

## AICHI TARGET 6: IMPROVING PROGRESS REPORTING AND WORKING TOWARDS IMPLEMENTATION

### Background document<sup>1</sup>

*By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.*

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<sup>1</sup> Document prepared for the Expert meeting on *Aichi Target 6: Improving progress reporting and working towards implementation* convened jointly by FAO, the CBD Secretariat and the IUCN-CEM-FEG with the cooperation of EBCD. Rome, Italy, 9-11 February 2016

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## List of abbreviations and acronyms

ABNJ	Area beyond national jurisdiction
AHTEG	Ad hoc Technical Expert Group
BIP	Biodiversity initiative partnership
$B_{LIM}$	Minimum biomass limit
$B_{PA}$	Precautionary biomass level
CBD	Convention on biological diversity
CCSBT	Convention for the conservation of southern bluefin tuna
CCMLAR	Convention for the conservation of Antarctic marine living resources
CCRF	Code of conduct for responsible fisheries
CECAF	Commission on Eastern-Central Atlantic fisheries
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CGRFA	Commission on genetic resources for food and agriculture
CMS	Commission on migrating species
COFI	Committee on fisheries (FAO)
CoP	Conference of the Parties
CSO	Civil society organisations
EAF	Ecosystem approach to fisheries
EBCD	European board of conservation and development
EBFM	Ecosystem-based fishery management
EBSA	Ecologically and biologically significant areas
EEZ	Exclusive economic zones
ERS	Ecologically related species
ESD	Ecologically sustainable development
FAO	Food and agriculture organization
$F_{im}$	Maximum level of fishing mortality
$F_{PA}$	Precautionary level of fishing mortality
FIGIS	Fisheries Global Information System
FIRMS	Fisheries and resources monitoring system
GBO	Global biodiversity outlook
GOBI	Global Ocean Biodiversity Initiative
HCR	Harvest control rule
HELCOM	Baltic Marine Environment Protection (Helsinki) Commission
IATTC	Inter-American tropical tuna commission

ICCAT	International commission for the conservation of Atlantic tuna
IPOA	International plan of action (FAO)
IUCN	International union for conservation of nature
LOSC	Law of the sea convention
MCS	Monitoring, control and surveillance
MSC	Marine stewardship council
MSE	Management strategy evaluation
MSY	Maximum sustainable yield
NAFO	Northwest Atlantic fisheries organization
NBSAP	National biodiversity strategy and action plan (CBD)
NPOA	National plan of action (FAO)
OBIS	Ocean Biogeographic Information System
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention)
PAF	Precautionary approach to fisheries
POI	Plan of implementation (WSSD)
RAMSAR	Ramsar convention on wetlands
RBM	Results-based Management
RFB	Regional fishery body
RFMO	Regional fishery management organization
RSC	Regional seas convention
RSO	Regional seas organisation
RSP	Regional seas programme
SBL	Safe biological level
SEL	Safe ecological level
SRFC	Sub-regional fishery commission (NW Africa)
SOFIA	State of fisheries and aquaculture
TAC	Total allowable catch
UNCED	United Nations conference on environment and development
UNEP	United Nations environment programme
VME	Vulnerable marine ecosystems
WOA	World Ocean assessment
WSSD	World Summit on Sustainable Development

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## 1. INTRODUCTION

Governance of fisheries and of biodiversity conservation streams continue to evolve, interacting with each other and with society on a widening range of issues (Garcia et al, 2014). A number of governance sub-streams of governance have developed with time around the implementation of key policy frameworks such as the 1995 FAO Code of Conduct for Responsible Fisheries (CCRF) or the 2010 CBD Strategic Plan for Biodiversity 2011-2020. In line with the Law of the Sea Convention (LOSC) and the CCRF, the overarching long-term objective of fisheries governance is sustainable and responsible fisheries development and management (for livelihoods and food security) and that includes conservation of resources and their critical habitats. In line with the Convention on Biological Diversity (CBD), itself aligned with the LOSC, overarching long-term objective of biodiversity governance is its sustainable use and equitable sharing of benefits derived from it.

The two sets of objectives are convergent and inter-dependent: the overarching long-term objective for biodiversity conservation can only be met if pressure from fishing is sustainable on stocks, species, habitats, and ecosystems; and the long-term objective of fisheries can only be met if the ecosystems supporting the fishery resources retain their diversity, productivity and resilience. Moreover, both biodiversity conservation and fisheries performance depend on protection of the ecosystem components from negative impact of the broad cross-sectoral suite of economic activities.

At global level, FAO and the CBD have been given unique mandates, respectively on sustainable development of fisheries and sustainable use of biodiversity, with specific roles, in information gathering, advisory and decision-making functions. Their respective governance streams have nested global, regional, national and local levels of actions to pursue their objectives. Both institutions have developed policy frameworks to guide the action of their Secretariat, related regional institutions and have practically identical list of Parties. Because of the strong connection between biodiversity and fisheries the two institutions' mandates necessarily overlap and decisions taken in one of the institutions within its mandate has consequences for the other within its own mandate. Coherence between the respective analyses and decisions is therefore needed if both institutions are to meet their respective goals (Garcia et al., 2014). However, the degree of coherence remains highly variable both among regions and jurisdictions on specific issues as well as among issues within a single jurisdiction.

FAO has developed a Code of Conduct for Responsible Fisheries (CCRF) with a series of international and technical guidelines and International Plans of Action (IPOAs) to be implemented through regional and National Plans of Action (NPOAs). Some reporting by Parties to FAO have been agreed and the publication on the State of Fisheries and Aquaculture (SOFIA) prepared on the basis of these and other reports is examined by the FAO Committee on Fisheries (COFI) every biennium. The explicit meta-target of this complex process is to ensure that all fisheries in all environments are sustainable, that resources are maintained at a level of biomass at or above that corresponding to MSY (in line with the LOSC and the United Nations Fish Stock Agreement), and that fishing capacity and removals are adjusted accordingly. Fisheries sustainability also requires economic viability of the enterprises and equitable distribution of benefits among sector components and actors. Small-scale fisheries, poverty and food security are central concerns. Since the early 1990s, in the wake of UNCED, the adoption of the CBD, and

with the growing involvement of civil society organizations (CSOs), the reduction of the collateral impact of fisheries on non-target resources and the environment (vulnerable ecosystems) has been a growing concern, leading to adoption of the Ecosystem Approach to Fisheries (FAO, 2003).

The CBD exercises its mandate through a variety of strategies and tools. Some are overarching and high-level policy guidance and principles, such as their Guidance on the Ecosystem Approach, the inclusion of biodiversity in environmental impact assessments, and the Jakarta Mandate on Conservation and Sustainable Use of Marine and Coastal Biological Diversity<sup>2</sup> (hereafter referred to as the Jakarta Mandate). The decadal Strategic Plans and associated biodiversity targets are a second scale of action and the Decisions taken at the biennial Conferences of the Parties (CoPs) an even more detailed exercise of its mandate. The CBD has no direct operational arm within national jurisdictions, rather providing information and other sources of support and capacity-building for national institutions to pursue the commitments made in the Decisions and higher level guidance. In marine areas beyond national jurisdiction (ABNJ), the CBD has no policy or management authority but, according to Decision VIII/21, may provide scientific, technical and technological information and advice on conservation of biodiversity to bodies active in these waters. Consistent with that charge, it has sponsored or co-sponsored a number of Expert Meetings on marine issues, including a number of regional workshops to describe areas meeting their criteria for Ecologically or Biologically Significant Areas (EBSAs) mainly but not only in ABNJs, as well as more fishery-oriented expert meetings, including on destructive fishing practices (FAO, 2010) and on the extent to which biodiversity concerns were taken into account by RFMOs in fisheries in ABNJ (Rice et al., 2012; CBD 2012).

Both institutions have concerns about fisheries and biodiversity. For the CBD and conservation constituencies, biodiversity must be maintained both for sustainable use and in its own right, and fisheries represent one of the sectors that impacts significantly on biodiversity as it extracts from it food and revenues, sustaining livelihoods. For FAO and fishery constituencies, fishery resources and their habitats –which are a part of the ocean biodiversity- must be maintained for and by responsible fisheries, for their sustainable development. They should be protected from depletion or impaired productivity as well as negative impacts of other economic sectors (Particularly coastal development and land- and marine-based pollution). Improved coordination between FAO and CBD and their Parties could contribute to improve the respective and overall performance of their governance.

Reporting on Target 6 represents, from the above angle, both a challenge and an opportunity for collaboration between fisheries and biodiversity conservation governance systems. A framework for collaboration already exists. FAO has elaborated Tools and Guidance to its Members to assist in the implementation of the CBD and its Strategic Plan for Biodiversity 2011-2020<sup>3</sup> in which the FAO contribution to the implementation of Target 6 is specified. The CBD Conference of the Parties (CoP11) requested its Executive Secretary, in collaboration with the Biodiversity Indicators Partnership (BIP<sup>4</sup>), FAO and other partners...to, *inter alia*, further develop global indicators with a view to ensuring that each Aichi Biodiversity Target can be monitored by at least one global indicator by 2014,

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<sup>2</sup> <https://www.cbd.int/doc/publications/jm-brochure-en.pdf>

<sup>3</sup> [http://www.fao.org/fileadmin/templates/biodiversity\\_paia/FAO\\_Instruments\\_Strategic\\_Plan\\_Aichi\\_Targets.pdf](http://www.fao.org/fileadmin/templates/biodiversity_paia/FAO_Instruments_Strategic_Plan_Aichi_Targets.pdf)

<sup>4</sup> FAO is represented in the BIP Steering Committee

taking into account indicators that are already in use by, or relevant to, other conventions, regional agreements and processes. Within the BIP process, FAO is responsible for the development of criteria and indicators for fisheries<sup>5</sup>.

CBD CoP11 also requested the Executive Secretary to promote further collaboration on biodiversity monitoring and indicators with the forestry, agriculture, fisheries and other sectors at global, regional and national levels. CoP 11 further invited FAO to contribute to assessing progress towards the achievement of selected Aichi Biodiversity Targets related to food and agriculture (FAO, 2013). This Expert Meeting jointly organized by FAO, CBD, and the IUCN Fisheries Expert Group is an additional step in the collaboration process, looking in more detail on one CBD Target, Target 6, with has implication in the ecological, economic, social, and governance dimensions of fisheries.

This document is aimed for consideration and use by the participants of the Expert Meeting on *Aichi Target 6: Improving progress reporting and working towards implementation*, convened jointly by FAO and CBD Secretariats and the IUCN-CEM-FEG with the cooperation of EBCD in Rome (Italy) from 9 to 11 February 2016. It aims at helping the two institutions in their task to develop guidance to facilitate reporting on Target 6 by 2020. The purpose of the Meeting is to explore further opportunities and feasible pathways to jointly achieve better reporting on policies, governance, and results on Target 6. It focusses on how to systematically complement and consolidate the information needed for accurate and efficient reporting on Target 6 at the appropriate scales. For this purpose, it will look specifically at the possible contribution of FAO and Regional Fishery Bodies, specially RFMOs in ways that would minimize additional burden and costs. It will also advise CBD as appropriate on reporting formats for its Parties to report on their implementation at national level. This effort should improve reporting, recognition of ongoing efforts at all levels, and better identification, by the biodiversity and fisheries expert communities of the gaps and affordable ways to address them. The results of this Expert Meeting will be considered by the governing bodies of FAO and the CBD through the appropriate pathways.

**Section 2** of the document provides a brief reflection on Results-based Management (RFB) and its implications in terms of operational objectives, targets dates and outcomes, and transparent performance assessment. **Section 3** examines the 2010 CBD Target 6 requirements. In **Section 4**, a draft framework that could be used for reporting on Target 6 is proposed for consideration by the Expert Meeting. In **Section 5** a brief account is given of the indicators of relevance for reporting on Target 6. **Section 6** provides a brief review of the reporting implications for CBD, FAO and their Parties, the fishery sector and civil society, within existing mandates and related agreed commitments and activities. **Section 7** contains the main conclusions of the document.

## 2. FROM INPUT-BASED TO RESULT-BASED GOVERNANCE

Some report on progress made in implementation of agreed international policies is usually requested by governing bodies of international organisations (e.g. FAO COFI, CBD Council) and such reports are usually prepared by the Secretariat based on voluntary

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<sup>5</sup> <http://www.fao.org/biodiversity/assessments/en>

submissions of Parties. The contents of these reports has tended to focus on the actions taken –such as institutional development, pilot projects, new legislation and management measures which are easily compiled– and not on the results obtained through these actions. There is some logic to this approach. First because international agreements are primarily on actions to be taken in response to the Agreements and these actions by States and regional bodies (adopting new policies and management measures, developing institutional infrastructure and pilots) are the responses to these Agreements. Second because more concrete results often require a few years to materialize and a reporting system exclusively based on them would delay the appraisal of the Agreements' performance. Moreover, implementing newly adopted policies and measures often requires significant investments to develop –at national or regional levels– the culture, institutions and formal systems of Monitoring & Evaluation (M&E) necessary to deliver and assess their results.

A significant modification of the international culture of policy development, implementation, reporting and performance evaluation (particularly at the level of the United Nations and its activities and programmes) has happened since 2000 through the introduction of concepts related to Result-Based Management (RBM) such as target dates and expected results with their corollary reference points, values and limits that Parties are encouraged to adhere to when they report.

Before 2000, the practice at the United Nations and in the Organizations of the UN system in relation to decision-making was to develop principles, policies and plans at strategic level, leaving to regional organizations and more specifically to states, the prerogative and responsibility to establish implementation plans with locally fine-tuned goals and operational objectives, including target dates and expected results. This is illustrated, for example, by the Rio Declaration adopted by the 1992 United Nations Conference on Environment and development (UNCED) and in its Agenda 21.

This has been the practice for FAO. At its governing bodies, the Parties agree on priority issues, principles, policies, strategies, approaches and high level goals expressed in qualitative terms in most cases. For example, the policy on sea-birds bycatch is materialized in an International Plan of Action (the IPOA-Seabirds) which aims at reducing seabirds bycatch in long-line fisheries. The IPOA-IUU intends to deter, prevent and eliminate illegal, unreported and unregulated (IUU) fishing. Because of the consciousness of the large differences in implementation capacity in different countries and sub-sectors, the eventual and usually non-mandatory, adoption of global quantifiable objectives to be reached by specific 'targets' dates is left to the various regional and mainly national detailed plans of action. FAO global reporting is mainly in terms of trends in the status of stocks and fleets capacity<sup>6</sup>, employment<sup>7</sup>, contribution to food security<sup>8</sup>, international trade, etc., with a view to *increase, decrease, minimize or eliminate* them, *as much as possible and as appropriate*, with no quantified goal or specific target dates<sup>9</sup>.

