes for making such decisions have not been spelled out yet anywhere but it can be assumed that the same bodies and processes described in **Section 4.7** would be activated to review the new information and its implications with the thoroughness applied in the Identification stage.

Minor oscillations of the components of OECM performance from year to year are to be expected, due to natural oscillations in the ecosystem as well as estimation errors or minor unexpected changes in fishing operations. Appropriate corrective action falls within the remit of "ordinary" management of the OECM (see **Section 5**) and will not be discussed here. If a periodic OECM-MER Report indicated major and(or sustained reductions in the effectiveness (and outcomes) of an OECM, "extraordinary" measures would logically be recommended. As the first choice, a substantial revision of the OECM parameters might be considered to improve the situation (e.g. in its size and boundaries; the management measures inside and around it; its governance). If no improvement was considered possible, or worthwhile, the OECM ought to be delisted from the national archive and the WCMC OECM global database. The exact processes for making such decisions have not been spelled out yet anywhere but it can be assumed that the same bodies and processes described in **Section 4 (Step. 7)** would be activated to review the new information and its implications with the thoroughness applied in the Identification stage.

UNEP-WCMC operates a 'take-down' policy, allowing a withdrawal of all or a portion of the data from the database under various circumstances (breach of copyright, confidentiality, defamation, or libel). A similar and simpler procedure may be used for States to revise their OECMs records, if required following a MER performance assessment.

Actions needed prior to and for revisions are described below.

7.1 Prior to revisions

- **Determine the periodicity for considering revisions.** Based on scientific and other evidence, the Legitimate Authority may decide whether revisions: (i) Should occur with their own periodicity, e.g. required every 5-10 years, by default, unless special conditions (to be listed) call for it; (ii) Are synchronized with the process established to revise the FMP, e.g. annual or multi-annual; (iii) are synchronized with the reporting schedule established for the reporting to WCMC (see **Section 6.4.2**); or (iv) Triggered by negative OECM-MER conclusions regarding. For example, such triggers might include an inadequate performance on conservation objectives, questioning the OECM

initial qualification; an inadequate performance on the narrow fishery sustainability objectives, questioning the ABFM status itself, regardless of the biodiversity outcomes; environmental change in the OECM or background that significantly affects performance; and significant change in the interactions with other economic sectors with potential consequences on the OECM status.

- **Determine the type of triggers and threshold values** that would lead to recommending a major revision or deletion from reporting, and could be integrated in decision rules. In many cases, determining critical levels may not be straightforward and comparisons with experience elsewhere and a precautionary approach would be necessary. However, specifying triggers and threshold values can greatly facilitate timely action on revisions, when they are appropriate to undertake.

7.2 To undertake a revision

- **Follow the assessment process of identification (Section 4)**, retrieve the information used for identification and that produced by the MER. Identify the steps that might have to be revised. The factors for an effective revision are similar to those of the identification (e.g. research capacity, collaborations, available data).
- **Avoid "over-reaction"** and take into account expected "natural" variations in system components as well as uncertainties in assessment and management before modifying the management regime. With time, the "normal variance" of performance may be appraised and explicit tolerances for deviations from the expected trajectories could be set. However, at the beginning, there is likely to be a weak basis to decide whether an observed change is "signal" of concern signalling inadequate performance of the OECM, or a "noise" characteristic of the system, to be noted but not calling for a regime change. High variability in the "properties" of an area would justify caution in its identification as an OECM.
- **If needed, suspend temporarily** the OECM from the WCMC database[62], while withholding a more permanent decision on its total removal until there is greater confidence that the unfavourable status and outcomes of the area are likely to persist. If the MER Reports are timely and of quality and if management responses to it are swift and effective, the corresponding revisions of specific measures or expectations could be fast enough to not necessitate a suspension.
- **Report as appropriate about the revision to CBD and in the OECM database handled by WCMC**.

8. GLOSSARY

Area-Based Fishery Management Measure (ABFM): Formally established, spatially defined, fishery management and/or conservation measures, implemented to achieve one or more intended fishery outcomes. The outcomes of these measures are commonly related to sustainable use of the fishery. However, they can also often include protection of, or reduction of impact on, biodiversity, habitats, or ecosystem structure and function. (CBD COP Decision 14/8).