By 2000, the progressive introduction of the spirit of Results-Based Management (RBM) at UN level reflected a major shift in attitude in the international arena from evaluating performance by the amount of inputs (i.e. policy, budgets, legal and operation actions taken by states) to evaluating it by its results. The ideal RBM process requires an

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<sup>6</sup> With reference to the MSY level

<sup>7</sup> With the general concern of maintaining livelihoods and reduce poverty

<sup>8</sup> With the view to maintain or improve food security

<sup>9</sup> There are some exceptions. For example, the IPOA-Sharks specifies (§ 20) that *States should strive to have a Shark Plan by the COFI session of 2001* and this is an expectable outcome as each State can adapt its plan to its implementation capacity.

analytical framework for: (1) planning, i.e. formulating objectives, selecting measures, allocating means, structuring data collection and performance measurement systems including performance indicators, targets and benchmarks; (2) implementation, including enforcement and monitoring; and (3) performance evaluation, identifying gaps, failures, opportunities, cause-effect relationships and adaptive responses. Most of these steps meet issues regarding means, methods, responsibilities, harmonization, capacity building and communication/participation with stakeholders.

The shift in policy development is apparent in the Millennium Development Goals developed in 2000 at the UN Millennium Summit. These Goals may be the first instrument globally adopted that reflects non-mandatory commitments to reach specific levels of achievement –relative to the levels in 1990– by given dates, in this specific case by the end of 2015. Examples include reducing hunger by half; mortality of under 5–year olds infants by two thirds and maternal mortality by three quarters<sup>10</sup>.

Following the lead, the 2002 United Nations World Summit on Sustainable Development (WSSD) adopted a global Plan of Implementation (POI) in which the states committed themselves systematically to reach specific objectives such as a reduction of x% or a particular impact by year 2010<sup>11</sup>. For example, it “*encourage(s) the application by 2010 of the ecosystem approach*” (§ 30d) and, in order to achieve sustainable fisheries, the following actions are required at all levels: (1) Maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015 (§31a); (2) Urgently develop and implement national and, where appropriate, regional plans of action, to put into effect the international plans of action of FAO, in particular the International Plan of Action for the Management of Fishing Capacity by 2005 and the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing by 2004 (§ 31d). It is interesting to note in this last example that the United Nations added target dates to FAO commitments that did not originally specify any.

The practice has also progressively been adopted in the CBD. In 2002 CBD CoP6 adopted a Strategic Plan for the Convention on Biological Diversity (Decision VI/26)<sup>12</sup> the aims of which were still qualitative and indicative even though the Parties committed themselves “... *to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth.*”

In 2004, CBD CoP7 faced the challenge to achieve tangible progress towards its rather generic 2010 Biodiversity Target and it agreed on strategic goals and specific operational, time-bound targets. It noted the target dates and expected results adopted in 2002 in the WSSD POI and agreed to adopt the same approach (Decision VII/5) in a Strategic Plan aiming at reaching the 2010 Target (Decision VII/30)<sup>13</sup>.

In 2010, recognizing that the global targets to be reached by 2010 had not been met, CBD CoP10 adopted a Strategic Plan for Biodiversity 2011-2020 which included 20 operational objectives (called the Aichi Biodiversity Targets<sup>14</sup>) to be reached by 2015 or 2020. Essentially, these targets postponed by few years the target outcomes foreseen in the

<sup>10</sup> <https://www.un.org/millenniumgoals/pdf/mdg2005progresschart.pdf>

<sup>11</sup> [http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/WSSD\\_PlanImpl.pdf](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf)

<sup>12</sup> <https://www.cbd.int/decision/cop/default.shtml?id=7200>

<sup>13</sup> Secretariat of the Convention on Biological Diversity. 2004. The 2010 biodiversity target: A framework for implementation. Decisions from the seventh meeting of the Conference of the Parties to the CBD. Kuala Lumpur, Malaysia 9- 20 and 27 February 2004. Montreal; UNEP-CBD: 382 p.

<sup>14</sup> <https://www.cbd.int/decision/cop/?id=12268>

2002 WSSD POI for 2010 but very partially fulfilled by that date. Also in 2010, the CBD-mandated Biodiversity Indicators Partnership (BIP, <http://www.bipindicators.net/donors>) adopted 27 indicators on the state of global diversity many of which have direct relevance for fisheries<sup>15</sup>, such as protected areas coverage and marine trophic index

### 3. FISHERIES, BIODIVERSITY AND TARGET 6

#### 3.1 THE DECADAL FRAMEWORK – STRATEGIC PLAN, GOALS AND TARGETS

The 2011-2020 Strategic Plan adopted by CBD represents the commitment of its Parties for the conservation of biodiversity in the present decade. The overall intent of the Plan is for “Living in Harmony with Nature”. From the start, however, this harmony is acknowledge to include the *use of biodiversity as well as its conservation and, as necessary, protection*. This is reflected in the first paragraph of the rationale for the Strategy Plan, which states that *“Biological diversity underpins ecosystem functioning and the provision of ecosystem services essential for human well-being. It provides for food security, human health, the provision of clean air and water; it contributes to local livelihoods, and economic development, and is essential for the achievement of the Millennium Development Goals, including poverty reduction”*

That rationale reflects the three objectives of the Convention: (i) to conserve biodiversity; (ii) to use it sustainably; and (iii) to ensure the equitable sharing of benefits from its use. Towards that end, the Strategic Plan aims at five Goals, each supported by three to six Targets. The **Goals** are:

- A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society;
- B. Reduce the direct pressures on biodiversity and promote sustainable use;
- C. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity;
- D. Enhance the benefits to all from biodiversity and ecosystem services; and
- E. Enhance implementation through participatory planning, knowledge management and capacity-building.

Included in the Strategic Plan, Aichi Biodiversity Targets represent one of the major sets of biodiversity conservation benchmarks for the current decade and, as such, are of interest not only to the CBD but also to FAO and the different economic sectors that may impact on biodiversity. The Targets address many general issues affecting all terrestrial and marine ecosystems and call on society and governments (particularly conservation agents) for action. Some of the targets have direct application to the marine realm and some are directly relevant for fisheries<sup>16</sup>, such as:

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<sup>15</sup> 2010 Biodiversity Indicators Partnership. 2010. Biodiversity indicators and the 2010 Target: Experiences and lessons learnt from the 2010 Biodiversity Indicators Partnership. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series No. 53, 196 pages.

<sup>16</sup> FAO tools and guidance to assist implementation of the CBD and the Strategic Plan for Biodiversity 2011-2020.

[http://www.fao.org/fileadmin/templates/biodiversity\\_paia/FAO\\_Instruments\\_Strategic\\_Plan\\_Aichi\\_Targets.pdf](http://www.fao.org/fileadmin/templates/biodiversity_paia/FAO_Instruments_Strategic_Plan_Aichi_Targets.pdf)

- Target 6, calling for sustainable harvest and management of all fishery resources and fisheries by 2010 (see details below);
- Target 10, on reduction or elimination of threats to coral reefs has become a focus for several international organizations which have formed around coral reef initiatives (e.g. International Coral Reef Initiative, the Coral Triangle Initiative, etc.); and
- Target 11, on protected areas (some of which would also contribute significantly to Target 10) likewise has been taken up by numerous organizations including the IUCN and its Protected Areas Programme, with a major part of their initiative focused on standards for and accounting of areas which meet the standards of the Target. National and international efforts towards achieving that Target are regularly heralded in newspapers and international meetings, most recently at the World Parks Congress (Sydney, November 2014).
- Target 12 on reduction of the risk of extinction of threatened species
- Target 14. On restoration and safeguarding of ecosystem services contributing to health and livelihoods of women, indigenous and vulnerable communities

Other targets related to human dimensions of biodiversity conservation are also of direct interest to fisheries (e.g. through work on small-scale fisheries, tenure systems, food security, participation, traditional knowledge, etc.) and receive contributions from FAO but will not be mentioned further here.

### **3.2 THE SPECIFIC ROLE OF TARGET 6**

Target 6, the, fisheries-specific target, is positioned under Goal B, giving prominence to reducing pressure on biodiversity, where the pressure from fisheries is causing loss of species, populations, genetic diversity or habitats for biodiversity, and ensure that pressure from fishing is kept sustainable where such losses are not imminent. However, as the Strategic Plan stresses, these goals are not to be viewed as silos. Both the Vision (Part II) and Mission (Part III) for the Strategic Plan make clear that the Goals have to be pursued to deliver integrated holistic outcomes for biodiversity, and not just individual outcomes for each target. Consequently, the initiatives to achieve and report on Target 6 need to be viewed also in the contexts of mainstreaming biodiversity concepts in government and society (Goal A), safeguarding ecosystems, specific and genetic diversity (Goal C), enhancing benefits to all from use of the ecosystem services used by fishing (Goal D), and participatory governance (Goal E).

Target 6 does not contain any specific provisions that are not already part of the 1995 FAO CCRF and of the Ecosystem Approach to Fisheries endorsed by FAO Parties through the 2001 Reykjavik Declaration and at the FAO Committee on Fisheries and Conference<sup>17</sup>. Nonetheless, it still lays out an ambitious challenge to Parties and Fisheries Management agencies in terms of calendar. The potential ambitiousness is bounded to some extent by several specific points highlighted directly in the Strategic Plan. As Paragraph 13 notes, *“The goals and targets comprise both: (i) aspirations for achievement at the global level; and (ii) a flexible framework for the establishment of national or regional targets. Parties are invited to set their own targets within this flexible framework, taking into account national needs and priorities “*. Thus, it is acknowledged that countries are starting their efforts to achieve all the targets, including Target 6, from different initial situations and with differing resources and priorities for planning and implementation.

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<sup>17</sup> <http://www.fao.org/docrep/MEETING/004/Y2211E.HTM>

This acknowledgment that the resource requirements for meeting each Aichi Target may be significant for many States and agencies must be kept in mind. Paragraph 6 of the CBD Strategic Plan notes that “*Most Parties identify a lack of financial, human and technical resources as limiting their implementation of the Convention.... Insufficient scientific information for policy and decision making is a further obstacle for the implementation of the Convention.*” This limitation is addressed in the targets themselves, particularly Target 20 specifically calling for enhanced mobilization of financial resources. The flexibility of the overall framework of the set of 20 targets is partly intended to keep programs realistic but progressive within the available resources and priorities of each country. In addition, though, the final part of target 6 notes that “scientific *uncertainty should not be used as an excuse for inaction*”. This echoes the Precautionary Principle adopted in UNCED in 1992, reflected in the 1995 CBD Jakarta Mandate, the Precautionary Approach to Fisheries (FAO, 1996) and explicitly embedded in EAF (FAO, 2003). Cost effectiveness is a key concern in the Precautionary Approach, but precaution is a key companion to cost effectiveness. As a consequence, when monitoring and reporting frameworks are designed to be cost effective and flexible, conservation actions have to be decisive without waiting for high scientific certainty.

### **The Content of Target 6**

Target 6 addresses many complex aspects of fisheries. It commits the CBD Parties to achieving the following:

*By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.*

This target echoes and further specifies the 2002 WSSD target for fisheries which committed participants to *maintain or restore stocks to levels that can produce the maximum sustainable yield (MSY) with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015*. That target was obviously not met globally but substantial progress has been made for many stocks, mainly in the developed world (Worms et al., 2009; FAO, 2014).

As drafted, and considering the global mandate of the CBD, the Target refers to ALL stocks, both inland and marine. Adopted by consensus by CBD Parties, it has implications for employment, food security, reduction of fishing capacity, possible compensations, institutional capacity development, R&D, etc., the management of which falls under the mandate of FAO and other competent institutions working on fisheries at regional and national levels.

Except for the fact that Target 6 contains a bumper date, 2020, its content is very similar to the overarching goals of FAO and its Parties for fisheries in all biotopes and under all jurisdictions, as reflected for example in the General Principles of the 1995 CCRF which in addition to the need to ensure stocks and fisheries sustainability (§ 6.1, 6.2, 6.3, 6.5, 6.10, also refer to, *inter alia*: (i) conservation of aquatic ecosystems (§ 6.1); (ii) conservation of target species as well as associated and dependent species (§6.2, 6.5 and 6.6); (iii) prevention of overfishing and rehabilitation of populations (§6.3); (iv) improved selectivity and environmentally-safe gear and practices, minimizing negative impacts on the environment (§6.6 and 6.7); rehabilitation of critical habitats and ecosystems (§6.8).

The coherence may not be surprising considering that FAO and CBD have practically the same Parties and are part of the United Nations System but it is worth noting. All those General Principles are then echoed in the various sections of the Code dealing with governance and management and particularly the sections dealing with data collection, assessment, management advice, precautionary approach, management measures, implementation, fishing operations, flag and port States duties and protection of the marine environment.

Target 6 contains therefore nothing at angle with the FAO responsible fisheries policy, commitments and guidance, but adds the bumper date. Even that, however, depends on how the Target 6 provision is understood. All Targets are outcomes of negotiations among Parties, and because most negotiators are experts in policy and not always in scientific and technical matters, consensus language may be politically agreeable to all but lack sufficient technical detail, allowing multiple interpretations of other experts and actors.

The following section presents a decomposition of Target 6 in the key arguments or issues it addresses: (i) Target species; (ii) Depleted species; (iii) Threatened species and vulnerable ecosystems; and (iv) Safe biological limits. For each of them, the intended interpretation is given, as inferred from the discussion during the negotiations.

### 3.2.1 Target species

The expectation is that *“By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided.”*

This argument refers to *stocks*, recognizing the pragmatic terminology used in fishery science for *populations* or their proxies. It sets the scope of the target as applying to all exploited marine taxa, not just major commercial finfish and directed harvest of marine mammals is intentionally excluded. The expression *“managed and harvested”* was intentionally specified to highlight that sustainable fisheries needed to have a management plan, accounting for the biology and state of the harvested species, the nature of the fishery and the governance system for the area where the fishery is prosecuted. Such a plan needs:

1. To be built on sustainability principles. Although no definition of *“sustainably”* is given, the term is deeply entrenched in the CBD in the concept of *sustainable use* as defined in the *Addis Ababa Principles for the Sustainable use of biodiversity*.<sup>18</sup>
2. To have a legal basis, capturing in one adverb both a call to eliminate IUU fishing and the need to ensure the management of each fishery has a sound legal foundation on which to build effective enforcement.
3. To be placed in an ecosystem context. No definition of *ecosystem-based approaches* is given for fisheries but CBD has invested significant effort in defining the Ecosystem Approach (e.g. in the 1998 Malawi Principles for the Ecosystem Approach<sup>19</sup>) and its implications in the marine environment (through the Jakarta Mandate).
4. To ensure that “overfishing is avoided”. Referring to the target species, a difference is made in fisheries between situations in which *overfishing* is taking place (fishing

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<sup>18</sup> [cbd.int/doc/publications/addis-gdl-en.pdf](http://cbd.int/doc/publications/addis-gdl-en.pdf)

<sup>19</sup> See [fao.org/docrep/006/Y4773E/y4773e0e.htm](http://fao.org/docrep/006/Y4773E/y4773e0e.htm) and <https://www.cbd.int/ecosystem/principles.shtml>

pressure above the MSY level) and situation in which stocks have been *overfished* in the past (biomass below the MSY level) despite adequate adjustments to fishing capacity. This argument accepts that baselines for monitoring and reporting may start from situations where stocks had been *overfished* –not ideal for biodiversity– but requires that active *overfishing* is deterred and not occurring at present. If environmental or socio-ecological conditions change to reduce target species productivity, appropriate management measures are implemented to reduce fishing pressure correspondingly and avoid overfishing. In the conservation arena, “overfishing” is more conceptually interpreted in the content of posing an increased risk that reproduction and productivity be impaired, rather than that some maximum yield (related to MSY) may not be available. The UN Fish Stock Agreement provides that MSY be considered as a limit and not a target. Thus using MSY as a limit reference reduces substantially the risk of impaired productivity. However, a stock that is not necessarily producing its *maximum yield* may not have its productivity *impaired* depending on how non-linearly related productivity is to spawning stock biomass.

### 3.2.2 Depleted species:

The expectation is that by 2020, *recovery plans and measures are in place for all depleted species*. This argument is a special case of the target species argument and it applies specifically to *depleted* target species, i.e. species that have been *severely overfished* in the past. No specific definition of “*depleted*” was included but it was acknowledged during drafting that the notion of a depleted population is long established in fisheries science and management. The FAO Glossary<sup>20</sup> definition refers to *a stock driven by fishing at very low level of abundance compared to historical levels, with dramatically reduced spawning biomass and reproductive capacity. It requires particularly energetic rebuilding strategies and its recovery time will depend on the present condition, the level of protection and the environmental conditions*. Most if not all fisheries management authorities and their science advisory bodies have some working empirical definition of the term, usable as benchmarks or trigger for rebuilding strategies.

The specific FAO definition was not in play during drafting of Target 6 but the notion of “impaired productivity” was. This was consistent with the practice that in the European Union and for most North-western European States, the ICES scientific advisory body calls for a recovery plan whenever a target stock’s spawning biomass falls below a biologically-based limit reference point, associated with impairment of stock productivity<sup>21</sup>, providing at least a partial bridge between this aspect of the CBD target and current practice in fisheries. . In addition, though, in some countries, “depleted” is understood as driven well below historical level by any factor, not only excessive harvesting<sup>22</sup>. This interpretation would help triggering rebuilding strategies even when fisheries are not the only or main responsible factor. This interpretation is consistent with making recovery of depleted populations a priority for all sectors, which conservation biology would argue is a necessity, regardless of the cause of the original depletion. However, it can raise serious difficulties in defining a “rebuilding strategy” solely within the fishery sector.

The language of Target 6 intentionally acknowledges that the biology of many target species may not allow a full recovery of biomass and reproductive potential between 2011

<sup>20</sup> Accessible at <http://www.fao.org/faoterm/collection/fisheries/en/>

<sup>21</sup> <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2003/oct/ICES%20Advice.pdf>

<sup>22</sup> See for example a discussion in

[www.nmfs.noaa.gov/ocs/mafac/meetings/2014\\_06/docs/mafac\\_msa\\_issue\\_overfished\\_vs\\_depleted\\_6-3-14](http://www.nmfs.noaa.gov/ocs/mafac/meetings/2014_06/docs/mafac_msa_issue_overfished_vs_depleted_6-3-14)

and 2020 and what is required is that explicit recovery plans have been developed and adopted and appropriate measures are in place to promote recovery.

### 3.2.3 Threatened species and vulnerable ecosystems

The expectation is that *fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems*.

This argument deals specifically with the protection of elements of biodiversity facing particularly high risk –i.e. threatened non-target species and vulnerable ecosystems– to ensure that they are given enhanced protection. The use of the term “*threatened*” was intentional, to link this argument to the risk of extinction level used by the IUCN Red List of Threatened Species ([www.iucnredlist.org](http://www.iucnredlist.org)) and by the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).

The expressions “*vulnerable ecosystems*” and “*no significant adverse impacts*” were used intentionally to reflect the wording that was negotiated in United Nations General Assembly Resolution 61/105 and to acknowledge the International Guidelines for the Management of Deep-sea Fisheries in the High Seas (FAO, 2009)<sup>23</sup>. None of the terms used in this argument were intended to be redefined more broadly or narrowly than was already in practice by CITES, FAO, and the UNGA. Thus some adverse impacts can occur within a fishery (e.g. bycatch of a few protected species, some physical impacts to sensitive habitats) as long as they are not “significant” as defined in the Deep-sea Fisheries guidelines). It should be noted that while these guidelines provide criteria for the identification of Vulnerable Marine Ecosystems (VME) and guidance on how to avoid significant adverse impacts on such systems from fisheries, the intended scope was limited to the management of deep-sea fisheries using gear in contact with the bottom in the high seas. In this context, VMEs could be seen as a sub-set of the “vulnerable ecosystems” potentially referred to in Aichi target 6.

### 3.2.4 It can be noted that under this argument dealing with VMEs, other spatial habitat protection devices (MPAs, EBSAs) are not mentioned because aspects of these tools appropriate for CBD advice are addressed under Aichi Target 11. **Safe ecological limits**

The expectation is that, in general, *the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits*.

This argument refers to elements covered earlier, such as stocks, and species (implicitly both target and non-target) but the reference to *ecological limits* places the effects of fishery removals above the species level (e.g. at community, food chains and ecosystem level). Accepting implicitly that not all fisheries are intended to be (or can be) totally selective, this argument intentionally refers to *stocks* and *species* without qualifying them as *target* or *non-target* in order to avoid requiring their separation in any fishery where this might be challenging or inappropriate<sup>24</sup>. It was agreed by all drafters that *stocks and species* meeting the “target species argument” would necessarily meet as well the present

<sup>23</sup> These guidelines define as significant adverse impacts *those 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*.

<sup>24</sup> The term “bycatch” came up during negotiations of this Target. It was intentionally not included in the final wording as several fisheries experts argued that the term has different (and sometimes no) meaning in different jurisdiction, and would prove harder to operationalize than “all stocks and species”

argument and be *within safe biological limits*. If not, they should be assessed against this criterion. Application is not restricted to particular taxa, so any incidental catch of (and impact on) marine mammals, seabirds, aquatic reptiles must be shown to be within *safe biological limits*, as must catch of any fish or invertebrate species purposely or accidentally taken by the fishery.

The intent of this argument was to set a common standard for all species, whether targeted or not. For target species, safe limits for biomass or exploitation rate are typically set at the stock level where management operates necessarily. Correspondingly, “safe limits” for bycatch species are also intended to be set at the level of functioning population units and not solely at the species level. In practice, it may be difficult to establish what “functioning population units” are for any but well-studied species, and practice may be ad hoc. However, the overall intent was to not require demonstrating fisheries bycatches were outside safe limits for an entire species before action was taken to address it at smaller scales (for example bycatch of a seabird species with many breeding populations, and high bycatch rates in only some of them). This part of the Target also is part of the reason why “impaired recruitment” was preferred as the benchmark rather than MSY. Some drafters were reluctant to require conservation limits to be fundamentally defined in relation to *yield* when the benchmarks were going to be applied to marine mammals, seabirds and other species where the appropriateness of “yield” was not universally accepted. There was universal acceptance of not allowing the productivity of such species or populations to be impaired, however, even if all impacts were accidental.

The last but main part of this argument, about maintaining ecosystems and their components *within safe ecological limits*, is more challenging. Ecosystems components and the processes connecting them have been at the core of ecological theory and their maintenance has been considered a priority for conservation for decades and more recently for sustainable use. This priority was explicitly enshrined in the 1980 World Conservation Strategy<sup>25</sup> (IUCN-UNEP-WWF, 1980) and is reflected in the Preamble of the Convention on Biological Diversity. A more explicit reference to maintaining *ecosystem structure and function* emerged with the formulation in 1998 by the CBD of the Ecosystem Approach and its Malawi Principles<sup>26</sup> (UNEP/CBD, 1998; CoP Decision V/6) and of the Addis Ababa Principles for Sustainable Use in 2004 (at CoP7; Decision VII/12)<sup>27</sup>.

In fisheries, the 1995 UN Fish Stock Agreement<sup>28</sup> recognized the need to *maintain the integrity of marine ecosystems* and the CCRF refers to ecosystem components /species and habitats) and their interrelations. More specifically, the need to maintain *ecosystem structure and function* has been acknowledged since the 2001 Reykjavik Declaration (FAO, 2003b) and is embedded in the goals of ecosystem-based approaches to fisheries management (Mangel et al., 1996; FAO, 2003a; Sinclair and Valdimarsson, 2003; Fogarty, 2013). However, the concept has received little elaboration on its operational implications for fisheries (Garcia et al, 2012; Garcia et al., 2015).

Despite this long-standing recognition of the importance of conservation at the ecosystem level, there is not yet a scientific or policy consensus on what are *safe limits* for perturbation of ecosystems although research continues to accumulate

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<sup>25</sup> Referring to maintenance of ecosystem processes, life-support systems and genetic diversity for sustainable utilization

<sup>26</sup> The 5<sup>th</sup> Malawi Principle states that “a key feature of the EA includes conservation of ecosystem structure and functioning...”

<sup>27</sup> Stating that “Sustainable use ... should avoid or minimize adverse impacts on ecosystem services, structure and functions...”

<sup>28</sup> [http://www.un.org/Depts/los/convention\\_agreements/convention\\_overview\\_fish\\_stocks.htm](http://www.un.org/Depts/los/convention_agreements/convention_overview_fish_stocks.htm)

At the conceptual level, the language of the application of precaution contained in Principle 15 of the 1992 UNCED Rio Declaration can guide the interpretation of *safe ecological limits*. Using the Principle language, such limits should ensure a low likelihood of “*serious or irreversible harm*” to ecosystem structure or function. Moving this guidance from conceptual to operational, however, requires more complex guidance. This may be most effectively developed by continuing the efforts to generalize from the practices established and validated at the single stock level, to their parallels at the multispecies and ecosystem levels.

Operationalizing “*serious or irreversible harm*” at the stock level was achieved by establishing what types and magnitudes of perturbation led to an increased likelihood of *impaired productivity*, reducing the capacity of (and time needed for) a depleted stock to increase again once the excessive pressure is removed (loss of resilience; lower rate of increase) (ICES, 2003). Although many traits may contribute to impaired productivity (e.g. increased mortality or decreased growth and/or fecundity), practice has settled in considering spawning biomass as the feature that typically integrates all these traits into an indicator of potential productivity of the stock, and fishing mortality as the manageable pressure that affect such productivity. Based on these key features of a population, stock specific benchmarks for *safe biological limits* are set, taking into account all the relevant traits of the particular stock.

At the ecosystem level, operationalizing “*serious or irreversible harm*” involves evaluating the ability of ecosystems to recover from various types and magnitudes of perturbation. Universal numerical benchmarks are no more appropriate for ecosystems than universal biomass levels or exploitation rates would be for all fish stocks. Rather, appropriate benchmarks must take into consideration the main features that characterize the structure and functional relationships of specific types of ecosystems, just as appropriate benchmarks for individual target species must take into account the life history features that characterize the productivity of the individual populations. The search would be for ecosystem-scale properties that integrate the number and relative abundances of the species in the ecosystem (the structural features) and how they may interact as predators, preys and competitors – the functional features important to the resilience of ecosystems (Levin and Lubchenco, 2006; Oliver et al., 2015). These are not simple properties to characterize, but substantial information on them has been accumulated. Research continues on these complex issues, as well, and additional reviews will be warranted in future.

A particular issue is that while the functions of an ecosystem depend strongly on its structure, the second is more directly and cheaply observable than the first, at least in the size range of relevance to fisheries. It would be convenient, therefore, if “irreversible harm” for an ecosystem could be defined and monitored in terms of harm to its structure, inferring the harm to functions based on known or assumed relations between structures and functions. However, the complex relations between aquatic ecosystem structure and functions, and the resilience of these functions to changes imposed by fishing, are complex, fuzzy, not well known and partly unpredictable (NMFS, 1999; Chapin et al., 2000; Rosenfeld, 2002; Cortina et al, 2006). Some progress is being made (Rice, 2009; Essington et al., 2015), whereas considerations like functional redundancy and the “portfolio effect” may raise even more questions about what aspects of “structure” are necessary for particular functions (Rosenfeld 2002, O’Conner and Crowe, 2005; Schindler et al., 2010; Rice et al., 2013) but more research is needed before operational solutions are identified.

The conventional goal of maintaining structure (age and size structures; populations; species, and habitats) as a proxy for maintaining function remains the more universally implementable approach. Successful movement towards making the structure–function inter-relationships useful in guiding conservation and management efforts are accumulating (Crowder et al., 2005, Seltzenmuller et al., 2009, Andersen et al., 2015, Garcia et al., 2015, Zhang et al., 2013).

## 4. DRAFT FRAMEWORK FOR REPORTING ON TARGET 6

### 4.1 INTRODUCTORY COMMENTS

In contrast to the activity noted around Aichi Targets 10 and 11, interest in approaches for uptake and reporting on Target 6 to the CBD has been modest. FAO, as the competent UN agency for fisheries provides information relevant to the sustainability of fisheries and state of the fishery resources through its biannual State of Fisheries and Aquaculture (SOFIA) initiative<sup>29</sup> and other tools and mechanisms that assist countries in implementing improved fisheries management systems. However, as was clear in the Global Biodiversity Outlook 4<sup>29</sup>, reporting on the broader ecosystem aspects of Target 6 has been spotty and unsystematic.