Benefit: A positive biodiversity outcome that may include: (1) Maintenance or increase in biodiversity

[62] The WCMC manual does not refer to this option. Therefore, its feasibility should be checked with the WCMC Secretariat which is dedicated to support CBD parties in their effort..

biomass, abundance and diversity, as well as habitats of concern, i.e. contributing to No Net Loss, or Net Gain; (2) Reduction of threats and risk of biodiversity loss, e.g., reducing the potential damage and/or the likelihood that the threat materializes, or both. Benefits are intended hence reflected in the management objectives (based on CDB Decision 14/8, Annex III, 1, d). **See also co-benefit**.

Biodiversity features of concern: In fisheries, the specified elements of biodiversity for which protection from excessive impact of fishing is expected, and in relation to which the OECM performance is assessed. The area itself may well still be exposed to selected fishing activities, but the allowed fishing would occur in ways that significantly reduce or eliminate the negative impact on these features, within the area.

Bycatch: Part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. Some or all of it may be returned to the sea as discards, usually dead or dying. Such term does not include fish released alive under a recreational catch and release fishery management.

Candidate-OECM: in fisheries, an area-based fishery management measure (ABFM, closed area) that has been assessed as adequately meeting the CBD Decision 14/8 Criteria for OECMs and is submitted to the **Legitimate Authority** for final decision.

Co-benefit: Or collateral objective: A positive biodiversity outcome that is generated in addition to the intended benefits but not foreseen or not considered as objective ((based on CDB Decision 14/8, Annex III, 1, d).

Discards: Target and non-target fish caught and returned to the sea, dead or alive, whether or not brought fully on board a fishing vessel, because of lack of market, lack of space in hull, physical damage, and legal requirement regarding *inter alia* minimum size limits or quotas or protected species.

Equitable governance: a governance in which "good governance" principles, as developed by the United Nations Agencies and other organizations, are adopted, and applied…irrespective of governance type. It requires recognition (or rights, identities, and values), inclusive decision-making procedures and equitable distribution of costs and benefits among actors. Its decisions are taken and implemented legitimately, competently, inclusively, fairly, with a sense of vision, accountably and while respecting rights (**from CBD Decision 14/8, Annex II,B,8**).

Free, prior, and informed consent (FPIC): a specific right that pertains to indigenous peoples and is recognised in the United Nations Declaration on the Rights of **Indigenous Peoples** (UNDRIP). It allows them to give or withhold consent to a project that may affect them or their territories. Once they have given their consent, they can withdraw it at any stage. Furthermore, FPIC enables them to negotiate the conditions under which the project will be designed, implemented, monitored, and evaluated. This is also embedded within the universal right to self-determination (cf. the 2007 UN Declaration on the Rights of Indigenous Peoples. The agreement of Indigenous Peoples is free (obtained without coercion), prior (to any decision or start of activities), informed (with appropriate information) and consensual (collective decision of right holders through traditional decision-making processes (**FAO**; http://www.fao.org/indigenous-peoples/our-pillars/fpic/en/).

Geographically defined area: An area the boundaries of which are geographically delineated with boundaries defined by geographical coordinates, as a polygon or a single point location (**UNEP-WCMC, 2019**). In the ocean, the delineation may be: (i) three-dimensional, including depth (**CBD Decision Criteria A**); (ii) static, at shallow depths or in the deep-sea bottom; and (iii) dynamic or mobile, when the boundary

is attached to a moving oceanographic structure (e.g. current, front, gyre). In this case, the boundary may be described in quasi real-time by an algorithm (using satellite information) or a **move-on rule**.

Indigenous peoples and local communities (IPLC): he Convention on Biological Diversity does not define the terms "indigenous peoples and local communities." . The United Nations Declaration on the Rights of Indigenous Peoples does not adopt a universal definition for "indigenous peoples", and a definition is not recommended. From the 2018 CBD COP Decision 14/13.

In-situ conservation of biodiversity: the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties (**CBD Convention, Article 2**).