The Joint Expert Meeting on Addressing Biodiversity Concerns in Sustainable Fisheries<sup>30</sup> organized in Bergen in 2011 (CBD-SBSTTA, 2012) by the CBD Secretariat in collaboration with UNEP, FAO and IUCN, and funded by Norway, focused on how and the extent to which Regional Fisheries Management Organizations (RFMOs) took biodiversity into account in fisheries assessments and management. It reviewed information that could comprise an important part of such reporting, but there has been little explicit follow-up since the endorsement of the report of this meeting by the Eleventh meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 11, 8-19 October 2012, Hyderabad, India).

In order to systematically check the progress made by the fishery sector towards meeting Target 6, it is necessary to check progress in relation to its various arguments identified in **Section 3** and the clarifications therein about the Target 6 drafters' intentions and expectations together with the Technical Guidance given by the CBD Secretariat on implementation (in **Annex 1**). These starting points are summarized in **Table 1**.

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<sup>29</sup> Secretariat of the Convention on Biological Diversity. Global Biodiversity Outlook 4. A mid-term assessment of progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020. UNEP, Montreal, CBD: 155 p. <http://www.cbd.int/gbo4/>

<sup>30</sup> Convened by the Secretariat of the Convention on Biological Diversity (CBD) in collaboration with the Food and Agriculture Organization of the UN (FAO), UN Environment Programme (UNEP) and the International Union for Conservation of Nature (IUCN) Commission on Ecosystem Management Fisheries Expert Group, 7-9 December 2011, Bergen, Norway

**Table 1:** Elements of Target 6 to be considered and expected outcomes

Elements to check	Expected status
All target stocks Fish, invertebrates, plants	Sustainably harvested Legally harvested Overfishing is avoided Within safe ecological limits
Depleted species	Recovery plans & measures in place
Threatened species and Vulnerable ecosystems	No significant adverse impact Within safe ecological limits
Management approach (safe ecological limits)	Ecosystem Approach (Maintained structure and function)

The following additional remarks might be made, from a fisheries angle, regarding the expectations of the CBD Parties when drafting Target 6 for fisheries.

First, there is some overlap between expectations: (i) *All stocks* includes target and non-target ones, whether sustainably used, *depleted*, or *threatened*; (ii) Stocks that are *sustainably harvested* are, by definition, those for which *overfishing is avoided* even though the first term applies to the fishing and management process while the second applies to stocks. (iii) *Depleted* species would most probably meet one or more of the IUCN Criteria for *threatened* even if the first term is used for target stocks and the second for non-target ones. (iv) The less-well defined *safe ecological limits* are probably complied with by avoiding *significant adverse impacts* on an ecosystem, maintaining its *structure and function*. This redundancy results probably from the search for the widest possible consensus and hence the need to integrate the “sacred” concerns and terminology of diverse groups in drafting. This may over-complicate reporting but will probably lead to the same indicators being used to reflect apparently different but fundamentally similar criteria.

Second, a management plan is only required explicitly for the *depleted* species as a *recovery plan* while it is a management imperative for *all target stocks* within the FAO CCRF. However, the requirement is explicit in the CBD Technical Guidelines.

Third, ecosystem services and more generally economic incentives are not explicitly mentioned. They might be assumed and not mentioned because of the strong limitations on CBD with regard to making recommendations about specific policies or management measures in marine environments (going back to the long debate on CBD mandate in ABNJ at COP VIII and the careful compromise references in Part 1 of this report.) However, considering the effort deployed in other conservation and fishery arenas to have economic language inserted in policy instruments, their “absence” in Target 6 is surprising. It can be noted, however, that *ecosystem services are addressed* in Goal D and subsidies and incentives in Goal A, as global issues not linked specifically to either fisheries or marine environments.

Finally, the actions foreseen under Target 6 have consequences for fishing capacity, livelihoods, etc. Outcomes for those potential benefits from use of biodiversity are captured in the Targets under Goal D, however. Integrated planning of coherent efforts to meet all the Goals will be essential, even if this WP focuses specifically on meeting Target 6 of Goal B.

## 4.2 REPORTING MATRIX

Different levels of inputs and output/outcome might be expected as measures of performance, depending on existing capacity and possibility to measure. Specifically, in

order of increasing demands on governance and complexity to set in place, implement and report, performance in implementing Target 6 relate to:

1. Policies and legal frameworks put in place or being developed;
2. Implementation strategies, plans and measures adopted and preferably being executed with measure of effectiveness and efficiency; and
3. Results/outcomes of (1) and (2) such as state of stocks, habitats, bycatch and discards or protected species.

For the purpose of performance assessment, and in order to help the Expert Meeting in providing advice on how to report on Target 6, the latter might be developed into a matrix reflecting explicit outcomes expected by 2020 (as identified in **Table 1**) and implicit expected actions (inputs) required to ensure those outcomes (as listed above).

It will be the task of the Expert Meeting to develop a reasonably comprehensive and implementable matrix. A first attempt to develop such a Matrix is shown in **Table 2** as example to be considered, modified or further developed as appropriate by the meeting participants.

Such a matrix could be considered, completed and used by the different break-out groups to identify the various actions taken by FAO, the CBD, States, civil society and the fishery sector that contribute to fulfilling Target 6 and reporting on progress.

The matrix could be used also as a guide for those committed to report on progress on the implementation of Target 6 and CBD Strategic Plan on policies put in place; legal frameworks, strategies, plans and measures adopted; and various types of results obtained within the period 2010-2020. It would be expected that by 2020 all Parties could report on status of relevant indicators for Columns 1 and 2. This would provide documentation of their efforts to develop and adopt policies and measures that contribute not just to Goal B on reducing pressures, but also to Goal A on reducing biodiversity loss and mainstreaming biodiversity across government and society and Goal C on safeguarding ecosystems, species and genetic diversity. The nature of the Policies, correspondingly, would be viewed through the lens of Goal D on enhancing the benefits to all from biodiversity and ecosystem services as well as on Goal E on participation knowledge and capacity-building.

**Table 2:** Draft matrix of expected outcomes and actions to be taken to reach Target 6 and measure implementation performance. Rows and columns identifiers are used below.

	ELEMENTS OF EVIDENCE				
	1	2	3	4	5
CRITERIA	Sustainable use policies are in place	Resources are harvested legally (1)	Management measures in use	State	Outcome
A All Target species	Int. Agreements translated into national legislation. EBFM/EAF in policy documents	Proper measures adopted. MCS strengthened; IUU eliminated	Capacity management plan. EBFM/EAFM measures. Proper incentives in place. Reliable data on fishing operations and catches	Stock status evaluated against relevant benchmarks. Harvested sustainably, within safe (stock) limits	Overfishing avoided
B Depleted Target species (2)	Policy goals, legislation and incentives in place for bycatch/discards	Recovery plans developed MCS strengthened. Bycatch/discard	Recovery plans and measures in place, Closures. Mandatory discards	Depleted species are rebuilding towards safe biological limits.	Trajectory to recovery is secure

		legislation enforced IUU eliminated	reporting or bans. Species status monitored. Discard levels assessed	Bycatch/discard species within SBL	
<b>C Threatened species &amp; bycatch (2)</b>	Species identified. Risk Policies developed. Legal provisions in place	Risk / Threat analyses done. Protective management Measures enforced	Protection measures. Compliance measures. Species status monitored	Fishing mortality reduced and low. Risk decreasing. Populations are increasing	No significant adverse impacts
<b>D Other species not covered in A, B or C (3)</b>	Policies requiring discard reporting and assessment are adopted	Legislation conducive to discards assessments is in place	Discards are recorded and discard levels are assessed	Discards reduced where they exceed sustainable levels	Discards within Safe Biological Limits (SEL)
<b>E VMEs</b>	VMEs identified. Policies foresee enhanced protection of VME's	Appropriate legal measures are in place	Protection measures; Compliance measures. Species status monitored	Rate of impact of fishery on VMEs is reduced.	No significant adverse impacts
<b>F Ecosystem Structure and function (ESF)</b>	Biodiversity explicitly mentioned; EBFM/EAF requested; Ref. to Ecosystem structure & function or Services	EBFM/EAF man. plans; Ecosystem perspective; From stocks to assemblages; ES-based incentives	Monitoring key ecosystem properties & compliance with measures is in place	ESFs identified. Key ecosystem features are consistent with progress towards SEL	Within Safe Ecological Limits (SEL)
<p>(1) In the Target 6 drafting process, the term "legally" was intended to apply only to target species (aiming at IUU). There was no intent to make all measures (e.g. on bycatch, habitat etc.) necessarily binding. So, the strict "legal" aspect of the elements B2 to F2 is optional</p> <p>(2) Discards are not mentioned specifically in Target 6 but are an important issue in fisheries management and sustainability and may be a risk for threatened or depleted species. In some countries, "discards" are referred to as "bycatch"</p> <p>(3) This category is not explicit in Target 6 and covers non-target species of unknown status caught and landed or discarded</p>					

Moving to more operational columns 3 and 4, there should bring concrete evidence of progress towards the Goal, particularly on rows A and B. Results by 2020 of actions taken between 2010 and 2010 might only be preliminary but early trends would be precious indicators of performance and could help assessing whether efforts are worthwhile and financially sustainable. It also might be expected that more explicit progress on columns 3 and 4 would be available for A and B because these are long-standing expectations of fisheries management, so evaluation and reporting methods should have been developed and implemented before 2010, and only need to be aggregated in the Target 6 reporting. Likewise some degree of quantitative reported of 3 and 4 for the threatened species part of C, where species-at-risk types of programs (CITES or national) may have been in place well before 2010.

The outcomes in column 5 representing the final demonstration of performance might not be all or completely available by 2020. They would nonetheless be milestones towards fulfilling the CBD vision for 2050, i.e. *a world living in harmony with nature where by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.* (CoP Decision X/2. <https://www.cbd.int/decision/cop/?id=12268>?)

It is acknowledged, however, that "moving to the right" in the matrix is also associated with substantial increases in two types of costs: (1) the direct sectoral management costs of the actions needed to implement measures, apply MCS, monitor stocks, fisheries, and ecosystems, estimate appropriate benchmarks and reference points, and doing periodic assessments of status relative to the benchmarks. Such operational implementation is generally costlier than policy development and planning; (2) The costs to society of making whatever changes to fisheries practices are needed to deliver the desired outcomes like re-organizing the sector, promoting cooperatives, providing economic incentives. It is well

established wisdom that in the medium and long term the greatest benefits to society come from sustainable practices in healthy ecosystems, and embodied in overarching documents like “The World We Want”. However, where practices have become unsustainable, or stocks and ecosystems have been severely perturbed by past unsustainable practices, transition costs to reach a state where those longer-term benefits can be enjoyed may be high<sup>31</sup>, in the form of economic incentives to be supported by society.

## 5. INDICATORS OF RELEVANCE TO TARGET 6

Monitoring implementation, measuring progress and assessing performance, specifically on Target 6, require the use of indicators, directly related to agreed objectives and constraints reflected in Target 6. In the following sections we first reflect briefly on FAO and CBD work on indicators in general before moving to indicators of specific interest for Target 6.

### 5.1 THE USE OF INDICATORS IN THE FISHERY ARENA

#### 5.1.1 Sustainability indicators

In modern fishery management approaches, objectives, criteria, indicators, and reference points (targets, limits and thresholds) are developed sequentially, in that logical order, and combined in various ways in implementation approaches. The following paragraphs describe this development in the FAO and the fishery arena.

FAO has developed guidelines on the use of indicators for sustainable development of marine capture fisheries (Garcia, 1997; FAO, 1999). The guidelines recognize that indicators provide a practicable and cost-effective means of (1) tracking progress; (2) predicting and detecting warnings about impinging future problems; (3) learning on successes and failure; and (4) informing stakeholders and improving policies performance through adaptive management.

Indicators often track interacting phenomena and must be considered together, within relevant geographic scales reflecting reasonably defined ecological units, and accounting for fisheries distribution, and international jurisdictions. Because fishery catches are obtained locally and are often traded globally, indicators will be needed both at the finest possible scale (e.g. by population and/or fisheries) but also at aggregated level (at regional and/or ecosystem or even global scale). They must also be elaborated and used keeping in mind the bio-ecological, techno-economic, socio-cultural and governance dimensions of sustainability. In each dimension, the evaluation of performance requires agreement on targets (to be achieved as much as possible) and constraints (to be avoided as much as possible). Thresholds might also be defined for precautionary reasons, signaling need for immediate mitigation.

The specific indicators needed to monitor progress in the implementation of Target 6 In each of the 4 arguments identified need to be formally and clearly identified, together with the data and the elaboration process needed to generate them and the keys to the interpretation of their changes. Considering the comprehensive scope of Target 6, the related indicators needed by the CBD to monitor implementation overlap very significantly

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<sup>31</sup> [http://www.oag-bvg.gc.ca/internet/English/parl\\_oag\\_199904\\_08\\_e\\_10137.html](http://www.oag-bvg.gc.ca/internet/English/parl_oag_199904_08_e_10137.html)

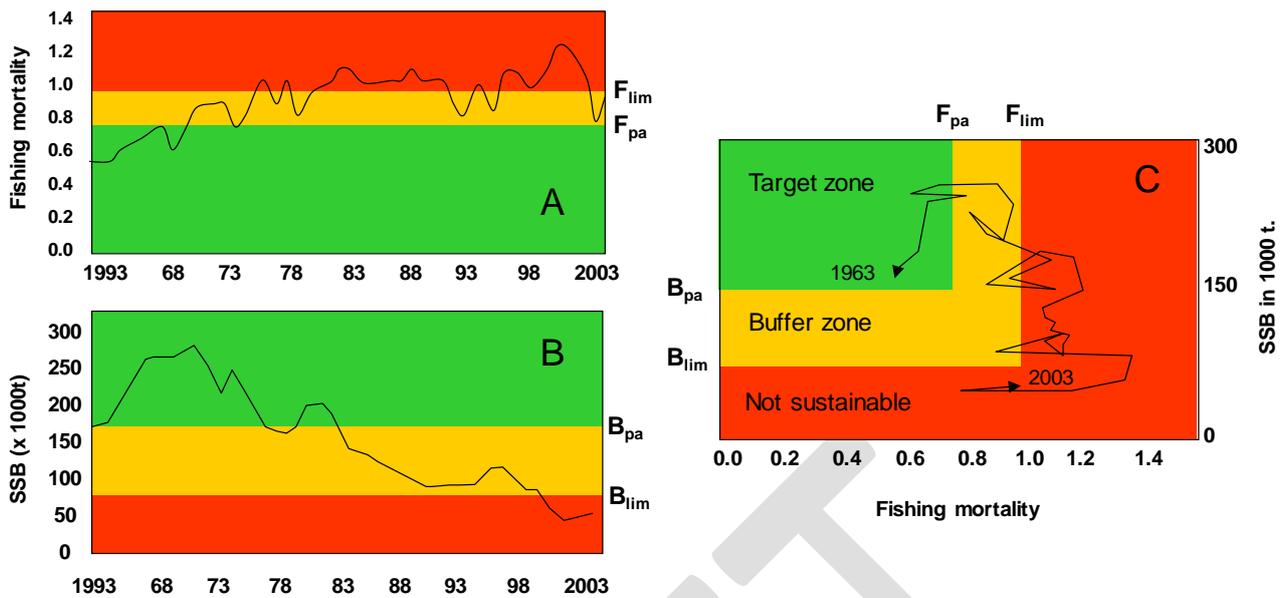
with the set of indicators that would be useful for FAO to monitor more systematically the progress achieved in improving fisheries sustainability.

The FAO Guidelines on sustainability indicators (FAO, 1999) list a large range on potential indicators related to target stocks, non-target stock and ecosystem, fisheries, fisherfolks, economy and governance. Indicators needed in the context of the Ecosystem Approach to Fisheries (EAF) to reflect ecosystems' diversity, quality and adaptability to change (resilience) were reviewed during an FAO EAF-Nansen Expert Meeting identifying for example: (i) catch, population size, and fishing mortality to address the impact of fisheries on target species; (ii) depletion of keystone prey and predator species; marine trophic Index, and ratios of indicator groups to detect fishing induced changes in trophic interactions and community structure (FAO, 2010).

### 5.1.2 Precautionary approach

The concept of the Precautionary Approach was entrenched in global policy for conservation and sustainable use the 1992 Rio Declaration of UNCED (Principle 15) and simultaneously embedded in the 1995 UN Fish Stock Agreement (General principle 5c; Article 6) and the FAO Code of Conduct for Responsible Fisheries (CCRF) (cf. General Principle 6.5) and Technical Guidelines for the Precautionary Approach to Fisheries (PAF) (Garcia, 1994a, 1994b; FAO, 1996). The PAF may use indicators to assess the level of risk involved in various decision trade-offs. For the purpose, target and limit reference points (or values, or trends) are identified delimiting areas of sustainability (to aim at) and areas of risk (to avoid). While such reference systems may be used to track the evolution of a complex system with time, they can be used also to design instruments materializing pre-agreed decisions for actions triggered by some pre-decided level of certain indicators. In fisheries, the concept of *safe biological limit* referred to in Target 6 emerged from that process.

The PAF was seen as linking “*fisheries management intimately with general environmental management*” (FAO, 1996: §21) and it included in *undesirable outcomes... overexploitation, overcapacity, loss of biodiversity, major physical disturbances of sensitive biotopes or social or economic dislocation* (FAO, 1996: §22). Although in the PAF, *safe biological limits* were defined primarily for spawning biomass and fishing mortality, other indicators are possible if more appropriate for the stock or fisheries information available (FAO, 1996: §48), promising increased interest in linking the previous FAO work on indicators (Garcia, 1997; FAO, 1999; Garcia et al., 2000). **Figure 1** shows an example of representation of the trajectory of a cod fisheries in a precautionary approach framework



Cod in sous-zone IV (Mer du Nord), Divisions VIId (Manche Est), and IIIa (Skagerrak) (CIEM 2004)

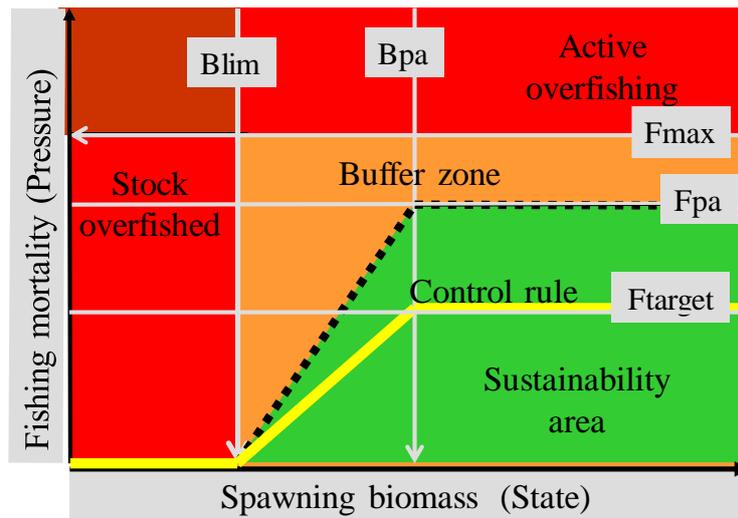
**Figure 1.** Examples of representation of a fishery in a Precautionary Approach framework.

SSB: spawning stock biomass;  $F_{lim}$ = highest allowable Fishing mortality (F).  $F_{pa}$ = Precautionary limit to F-  $B_{lim}$ = Minimum allowable biomass (high risk of collapse).  $B_{pa}$ : Precautionary limit to B. The green area (target are) is also the area within safe biological limits

### 5.1.3 Harvest control rules and EAF

Two developments were then built partly on the indicators and PAF foundation: the development of Harvest Control Rules (HCRs) and the Ecosystem Approach to Fisheries.

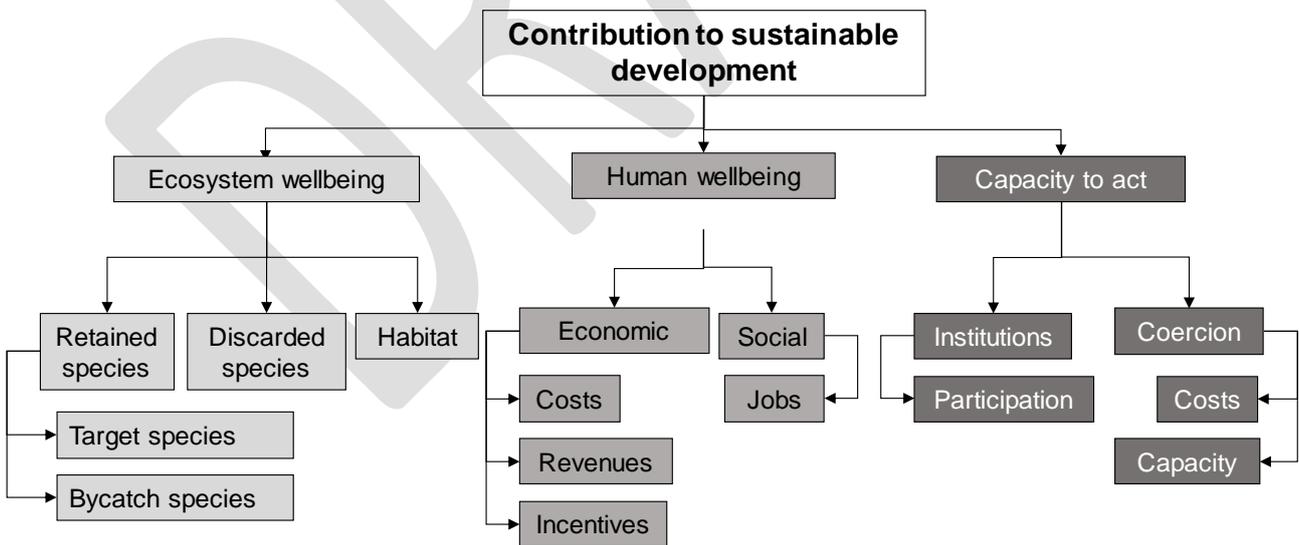
According to the Marine Stewardship Council (MSC) a HCR is *a set of well-defined pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points* (See **Figure 2**). They “codify” a management strategy or harvest regime. In modern marine fisheries, they have been used essentially to calculate of the Total Allowable Catch (TAC), depending on the population and fishery parameters and the selected management strategy (e.g. constant harvest rate, constant quota, or constant escapement strategies). The harvest level decision is controlled by the level of biomass (or spawning biomass) aimed at (target reference) and the HCR helps defining the allowable catch or effort that would maintain biomass at the target level, or increase biomass to the target level (e.g. in a rebuilding plan). A lowest (biologically safe) limit can also be established at or below which drastic decision will automatically be taken, such as rapidly decreasing the TAC or closing the fishery. The sensitivity of the HCR to data or model error as well as environmental oscillations can be tested through simulations (Management Strategy Evaluation, MSE).



**Figure 2.** Theoretical example of a Harvest Control Rule (HCR)

The use of pre-agreed decision frameworks of this type is a direct application of the PAF. Balanced Harvest is an ecosystem-based fishing strategy that may use simple ecosystem-level HCRs with a similar purpose but at the level of the ecosystem or the entire sector (Garcia et al., 2015).

The Ecosystem Approach to Fisheries (EAF) was adopted by FAO in 2001, nine years after its enshrining into the CBD. Indeed, EAF, as promoted by FAO in its Guidelines (FAO, 2003) and as developed, for example in the EAF-NANSEN project<sup>32</sup> uses objectives, targets and limits as part of the multi-criteria decision trees advocated for risk-assessment and decision-making, introducing concretely the precautionary approach into EAF (Figure 3).



**Figure 3.** Decision tree used in multi-criteria analysis for application in EAF

<sup>32</sup> The EAF-Nansen Project “Strengthening the Knowledge Base for and Implementing an Ecosystem Approach to Marine Fisheries in Developing Countries” (GCP/INT/003/NOR) is an initiative to support the implementation of the ecosystem approach in the management of marine fisheries. The aim is to promote sustainable utilization of marine living resources and improved protection of the marine environment. <http://www.fao.org/in-action/eaf-nansen/en>

Practically all the indicators used to construct the decision-tree of EAF and make management decisions at a given time, can be used to track the evolution of the system, (cf. **Figure 1**. Examples of representation of a fishery in a Precautionary Approach framework. SSB: spawning stock biomass; Flim= highest allowable Fishing mortality (F). Fpa= Precautionary limit to F- Blim= Minimum allowable biomass (high risk of collapse). Bpa: Precautionary limit to B. The green area (target are) is also the area within safe biological limits) finding historical trends and changes potentially related to the introduction of measures. As a consequence, the criteria and indicators used for the EAF decision tree can be re-used to monitor progress towards the implementation of Target 6.

## 5.2 SUSTAINABLE USE INDICATORS IN THE CBD ARENA

After the Aichi Targets were adopted at CoP10 in 2010, an *ad hoc* Technical Expert Group (AHTEG) met to review possible indicators for each Target. Its report<sup>33</sup> was considered by CoP11 (CBD 2012) and Decision XI/3 listed the indicators below as possibly relevant to evaluation of progress towards Target 6:

1. Trends in pressures from unsustainable fisheries
  - a. Trends in extinction risk of target and bycatch aquatic species;
  - b. Trends in population of target and bycatch aquatic species;
  - c. Trends in proportion of utilized stocks outside safe biological limits (This is also the Millennium Development Goal [MDG] indicator 7.4);
  - d. Trends in catch per unit effort.
  - e. Trends in fishing effort capacity.
  - f. Trends in area, frequency, and/or intensity of destructive fishing practices
2. Trends in integration of biodiversity, ecosystem services and benefits sharing into planning, policy formulation and implementation and incentives
  - a. Trends in proportion of depleted target and bycatch species with recovery plans (relates directly to 1a, b, c and depends on 1d and 1e)
  - b. Identification of ecosystem services and trends in these services (Added)

These indicators were included in a much larger Annex to Decision XI/3, with the Annex explicitly labels "Indicative List of Indicators {stress added}. The AHTEG lacked both time and expertise to evaluate the feasibility of estimating, individually or collectively, either the periodic status of these indicators for particular fisheries or ecosystems, or appropriate values for reference points on them, Rather, the message was that if the necessary data existed, these types of indicators would be appropriate for reporting. For jurisdictions rich in science capacity and conducting regular stock assessments, some of these indicators may indeed be feasible, particularly those referred to in bullets b, c, and d. However, such science capacity is far from universally available, and many of the indicators are not straightforward to calculation, e.g. for indicators in bullets a and f.

Nonetheless, the FAO Commission on Genetic Resources for Food and Agriculture (CGRFA) considered these indicators as fully relevant to its work (FAO, 2013).

## 5.3 TARGET 6 INDICATORS

### 5.3.1 Matrix of possible indicators

<sup>33</sup> <https://www.cbd.int/doc/?meeting=AHTEG-SP-IND-01>

The Expert Meeting will use **Table 2** (revised as appropriate) to identify in each of the cells the relevant indicators and examine whether they are likely to be produced, occasionally regularly, exceptionally, and in particular in time for the 2010 bumper date set by the CBD.