Legitimate Authority: In fisheries, the regional, national or sub-national institution or institutions formally recognized as having the authority and responsibility for decision-making and management of the fisheries and the OECM operating in these fisheries. The "*legitimate governance authority" (or authorities) has the authority for achieving in situ conservation of biodiversity within the area. Governance by IPLCs is self-identified in accordance with national legislation and applicable international obligations. In general, governance by "legitimate authorities" : (i) reflects the equity considerations adopted in the Convention; (ii) may be by a single authority or several collaborative authorities; and (iii) provides the ability to address threats collectively* (CBD Decision 14/8)

Locally managed marine area: A locally managed marine area (LMMA) is an area of nearshore waters and its associated coastal and marine resources that is largely or wholly managed at a local level by the coastal communities, land-owning groups, partner organizations, and/or collaborative government representatives who reside or are based in the immediate area. (http://lmmanetwork.org).

Move-on rule: A regulatory provision that requires a fishing vessel that encounters (brings on board during fishing operations) more than a maximum limit of a particular protected taxon, to move away from the point of encounter, by a minimum regulated distance.

Other Effective Area-based Conservation Measure (OECM): a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the **in-situ conservation of biodiversity**, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio–economic, and other locally relevant values (**CBD Decision 14/8, §2**).

Other locally relevant values: cultural, spiritual, socioeconomic values as well as local knowledge, practices and institutions, that are fundamental for the in-situ conservation of biodiversity (from **CBD Decision 14/8, Criteria D2**).

Potential OECM: in fisheries, an existing or planned Area-Based Fishery Management measure (ABFM) that appears, after a quick check, to have the prerequisites for being fully assessed against the CBD Decision 14/8 Criteria

Sustainable use: The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations (**CBD Article 2**).

Upgradable ABFM: in fisheries, an area-based fishery management measure (ABFM, closed area) that has been assessed as being able to adequately meet the CBD Definition and identification Criteria of OECMs with some modifications (e.g. in its boundaries or measures applied in it).

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[63] See also https://www.gov.uk/guidance/ecosystems-services; https://oceanwealth.org/ecosystem-services/; https://roa.midatlanticocean.org/ocean-ecosystem-and-resources/characterizing-the-mid-atlantic-ocean-ecosystem/ecosystem-services/; and https://www.cbd.int/financial/monterreytradetech/unep-valuation-sids.pdf.

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ANNEX I - CRITERIA AND PRINCIPLES FOR IDENTIFICATION LISTED IN THE CBD DECISION 14/8

1. LIST OF CRITERIA

The following text is extracted from Decision 14/8. The numbering of sub-elements –e.g. B1a or C2b– is added for easier citation in the Guidance text.

Criterion A: Area is not currently recognized as a protected area		
A-Not a protected area	A	The area is not currently recognized or reported as a protected area or part of a protected area; it may have been established for another function.
Criterion B: Area is governed and managed		
B1-Geog. defined space	B1a B1b	Size and area are described, including in three dimensions where necessary. Boundaries are geographically delineated.
B2-Legitimate governance authorities	B2a B2b B2c B2d	Governance has Legitimate Authority - and is appropriate for achieving in situ conservation of biodiversity within the area. Governance by indigenous peoples and local communities is self-identified in accordance with national legislation and applicable international obligations. Governance reflects the equity considerations adopted in the Convention. Governance may be by a single authority and/or organization or through collaboration among relevant authorities and provides the ability to address threats collectively.
B3-Managed	B3a B3b B3c B3d	Managed in ways that achieve positive and sustained outcomes for the conservation of biological diversity. Relevant authorities and stakeholders are identified and involved in management. A management system is in place that contributes to sustaining the *in-situ* conservation of biodiversity. Management is consistent with the ecosystem approach with the ability to adapt to achieve expected biodiversity conservation outcomes, including long-term outcomes, and including the ability to manage a new threat.
Criterion C: Achieves sustained and effective contribution to *in situ* conservation of biodiversity		