**Table 3:** Draft matrix of indicators of relevance for Target 6, based on the actions and outcomes listed in **Table 2**

		1	2	3	4	5
		Sustainable use policies are in place	Resources are harvested legally (1)	Evidence of inputs Measures in use	Evidence of state	Evidence of outcome
A	All Target species	Nb of revised or reviewed) national legislations	Nb of MCS systems strengthened; IUU records (interventions, convictions)	Nb of national capacity mangt & EBFM/EAFM plans; Nb of mangt. measures reviewed / revised	% Stocks sus.harvested based on assessments of B and F or surrogates; %stocks within safe limits	% Stocks under overfishing  % Stocks overfished/depleted
B	Depleted species	Presence of policies and processes for designating "depleted" species	Presence of regulations requiring recovery of depleted species	% species designated as depleted, for which recovery plans are developing/adopted; Nb of recovery plans & measures	% Stocks with reduced F, increased B	% stocks overfished/ depleted
C	All discards	Policies that require recoding and reporting on total catch composition (not just key valued species)	% of fisheries with mandatory bycatch reporting	% Fisheries with mandatory bycatch reporting; % of fisheries with some management goals or targets for bycatch	% species with discards limits. % of species assessed against these benchmarks	Evolution of discards amounts by species
D	Threatened species bycatch	% of plans with threatened species identified	% of fisheries where catch is regulated to protect threatened species	Presence of Fishing & trade protect. measures appropriate to the fishery and threatened species	Evolution of threatened species biomass or catch	% of threatened species potentially experiencing significant adverse impacts
E	VMEs	Percent of fisheries with policies intended to protect VMEs	VMEs are referred to in fishery legislation	Nb or coverage of protected VMEs by ecosystem	Nb of scientific surveys and % of total area covered	% of seabed where VME criteria have been applied by a scientifically robust process
F	Ecosystem Structure and function (ESF)	% policies adopting ecosystem structure references; % fisheries covered by EAF/EBFM mngt plans	ESF is referred to in fishery or env. legislation	% of Fisheries with EAF/EBFM plans, indicators and reference values; multisp. framework; Incentives for Ecosystem Services	% of ecosystems assessed against benchmarks & within safe ecological limits (SEL)	% of ecosystems with notable improvement of ecosystem structures (sp. & sizes) & overall balance; Coverage of critical habitat rebuilding

<b>Notes</b>	<p><sup>1)</sup> In the Target 6 drafting process, the term “legally” was intended to apply only to target species (aiming at IUU). There was no intent to make all measures (e.g. on bycatch, habitat etc.) <u>necessarily binding</u>. So, the strict “legal” aspect of the elements B2 to F2 is optional.</p> <p><sup>2)</sup> Discards are not mentioned specifically in Target 6 but are an important issue in fisheries management and sustainability and may be a risk for threatened or depleted species. In some countries, “discards” are referred to as “bycatch”</p>
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The above tables have the rows structured chronologically, following a policy development to implementation process: (1) adopt a policy, (2) ensure that legal instruments are adequate; (3) identify and put in place the measures and instruments needed to implement the policy, in line with the law; (4) monitor responses of the ecosystem element concerned (e.g. a species, a stock or a habitat) to the measures, and (5) see the accumulated changes (outcomes) resulting from the responses persisting over time. However, when considering the potential indicators, the classes of indicators are re-arranged in the following sections in a stock and fisheries assessment logic. This makes it easier to follow the flow of data and information needs, from tabulation of basic data to various assessments and elaboration of advice, distinguishing minimum requirements to have a meaningful reporting on that category from what might desirable, conditions permitting.

For illustration purposes and without pretending to be exhaustive, we will reorganize the information along two perspectives: (i) trends in pressure, resources and supporting ecosystems; (ii) trends in governance response. In reality, these trends are directly connected into what ought to be a virtuous cycle of pressure-state-response and the order in which they are addressed is not particularly relevant. In a result-based management framework, these indicators are most important for performance assessment. Reporting on actions is however useful in the initial stages of implementation, before the end results materialize, to get some sense of progress.

### 5.3.2 Trends in fishing pressure and state of stocks and ecosystems

In this section, we will examine the way in which trends in fishing pressure and its impact on stocks, species, and ecosystems can be detected and reported, reflecting the response of the natural system to (i) the pressure exerted by fisheries; and (ii) to governance action, i.e. to policy, legal and management measures. To a large extent, this covers columns numbered 4 and 5 in **Table 3. Removals**

- a. Minimum: Catch data, possibly disaggregated by landings and discards, for target and non-target species, by population (species/stock).
- b. Desirable: Demographic data by species and by age/size is needed for robust estimates of mortality.

#### 1. Standardized fishing pressure

- a. Minimum: Data on fishing capacity/effort by fleet/ fishery/ management unit, covering main gears.
- b. Desirable: From total fleet size (GRT) to total number of days at sea (weighted by vessel size) and formal fishing mortality estimates, in as detailed form as possible, e.g. by main gears, by stock, with spatial distribution.

#### 2. Assessments of the state of target species/stocks

- a. Minimum: Assessments undertaken by population/stock, by management unit, using the above fishery data

- b. Desirable: Assessments based on fishery data augmented by fishery-independent data (e.g. collected by periodical scientific surveys)

### 3. Assessments of the state of non-target species/stocks

- a. Minimum: Such assessment usually produces: (i) trends in population size; (ii) Trends in fishing pressure; Amounts and composition of discards, by species.
- b. Desired: Relation of trends and status to some optimal level of capacity/effort/mortality or reference state such as MSY (e.g. fully exploited, overexploited, depleted, etc.) or Safe Biological Limit.

### 4. Vulnerable Marine Ecosystems

- a. Minimum: (i) Identification of the areas which meet the criteria for VMEs or surrogates for VMES; (ii) General assessments of how threats that various fishing gears and practices may represent in the types of areas that meet each VME criteria; and (iii) spatial distribution of effort by gears identified in (ii).
- b. Desired: Some direct evaluation of the status of the VMES and impacts of fishing gears on them.

As one could expect, for at least 3 (non-target populations) and 4 (VMEs) even the data for the minimum evaluations are not systematically available. Even for targeted stocks the universally-recognized destructive practices such as dynamite fishing, poisoning or trawling on fragile and exposed habitats (e.g. as coral reefs, seagrass beds), often formally prohibited by law and hence practiced illegally, are obviously not reported to fishery authorities –*a fortiori* to FAO itself– and are conceptually part of IUU. However, trends may be available in selected countries from local Monitoring Control and Surveillance (MCS) data. The extent to which this can be extrapolated to a regional or global trend remains to be seen.

### 6. Status and trends in Ecosystem Structure and Function

- a. Minimum: (i) Identification of the main features that characterize ecosystem structure and, if present in sufficient supply, allow adequate functioning; (ii) Periodic assessments of these features and their status;
- b. Desired: (i) Identification of more integrated and dynamic ecosystem properties from those individual features in ways that reflect the rates (or surrogates for rates) at which the functions are working; (ii) Assessment of the status and trends of those ecosystem properties.

Ecosystem modelling is a preferred tool for identifying the appropriate features (§6a) and assessing the status and trends (§6b). There are many types of ecosystem models, with differing assumptions and data requirements (e.g. in Plaganyi, 2007). Many reviews have failed to identify a single “best” modelling approach, and the capacity to apply any of them differs greatly between countries and jurisdictions. A diversity of models, from qualitative and descriptive to highly analytical and process-based, will be applied in reporting of this aspect of the target. It is important that, in each case, the inferences about properties, status and trends that will be drawn from model results, take into account the data available and model assumptions. In practice, great care will be needed to avoid over-interpretation of both simple and complex models outputs, whether supported by lesser or greater amounts of data.

#### 5.3.3 Trends in governance responses

At a more strategic level, this section looks at ways in which governance (policy and legal frames, strategies, approaches, plans, measures etc.) are changing to confront the difficult and dynamic challenge of satisfying growing human needs while maintaining an essential productive ecosystem. This relates to columns numbered 1 to 3 in **Table 3**.

Target 6 reflects a commitment to undertake substantial changes in fisheries governance (contributing also to Goal E of the Strategic Plan. One would expect a progressive generalization of successful institutional innovations already tested in a number of advanced countries, translating international agreements into national and regional realities. Following the sequence of institutional processes one would look for progress in: (1) The changes in policy and legal frameworks; (2) Adoption of strategies, processes, approaches and plans (including Monitoring & Evaluation); (3) and Specific measures (input, output and incentives) adopted.

The following sections give only some illustrative examples. Some appropriate indicators may be quantitative (e.g. number of new MCS agents recruited; % increase in MCS budget). Some may be bipolar (e.g. has EAF or good governance been formally adopted? Yes, or no?). Some others may be qualitative (e.g. Fishers' collaboration has improved; Increased fishermen's awareness). However, efforts should be made to quantify the changes as much as possible. The individual types of possible indicators are not specified separately for each row of Table 3, since they are generally the same in each major heading

### **1. Changes in policy and legal frameworks**

- a. Minimum: (i) National recognition of ecosystem and biodiversity concerns: Nb. of conferences, briefings, TV shows, guidance documents. (ii) Official declaration of adoption of EAF; (iii) Number of "addendums" to existing policies (e.g. decrees) to fill gaps regarding e.g. threatened species and habitats; (iv) Nb. of economic and social incentives introduced to promote voluntary action. (v) More decisive enforcement and pro-environmental interpretation of existing legislation. In general, efforts to increase awareness on vulnerable species and habitats and people sense of stewardship; (vi) Nb. of training courses of MCS officers in biodiversity-related matters or Nb. of trainees; (vii) % increase in NGOs involved in policy-making.
- b. Desirable: (i) Official adoption of EAF at policy/legal level; (ii) Nb. of new legal instruments adopted to better integrate ecological concerns: e.g. obligations to report on discards, catch of threatened species; discard bans or bycatch quotas and credits as appropriate; New and more deterrent penalties against IUU fishing; Better protection of confidentiality to foster industry's collaboration (e.g. through "sentinel fleets"); (iii) % increase in MCS budgets/means; (vi) Institutionalization of Mandatory management plans; Environmental Impact Assessment; "Good Governance"; and performance assessment.

These changes would be fostered by adoption of cross-sectoral policy and legal frames – such as the Ecologically Sustainable Development (ESD) frame adopted in Australia in 1992<sup>34</sup>.

### **2. Adoption of management strategies, processes and approaches**

- a. Minimum: (i) Development of local EAF guidelines (in the appropriate language); (ii) Nb of pilot projects designed to develop and test EAF-based

<sup>34</sup> <http://www.environment.gov.au/about-us/esd>

management plans including performance assessment; (iii) Nb. of pilot projects on capacity reduction and/or introduction of user rights; (iv) Nb. of training courses and trainees in EAF implementation (data collection; Identification of threatened species; Assessment; Modelling; Elaboration of advice and management; Implications for industry; (vi) Nb. of fisheries for which the ecosystem environment has been described, with critical habitats, threatened species, etc.);

- b. Desirable: (i) % of fisheries covered with mandatory EAF-based management plans; (ii) % of national fisheries covered by a capacity management plan, accounting for compensation costs and funding needs sources and eventual leakage problems; (iii) % of management plans including formal risk assessment and management, including for data-poor situations; (iv) % of fisheries covered by an Environmental Impact Assessment (EIA).

The efforts needed to bring the national/regional capacity up to task may not be insignificant and requires international cooperation. Good governance (with meaningful participation to decision-making) and a culture of performance (results-based governance).

### 3. Management measures

At this level, many initiatives might be bipolar and reported as Yes or NO or ticking a box or not. A large tool-box is available of management measures that have been adopted often sequentially, piling up in over-complex frameworks and a long list or a large number of them might not really reflect effectiveness and efficiency. What is mainly needed is some evidence that key measures are implemented, particularly those most likely to improve sustainability and reduce collateral impact on biodiversity.

Indicators might include the number or % of fisheries with: (i) capacity reduction measures; (ii) traditional use rights identified, reinforced or eliminated; (iii) new community-based or individual rights (transferable or not); (iv) catch traceability programmes; (v) Ecolabelling; (vi) Bycatch Excluder Devices, mandatory discard reporting or landing obligation; (vi) economic incentives for voluntary bycatch reduction (buy-back; compensation; Payments for Ecosystem Services)

## 6. PRESENT COMMITMENTS AND RELEVANT ACTIVITIES

### 6.1 INTRODUCTION

A central issue to be addressed by the Expert Meeting is that of considering the forms of collaboration with FAO and the fisheries constituency at global and regional levels that would enhance global reporting by CBD to its Parties and the World (and by FAO to COFI and its broader constituency. This may imply submission of fishery information from FAO to CBD at regional and global level, on elements to be agreed and in time for the 2020 report. This may also imply collaboration by FAO in designing templates for States and RFBs to report to CBD on their efforts to reach Target 6 in their areas of competence.

However, the multiplication of instruments and initiatives, the growing complexity of Governance, and the widening adoption of performance appraisal, has resulted in an ever growing reporting burden for which States complain regularly in international fora. As a consequence, adding a Target 6 reporting burden to institutions already overloaded by their own is something to be considered carefully, to reduce as much as possible the marginal cost to the institutions concerned.

The reporting framework proposed above points to types of indicators which in turn reflect needs in data collection, assessment, and reporting and communication with significant obligations for groups of stakeholders, including many that may have participated in the decision process leading to Target 6 and are not formally bound by it, if not by a common sense of ethics, or concrete economic interest. These implications need to be looked at national, regional and global levels within the context of existing commitments, budgets and human capacity, identifying uncovered needs and ways to fill the related gaps.

In the following sections, we will focus on the global and regional level and on FAO and the CBD. At the national level, efforts at collecting marine fisheries and biodiversity data are so variable among countries that no simple summary is possible. Fully developed countries often have budgets in the order of millions to tens of millions of US dollars annually for data collection and management and scientific assessments while developing countries, particularly Small Island Developing States have very limited capacity to undertake these tasks and depend to a variable extent on international and bilateral cooperation.

It is the responsibility of inter-governmental institutions, like FAO and the CBD to develop guidance for their Parties, to be used for national reporting, considering all reporting burdens they may have already, and many of the considerations made in the following sections are relevant for that purpose.

## 6.2 EXISTING COMMITMENTS

The examination of existing commitments aims at identifying the potential contributions to reporting on Target 6 that might be provided by ongoing activities in fisheries and biodiversity conservation with little marginal costs.

States commit themselves to undertake certain things in certain ways in inter-governmental institutions they have established at global and regional levels. The dense web of such institutions that exist today for fisheries and biodiversity conservation have developed progressively since the mid-19<sup>th</sup> century (Garcia, 2014). The legal frameworks provide by international treaties and conventions tends to evolve very slowly and reflect overarching commitments embedded in their goals. The policy frameworks agreed under their umbrella and which aim to translate them into concrete action tend to be more dynamic and are at the core of international negotiation. They have evolved with time but remain connected to their historical roots.

In relation to the commitments of relevance to the implementation of sustainable fisheries and sustainable use of biodiversity –including for Target 6 within the 2010-2020 decade– have been elaborated since the early 1970s even though the quest for a *society living in harmony with Nature* is very much older. They emerge from: (i) Legal binding instruments (treaties and conventions) with their overarching goals and the 1982 UN Convention on the Law of the Sea is the overarching and common legal frame for fisheries and biodiversity conservation; (ii) Policy frameworks developed by specialized institutions like IUCN, FAO or the CBD; and (iii) last but not least the outcomes of influential cross-sectoral Summits, organized in –and followed up under– the UNGA since the early 1970s (UNCHE, 1972; UNCED, 1992; Millennium Summit, 2000; WSSD, 2002; Rio+20, 2012 and the UN Sustainable Development Summit, 2015) and follow-up work in the ambit of the UNGA.