C1-Effective	C1a The area achieves, or is expected to achieve, positive and sustained outcomes for the *in situ* conservation of biodiversity. C1b Threats, existing or reasonably anticipated ones are addressed effectively by preventing, significantly reducing, or eliminating them, and by restoring degraded ecosystems. C1c Mechanisms, such as policy frameworks and regulations, are in place to recognize and respond to new threats. C1d To the extent relevant and possible, management inside and outside the other effective area-based conservation measure is integrated.
C2-Sustained over long term	C2a The other effective area-based conservation measures are in place for the long term or are likely to be. C2b "Sustained" pertains to the continuity of governance and management and "long term" pertains to the biodiversity outcome.
C3-*In situ* conservation of biological diversity	C3 Recognition of other effective area-based conservation measures is expected to include the identification of the range of biodiversity attributes for which the site is considered important (e.g. communities of rare, threatened or endangered species, representative natural ecosystems, range restricted species, key biodiversity areas, areas providing critical ecosystem functions and services, areas for ecological connectivity).
C4-Information and monitoring	C4a Identification of other effective area-based conservation measures should, to the extent possible, document the known biodiversity attributes, as well as, where relevant, cultural and/or spiritual values, of the area and the governance and management in place as a baseline for assessing effectiveness. C4b A monitoring system informs management on the effectiveness of measures with respect to biodiversity, including the health of ecosystems. C4c Processes should be in place to evaluate the effectiveness of governance and management, including with respect to equity. C4d General data of the area such as boundaries, aim and governance are available information.
Criterion D: Associated ecosystem functions and services and cultural, spiritual, socio-economic and other locally relevant values	
D1-Ecosystem functions and services	D1a Ecosystem functions and services are supported, including those of importance to indigenous peoples and local communities, for other effective area-based conservation measures concerning their territories, taking into account interactions and trade-offs among ecosystem functions and services, with a view to ensuring positive biodiversity outcomes and equity. D1b Management to enhance one particular ecosystem function or service does not impact negatively on the sites overall biological diversity.
D2-Cultural, spiritual, socio-economic and other locally relevant values	D2a Governance and management measures identify, respect and uphold the cultural, spiritual, socioeconomic, and other locally relevant values of the area, where such values exist. D2b Governance and management measures respect and uphold the knowledge, practices and institutions that are fundamental for the *in situ* conservation of biodiversity.

2. LIST OF PRINCIPLES

In decision 14/8, the Principles were not given titles. The Principles have been grouped below in two groups, with a short title referring to their main subject and a reference letter, all taken from **Garcia et al, 2019**). For a complete text, the reader is referred to the Decision itself.

Roles and expected outcomes of OECMs	OECMs and governance
a: Biodiversity value or related objectives	g: Broad consultation
b: Conservation role (biodiversity and ES)	h: Legitimate governance capacity
c: Dual role : sustainability & Conservation	i: Indigenous people & local communities (FPIC)
d: Complementary to MPAs /networks	j: Respect/inform cultural & spiritual values
e: Demonstrated positive outcomes	k : Governance diversity - Empowerment
f: Representative & connected (MPAs)	l: Best available science & local knowledge
	m: Transparency and evaluation

ANNEX II – EXAMPLE OF SCORING OF OECM CRITERIA USING AN EXPERT-BASED APPROACH[64]

An expert-based MCDA was undertaken in the Aegean Sea (**Petza et al., 2019**) to assess 516 Fishery Restricted Areas (FRAS) as potential OECMs. FRAs are fishery closures defined by the General Fisheries Council of the Mediterranean (GFCM) as *a geographically defined area in which all or certain fishing activities are temporarily or permanently banned or restricted in order to improve the exploitation and conservation of harvested living aquatic resources or the protection of marine ecosystems*". For their study, **Petza et al.** broadened this definition to cover also areas closed to fishing by *environmental, archaeological, or maritime legislation [at] national, European… or international…levels.*

Based on the literature available at the time of the analysis, a small group of fisheries and conservation experts identified seven criteria against which potential OECMs could be assessed (**Table 1, col. 1**). These criteria do not match those identified in Decision 14/8 because they were identified by the experts, before the CBD COP Decision was adopted. In addition, because of the broadened definition used, many FRAs overlapped significantly with already designated protected areas (**Petza et al., 2019: 6**), inadvertently violating the most important criteria of the OECM identification process[65]. I should also be noted that the criteria elicited by the experts were all related to the actions taken in the FRAs (objectives, regulations, governance) and not to their observed or intended biodiversity outcomes. The results are of interest however, both from historical and methodological points of view.