The commitments undersigned at these meetings are registered in international policy documents such as the Agenda 21 of UNCED, the Plan of Implementation of WSSD, the Rio+20 Declaration (“The Future We Want”), United Nations Millennium Development

Goals (MDGs, in 2000) and the Sustainable Development Goals (SDGs in 2015) contained in the Agenda for Sustainable Development<sup>35</sup>.

Fortunately, all these successive commitments do not pile up in an unmanageable scaffolding but tend to replace each other and evolve somewhat in successive outcomes, becoming more specific, more precise and more realistic, perhaps, as lessons on implementation are learned. From that angle, Target 6 synthesizes a lot of earlier commitments, stressing more than the preceding ones, though, the ecosystem and biodiversity conservation dimensions of fisheries. The global commitments are then translated in regional and national policy frameworks with the relevant institutions, legislation, plans, etc. through cascading processes (Ridgeway, 2014).

Global commitments are generally “declarative”. For example, in its 2012 Declaration (entitled “The future we want”) the Rio+20 Summit participants *commit to protect, and restore, the health, productivity and resilience of oceans and marine ecosystems, and to maintain their biodiversity, enabling their conservation and sustainable use for present and future generations, and to effectively apply an ecosystem approach and the precautionary approach in the management, in accordance with international law, of activities impacting on the marine environment, to deliver on all three dimensions of sustainable development* (emphasis added).

This text confirms the decades-old commitments to develop a *society in harmony with Nature* using modern terms and concepts and reminding of the three dimensions of sustainable development, underlining a concern that some of them might be underplayed. These commitments are not expressed in any absolute or relative term (in % of some reference value). A generic time horizon is often attached to the commitments (e.g. 2015, 2010, 2030) by which, implicitly or explicitly, some review will be conducted. As a consequence, progress remains elusive, not easy to check, and can be differently appreciated by those reading about it. Nonetheless, the purpose of these commitments is to check the amount of consensus available and to serve as a reference of claimed intentions, to be kept in mind, or cited, when developing regional and national policies, at the level of which more quantitative and specific commitments can be made.

In the following sections we will briefly examine the commitments in fisheries and biodiversity conservation at global and regional levels focussing on FAO and the CBD while noting other possible contributions to the reporting on Target 6 without pretending to be exhaustive.

### 6.2.1 At global level

#### Commitments from FAO

Global legal frameworks for sustainable and responsible fisheries include: (i) The 1982 Law of the Sea convention (LOSC); (ii) The 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Compliance Agreement); (iii) 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 Stock Agreement); (iv) The 2009 FAO

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<sup>35</sup> Adopted in September 2015 at the occasion of the 70<sup>th</sup> United Nations Anniversary with bumper date of 2030. <https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>.

## Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

The overarching goal of FAO in fisheries, expressed in various ways since its creation, is to ensuring a sustainable contribution of fisheries to food security, with all its implications for resources conservation and livelihoods. The scope of its work has broadened with time, from the initial focus on fisheries production to: stock assessment and fisheries technology; development and environmental impacts on fisheries; economics, policy and planning; environmental impacts of fisheries on biodiversity and ecosystems and is now facing the changing role of fisheries in a globalizing cross-sectoral complex.

During this evolutionary process, the FAO agenda and objectives have significantly broadened. Through its biennial Committee on Fisheries (COFI) and occasional high-level conferences, FAO has built consensus and made decisions regarding fisheries policy, generating numerous specific and in most cases non-binding commitments. Its work on biodiversity is also supported by a number of Statutory Bodies, such as the Commission on Genetic Resources for Food and Agriculture, where countries debate and deliberate on matters related to the mandate of FAO at global or regional level.

Every COFI meeting is an occasion to review the issues affecting fisheries, already identified or emerging, take stock of progress or lack of it and develop consensus on corrective solutions. The agreed policies, strategies, approaches and objectives represent *de facto* commitments of the Parties to adopt and use them themselves, and the COFI Secretariat is often requested to follow up on implementation of the main instruments and report.

The detailed commitments that such a process leads to –e.g. regarding the bio-ecological, techno-economic, socio-cultural and governance aspects of fisheries– are too numerous to be summarized here. The best comprehensive representation of these commitments may be the Code of Conduct for Responsible Fisheries (CCRF) and the various International Plans of Action as well as the International Guidelines formally adopted at COFI to foster implementation (see **ANNEX 2** – FAO Fishery policy and management instruments) including in areas such as data collection, information systems, assessment methods, monitoring, evaluation and reporting.

*De facto*, many of these instruments contain also commitments in relation to other targets such as Target 10 (e.g. regarding reduction of anthropogenic impact on coral reefs) and Target 11 (on protected areas and other effective area-based conservation measures).

The range of commitments regarding fisheries already made, in principle, at FAO by its Parties –including on target, non-target and threatened species as well as vulnerable ecosystems– cover the 4 main arguments of Target 6<sup>36</sup> (cf. **Section 3.2**). This convergence, reached despite a poor participation of the fishery community to the redaction of Target 6 should facilitate a more direct and mutually beneficial collaboration between the processes of reporting on progress towards responsible fisheries, at FAO, and on implementation of Target 6, at the CBD. There are challenges, however:

1. The elements of appreciation of performance are rather vague in the expression of Target 6 itself. More specific elements are given in the Technical Guidance (**Annex 1**) such as direct reference to MSY but these have been developed by experts, have not been formally endorsed by Parties and remain “guidance”. Objections and differences in interpretation might therefore emerge in the reporting process.

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<sup>36</sup> But probably not all the expectations of CBD regarding all the biodiversity present in fishing grounds.

2. There may be some different views about the role of MSY or the operational definition of “Safe Biological Limits” that need to be resolved to produce agreed outputs.
3. Differences can be expected in favourite instruments (e.g. technology and performance standards and in fisheries vs protected areas in biodiversity conservation);
4. As a report on Target 6 is needed by 2020, it can only be hoped that a faster agreement on data, indicators, references and trends can be reached very rapidly. By comparison, it took FAO, CITES, IUCN and TRAFFIC about two decades to finally “accept to disagree” on limits and interpretation of trends in relation to extinction rate.
5. These commitments often require significant negotiations but are non-binding, leaving their implementation to the political will and capacity of the states concerned. For developing countries and SIDSs, bilateral and multilateral cooperation are essential.
6. A certain level of overall coherence among them despite the necessary changing COFI agenda is ensured by the Secretariat and above all is provided by the Code of Conduct, a non-binding instruments that has demonstrated nonetheless to be very widely used as a reference and as a code of ethics under which strategies, plans and guidelines are nested.
7. Commitments made at FAO are not time bound while Target 6 is to be reached by 2020 (following failures to reach the same results by 2012 or 2015 though!). Contributing by that bumper date may require some special effort by FAO to align its assessments on that date. The fishery commitments at COFI as have accumulated incrementally since the Code was elaborated, with some re-organization through the adoption of the Ecosystem Approach to Fisheries, Target 6 is an attempt to bring the biodiversity-related commitments together for comprehensive coverage of the interactions between fisheries and biodiversity.

Thus, the convergence in the aims and the rational “softness” of the Target arguments (cf. **Section 0**) are such that, with some efforts from both Parties, particularly in reporting, a reasonable level of implementation could be expected.

### **In the biodiversity conservation arena**

The main global legal frameworks for biodiversity conservation are: (i) The 1982 Law of the Sea Convention, common to fisheries and biodiversity conservation; (ii) The 1992 Convention on Biological Diversity; and (iii) a series of global conventions and treaties such as those establishing IUCN (1948), RAMSAR (1971), UNEP (1972), CITES (1975) and CMS (1979). In the near future, if the starting negotiations are fruitful, an Implementation Agreement to UNCLOS for the Conservation and Sustainable Use of Marine Biodiversity in Areas beyond National Jurisdiction might help improving that framework and the commitments of States regarding high seas biodiversity.

In the meantime, the main vehicles for commitments of Parties to the CBD, aside from the convention itself, are the decadal Strategic Plans (adopted in 2000 and 2010), and the Decisions adopted at the biennial CoPs. The current Strategic Plan has already been summarized in **Section 3.1**. The more frequent Decisions follow a number of themes. A few occur only once. A few emerge in a series of meetings before the issue is considered addressed or has evolved sufficiently to be better covered by a different theme. Finally, some themes become nearly routine features of the CoP outputs. The Marine Coastal Decision has been negotiated annually since COP V (2000).

The CBD Decisions on Marine and Coastal Biodiversity have had the provisions most directly relevant to fisheries, as illustrated in **ANNEX 4** – List of FAO statistical data collections of relevance to Target 6 based on specific paragraphs taken from past CBD Decisions that directly address fisheries issues. Of course many other parts of the Decisions on Marine and Coastal Biodiversity have implications for fisheries, such as all the work on Ecologically and Biologically Significant Areas (EBSAs) where jurisdictions might consider management measures to give these areas features of “enhanced protection”. In addition, many of the cross-cutting thematic Decisions contain provisions which are germane to fisheries either via their scope of application to all pressures on biodiversity, or include outcomes only achievable if fisheries as well as other sectors cooperate. Decisions on Protected Areas in general are a case in point.

The unifying concepts across all these Decisions remains the Convention itself, and its commitment to conservation of biodiversity, its sustainable use, and equitable sharing of benefits from biodiversity. However, the decisions just sketch out goals and sometimes pathways to move towards those goals. Respecting the CBD mandate, they do not discuss specific management measures or call for their application.

Important for this Expert Meeting, they also do not call for specific data to be collected and reported to the CBD Secretariat, or for the Secretariat to maintain specific databases and perform specific evaluations. The periodic Global Biodiversity Outlook (GOB) does convey substantial information on status and trends of biodiversity, particular as related to Aichi Targets on biodiversity and to features explicitly mentioned in Decisions. However, their process of development does not entail consolidating identical data reported by Parties, and doing original synthetic analyses of those consolidated databases. Rather they are synthesis reports from expert working groups usually supported by UNEP, integrating information from national biodiversity strategies, action plans and reports and extrapolations of indicator-based and model-based trends, and other scientific literature. States are informed of the preferred indicators for each Target, but there is great flexibility allowed in what is contained in national reports (CBD, 2014, Box 0.2). Moreover, the RSOs are focused specifically on reporting on progress towards specified Targets. Reporting on actions on issues raised in the Decisions themselves (for example in response to the calls in Table 4) is even more flexible. In the case of EBSAs, for example, the CBD is mandated to maintain an EBSA Repository (Decision X/29, §39) but Parties and workshops are given great leeway in what they may contribute to the repertory. Thus, the reporting burden on States at the global level is kept modest. Templates are provided by CBD to be completed for each EBSA entered in the Repository, but they are not mandatory for use by Parties within their EEZs, and even when completed for EBSAs at CBD workshops the nature of the contents is variable, as are arrangements for access to the background data from each EBSA..

### 6.2.2 At regional level

The regional level is central to the effectiveness of translation of global commitments into regional and national implementation (Ridgeway, 2014). The Rio+20 Summit Declaration (The future we want) *acknowledge(d) the importance of the regional dimension of sustainable development...agreeing that...Regional frameworks can complement and facilitate effective translation of sustainable development policies into concrete action at national level.*

#### **Commitments of Regional Fishery Bodies (including CCAMLR)**

Regional Fishery Bodies have existed for decades. They are international organisations formed by countries with fishing interests in an area/resource. Their convention defines their mandate in terms of area and species of competence. Some of them deal with practically all the fish stocks found in a specific area (e.g. NAFO, CECAF) while others deal only with a group of species in their area like tropical tunas (e.g. ICCAT, IATTC) or even a single species like the Southern bluefin tuna (e.g. CCSBT). The FAO RFBs have only a consultative, promotional and capacity-building role, promote research and assessment, provide advice on management but do not have any binding decision-making power. The Regional Fishery Management Organizations (RFMOs) make formal management decisions (e.g. allocate resources; regulate effectively fishing operations). They do not have coercive power (they rely on States for that) but monitor and report on compliance. The more specialized the institution, the less one can expect in terms from them of capacity to deal with the broad biodiversity (CCMLAR is the most broad-based of the RFMOs).

As a consequence, the commitments of RFBs is limited by their mandate. It is circumscribed by the list of species under competence. For these species, RFBs are committed to collect data on fisheries (catch, effort, population distribution and structure, state of stocks, etc.). The interest for habitats (unless really critical to the target resources) and for non-target species (unless specifically protected) has been limited by political will of members and financial resources available. This is changing, however, and attention towards Ecologically Related Species (ERS) and Vulnerable Marine Ecosystems is growing.

A meeting organized by CBD in collaboration with FAO to study the extent to which RFMOs had introduced biodiversity concerns in their agenda and activities (UNEP, 2011). Four classes of “biodiversity concerns” were considered:

1. The extent to which predation on pre-recruit and recruited ages of exploited fish stocks was considered in accounting for the dynamics of those exploited stocks;
2. The extent to which assessments of the exploited stocks evaluated the degree to which those stocks were contributing top-down control as a predator over the dynamics of the food web of which the stocks were a part;
3. The extent to which bycatch mortality imposed on non-targeted (and often non-assessed) species was considered in stock assessments; and
4. The extent to which the impacts on seafloor habitats by gears used in the fisheries were considered in stock assessments.

The relation with Target 6 and in particular its ecosystem-related concerns are obvious.

In brief, the conclusion was that *RFMO have many appropriate provisions for conservation and sustainable use of biodiversity in their Conventions and overarching policies, and the more matures ones have translated these provisions into management measures.* However, the review noted the dearth of analytical evaluation of the performance of such measures in delivering intended outcomes. It noted that the effectiveness of VMEs' protection depended on the relative speed of expansion of VMEs and of the fisheries. In relation to non-spatial, trait-based protection measures, the review concluded that they would be effective only if bycatch limits were set at appropriate level and bycatch mortality was kept within the specified (biologically safe) limits. It reckoned also that several areas of potential collaboration between CBD and RFMOs existed to accelerate the deployment of more effective biodiversity management measures (UNEP, 2011).