A Multi-Criteria Decision Analysis framework was proposed to assess, based on expert views, the extent to which individual potential OECMs would sufficiently contribute to marine biodiversity conservation and hence cold be formally identified as OECMs.

In order to set the MCDA framework a number of rating classes (or properties) was determined by experts (**Table 1, col. 2**) for each criterion, from the information available in the literature and in the FRAs database **(Petza et al., 2017**). Each rating property was allocated a score from 0 to 100 by each expert, based on its importance for the biodiversity objective and the median score of the expert group was taken as the consolidated score for the rating property (**Table 1, col. 3**). Independently, the seven criteria were also weighted and ranked by the experts, using the Analytic Hierarchy Process (AHP) based on pairwise comparison of the criteria.

For the case-by-case implementation of the MCDA to each potential OECM, each criterion was initially scored as indicated above, and then, the consolidated scores of the seven criteria were aggregated using a weighted additive model to produce the overall composite score of the OECM ranging from 0 to 100% (this is not shown in Table 1). Finally the potential OECMs were classified among six classes of effectiveness according to their composite scores, as follows: (A) extremely effective (composite score from 100 to 90%); (B) very effective (89-80%); (C) effective (79-70%); (D) moderately effective (69-60%); (E) slightly effective (59-50%); and (F) ineffective (<49%). The % limits of the classes of effectiveness were

[64] **Disclaimer**: This annex, developed by the authors of the document based on the original paper by **Petza et al (2019),** is purely illustrative of an example of a useful multiple criteria scoring process applied to OECMs. This does not imply that the authors endorse the criteria, rating classes, scores, and conclusions of the cited analysis. Any error or misinterpretation is our responsibility

[65] i.e. that areas potential OECMs should not not have been already designated as MPAs.

expert-based. The minimum standard (class of effectiveness) that a *bona fide* OECM must meet might be suggested by the Expert Group but should be formally decided by the decision-makers. The workflow may be followed on **Table 1**.

To check the validity of their expert-based process, **Petza et al. (2019)** undertook an analysis of the consistency of the experts' judgements and a sensitivity analysis.

Table 1: Theoretical example of Criteria, rating classes and composite scores elaborated for an expert-based Multiple Criteria Decision Analysis of OECMs (Based on From Petza et al.,2019: supplementary Table 3). For illustration only, the score reached by the criteria (column 3, in bold) and the resulting weighted scores and resulting composite score (column 5) have been added.

Criteria	Rating classes (properties)	Scoring	Weight (Tot=1)	Weighted score
1. The area is geographically well defined:	**By coordinates**	**100**	0.03	3,0
	By description	70		
	Not defined	0		
2. The biodiversity conservation objective is to…	Protect biodiversity as a whole	100	0.14	
	Protect specific habitats	**80**		11,2
	Protect specific stocks	60		
	None: but contributes significantly	30		
	None: but contributes slightly	10		
3. Activities allowed within the area meet biodiversity conservation objectives are…	No fishing activity	100	0.23	
	Static gears only	**60**		13.8
	Mobile gears	50		
	Static and mobile gears	40		
	Towed gears	20		
	Towed and static gears	15		
	Towed and mobile gears	10		
	All gears	5		
4. Management and control mechanisms exist within the area?	Yes, all needed	100	0.37	
	Partially	**50**		18.5
	No	0		
5. Area is in place for the long term	> 60 years	100	0.06	
	59 to 40 years	90		
	39 to 20 years	**60**		3.6
	19-10years	40		
	< 10 years	20		
6. Mechanisms by which area is established are difficult to reverse	EU legislation	100	0.06	
	RFMOs' decisions	90		
	National law	**80**		4.8
	Presidential / Royal decree	60		
	Joint ministerial decision	40		
	Ministerial decision)	20		
7. Area closure during the year is:	**Permanent**	**100**	0.11	11.0
	Seasonal: >240 days/year	60		
	Seasonal: 180–239 days/year	40		
	Seasonal: 1-179 days/year	20		
Composite score	**Moderately effective**			**65.9/100**

The proposed MCDA might be used as model for addressing the OECMs issue when other types of areas are to be assessed, e.g. using the CBD Decision set of identification criteria (or Steps) and adjusting accordingly the set of rating properties, scoring range and classed of effectiveness.

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