Within the time available to produce this report, we have not been able to check to what extent RFBs were dealing with, or referring at all, to Target 6. In terms of reporting, the CBD could probably expect to obtain information regarding the state of target species with better information for the most important ones. Such information is usually available anyway on their website but could be more easily and competently compiled and summarized by their scientific groups. Some might be able to provide recent information on key bycatch species (e.g. sharks, birds and turtles in tuna fisheries) and VMEs. Very few would have a comprehensive ecosystem perspective on their area of competence. However, any such reporting by RFBs directly to CBD, formally or informally, would require clearance by the Parties to the RFB. It cannot be assumed that such clearance will be given quickly and readily in all cases, based on the experiences with collaboration between RFBs and CBD on the EBSA-VME descriptions (e.g. in Rice et al. 2014).

Some RFBs with a hybrid mandate such as the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) or the Sub-Regional Fishery Commission (SRFC) in West Africa which deal both with fisheries and the environment, more complete reporting might be expected. However, the capacity of CCMLAR to respond to reporting demands is significantly superior to that of the SRFC.

### **Commitments of regional environmental organizations (RSOs)**

The CBD has no regional arm in itself, although it cooperates with regional organizations, particularly the UNEP Regional Seas Organizations (RSOs), and increasingly with the Regional Fishery Management Organizations and Agreements (RFMOs/As), for example in the work on VMES and EBSAs (Rice et al. 2014) as well as various capacity building activities through the Sustainable Ocean Initiative<sup>37</sup>.

There are several international marine biodiversity scientific consortia that, although having global coverage, and to the extent possible, provide much of their information at regional scales. Key groups are the now completed Census of Marine Life, its institutional offspring –the Ocean Biogeographic Information System (OBIS)<sup>38</sup> and the Global Ocean Biodiversity Initiative (GOBI)<sup>39</sup>. Both have provided information highly relevant to many of the arguments of Target 6. They are scientific networks that strive to stay abreast of new information on ocean biodiversity as it comes available. However, there are no responsibility of States to provide information to OBIS (although it belongs now to the Intergovernmental Oceanographic Commission of UNESCO) or GOBI, nor any authority for OBIS or GOBI to impose on States requirements for provision of information or specified data.

The work of the UNEP network of Regional Seas Organizations (RSOs) and Programmes (RSPs) has important implications for conservation of biodiversity, and many activities are developing in consultation with the CBD. UNEP maintains a reporting series for products from the various Regional Seas organizations<sup>40</sup>. Many of these reports are excellent sources of information, but their contents are largely determined by the participating experts, in response to high-level requests from UNEP Parties for a report on a specific theme. They rarely involve specific and systematic reporting structures and requirements imposed on the members of each RSO. Many reports have information relevant to reporting on Target 6, such as on seamounts (Clark et al., 2006) and deep-sea biodiversity

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<sup>37</sup> <https://www.cbd.int/doc/meetings/mar/soiom-2014-02/official/soiom-2014-02-actionplan-en.pdf>

<sup>38</sup> <http://www.iobis.org/>

<sup>39</sup> <http://www.gobi.org/>

<sup>40</sup> <http://www.unep.org/regionalseas/Publications/reports/default.asp>

(UNEP 2006). However, these are one-of reports not implying any ongoing reporting demands on States.

Overall there may be some potential for RSOs to play a role in reporting on some aspects of Target 6 at the regional scale. However, this is likely to be greatest for the “ecosystems within safe limits” aspects of Target 6, and even that potential limited by the capacity of the RSOs do whole ecosystem synthesis studies.

Another important initiative that might be able to produce reports at regional (indeed ecosystemic level) is the IUCN programme towards establishing a Red List of Ecosystems<sup>41</sup>. Red List of Threatened Species, it compiles information on the state of the world’s ecosystems at different geographic scales and its central objective is to assess the risk of ecosystem collapse. We are not aware of the capacity of the programme to report in time, whether it could report anything regarding the status of ecosystems exploited by fisheries, and if some indicators could be developed. But the initiative is important and deserves a mention.

### **6.3 DATA AND INFORMATION COLLECTION SYSTEMS**

#### **6.3.1 At global level**

##### **Fisheries data collection**

FAO is the only intergovernmental organization formally mandated by its constitution to undertake the worldwide collection, compilation, analysis and diffusion of data and information in fisheries and aquaculture. The compilation of accurate, relevant and timely data in a standard form facilitates monitoring, comparisons and analyses of status and trends that are essential to underpin the responsible development of the world’s fisheries and aquaculture sectors and the sustainable utilization of the resources. It requires intensive international collaboration and cooperation, an area in which FAO plays a central role.

Since its inception, the FAO Fisheries and Aquaculture Department has built up statistical databases that are publicly accessible. The data is provided by FAO Members and verified from other sources by the FAO Secretariat wherever possible. The reliability of the analysis based on the data, and the quality of the advice to which it gives rise, depends on the reliability and quality of the data itself. To this end the FAO seeks to continue supporting and strengthening national capacity in the collecting, analysis and use of accurate, reliable and timely data. In this respect the FAO has a unique role in supporting the management and development of the aquaculture and fishery sectors.

The FAO Fisheries and Aquaculture Department recognizes the importance of internationally agreed methods and tools for data compilation. Thus, for the last five decades, it has cooperated in international efforts directed towards the development of standard concepts, definitions, classifications and methodologies for the collection and collation of fishery statistics, most notably through the Coordinating Working Party on Fisheries Statistics.<sup>42</sup> To ensure quality assurance, each collection is documented to highlight definitions and to specify the structure, sources, coverage, processes, intended use, etc. This is further complemented with the CWP Handbook of Fishery Statistical

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<sup>41</sup> <http://iucnredlistofecosystems.org>

<sup>42</sup> <http://www.fao.org/fishery/topic/2017/en>

Standards which includes comprehensive definitions of concepts and details of standard classifications.

Global time series have been maintained over more than 60 years in various formats and are accessible through statistical tools and information products. The data can be accessed through:

- FishStatJ: a software for fishery statistical time series which offers experts and scientists a stand-alone application for complex and sophisticated data exploration and extraction.
- Online Query Panels: which enable advanced users to extract customized information and reports from the time series.
- Yearbooks: which provide a full range of tables with detailed statistics.

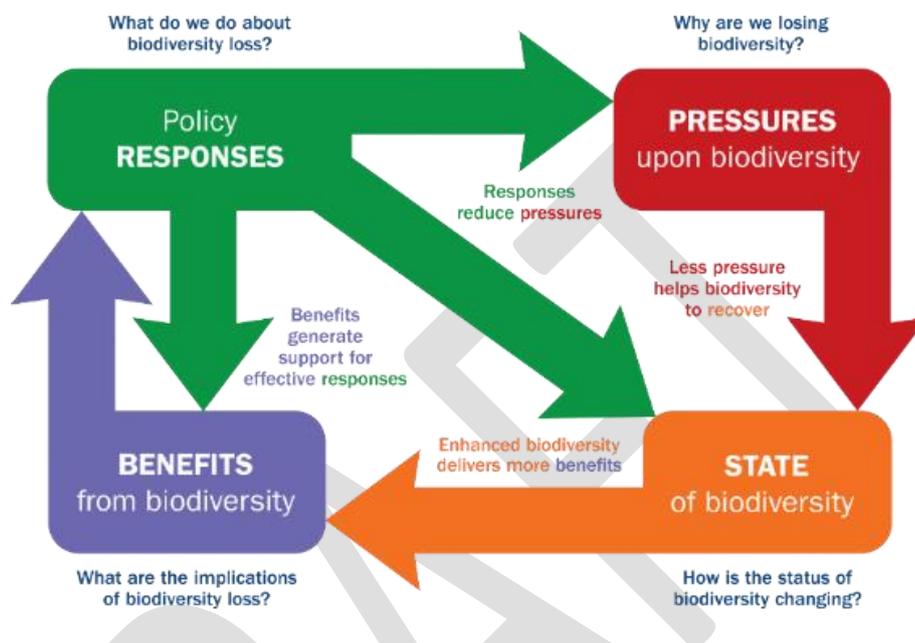
The data collected relates to: Capture production, Aquaculture production, Commodities, Food balance sheets and Fishery fleet and employment. All data collections are fully documented and organized by records, Fact Sheets and maps, thus complementing the overall statistical collections.

#### **Data collection on biodiversity**

The CBD has a strong interest in collection and management of information on biodiversity and global and regional scales but no internal formal infrastructure primarily mandated for those tasks. However, the Biodiversity Indicators Partnership (BIP), a quasi-formal association of more than 40 intergovernmental and academic bodies, including FAO, with the CBD as a central member, is a global initiative to “*further develop and promote indicators for the consistent monitoring and assessment of biodiversity*”. The organizations are committed to work to support periodic delivery of biodiversity indicators relevant for reporting on the Aichi Biodiversity Targets. Organizations have a variety of levels of affiliation and involvement with the BIP (BIP, 2011). Although initially mandated by the CBD, the BIP provides information to a variety of multilateral Environmental Agreements (MEA), IPBES, national and regional governments and a range of other sectors. However, to this point, the focus of BIP work has been much more strongly on terrestrial and freshwater biodiversity than on the marine one. Quite elaborate frameworks have been developed for how the headline indicators they have identified can be used in reporting (**Figure 4**).

The BIP has also identified 47 Headline indicators including: (i) 18 pressure indicators, of which 4 are primarily oriented at marine ecosystems and most directly related to Target 6 (although only one is solely reflecting fishery pressures); (ii) 10 are State indicators of which one is solely marine; (iii) 4 are indicators of human benefits from biodiversity all at global level global, to some of which Target 6 reports may contribute; and (iv) 18 are response indicators, one of which specifically on sustainable fisheries and several others to which Target 6 may contribute. Even these Headline Indicators comprise still fairly coarse scale guidance on reporting. For example, the Indicator, “extent of marine habitats” is one of six indicators reporting on trends in extent, condition and vulnerability of ecosystems, biomes, and habitats, but it leaves great scope in terms of what marine habitats should be reported and what to report about them. Similarly, the group of indicators of trends in Pressures from Unsustainable [sectoral] Practices, includes the Marine Trophic Index, the Ocean Health Index, and the Proportion of Fish Stocks in Safe Biological Limits. Although in this case the information to report for each Indicator is clearly specified, only the Proportion of Fish Stocks indicator is directly related to Target 6, with the others are influenced by many other factors as well. In addition, although information is

provided on the calculation and interpretation of these indicators, no provisions are made within the partnership for collecting the necessary data or conducting the required calculations. The choice of which indicators to use, as well as data collection and management are left to Parties. Institutionalized information systems like OBIS and projects like GOBI try to provide some coordination of efforts at regional and supra-regional scales, but these are efforts of scientific networks, dependent on voluntary donor funding.



**Figure 4.** Flow chart of potential inter-relationships of BIP indicators. From <http://www.bipindicators.net/globalindicators>.

The World Conservation Monitoring Center (UNEP-WCMC)<sup>43</sup> is the specialist biodiversity assessment arm of UNEP. It well-recognized expertise in collating, verifying, analysing and interpreting information about biodiversity and ecosystem services, and sharing it in different ways for decision-making and awareness raising.

### 6.3.2 At regional level

#### FAO data and information

FAO data collection and repositories are structures by statistical divisions which, in the ocean, subdivide ocean space in “quasi ecological” units the limits of which were fixed based mainly on oceanographic characteristics and biogeography, anticipating the LME concept). In some regions (as in the Mediterranean and West Africa, statistical divisions are subdivided in finer polygons and data are collected in that finer grid. While this system, decided by the Coordinating Working Party (CWP) on fishery statistics, has the defect of not matching political boundaries, it has the advantage to assemble data by “quasi ecological” units and to cover both EEZs and the high sea. The “regions” so defined overlap but do not correspond exactly to, for example, the Regional Seas Organizations spatial coverage.

#### Regional Fishery Bodies

<sup>43</sup> <http://www.unep-wcmc.org>

FAO promotes collaboration between RFBs and provides technical assistance to its own. Through this facilitates the translation of decisions made at global level (at the United Nations or global conferences) into regional initiatives and coordination of national initiatives at regional level. Collection of fishery data and generating assessments is an important part of their function.

The FAO RFBs have areas of competence that match the large FAO statistical divisions and have always played the role of platforms to promote standardized data collection by the Parties, assessment, monitoring and collaborative elaboration of scientific advice to these Parties. The collection, elaboration, maintenance and diffusion of data related to FAO RFBs are handled centrally, as a subsets of the global system described above. Their standing WGs meet more or less regularly to undertake stock assessments that are used by FAO for its global monitoring.

Most FAO Regional Fishery Bodies are advisory (no decision-making and enforcement powers) but play a fundamental role in helping the translation of global commitments in national ones. In particular FAO RFBs maintain a fishery statistics repository often more detailed (at sub-regional level) than the FAO global system. Through the RFBs stock-assessment WGs (the frequency of which depends entirely on progress in data collection and availability of funding) information is obtained on fishery-level data and on state of stocks.

As mentioned in **Section 6.2.2**, All RFMOs maintain data collection systems related directly (and often exclusively) to their assessment and management mandate: Target catch and catch composition; Advice given; Measures taken; Bycatch data, increasingly; MCS and observer records; and compliance records. The most effective have transparent websites. However, their efforts to broaden their scope is leading many of them to start collecting data on the ecosystem structures, vulnerable ecosystems (when they deal with deep sea fisheries) key bycatch species etc.

### **Regional Seas Programme (RSP) data collection**

The UNEP RSP is a global programme initiated in 1974 in the wake of UNEP's establishment and implemented through UNEP regional institutions. It is an action-oriented programme that focuses on mitigation or elimination of environmental degradation (pollution) and of its consequences. It has a comprehensive, integrated, result-oriented approach to combating environmental problems through the rational management of marine and coastal areas<sup>44</sup>. The 18 Regional Seas Conventions (RSCs) and Action Plans fulfill an important role in implementing the international agenda on marine and coastal issues and provide valuable regional frameworks for addressing assessment and development issues and agree on strategies, policies, management tools and protocols. In relation to biodiversity they have addressed, for example, the application of ecosystem approaches for management of coral reefs, mangroves and seagrass beds and their multiple ecosystem Services intending explicitly to contribute to Aichi Targets 6, 10, and 11.

To the authors' knowledge, there are no standardized data collection programs at the Regional Seas level that are directly relevant to Target 6. Some Regional Seas Organizations in the more fully developed regions have programs for national reporting into regional data-bases for ocean properties like contaminant levels and other water quality metrics, using ICES as the data management body. However, the types of biodiversity inventories that could be used to assess status and trends in the bycatch,

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<sup>44</sup> <http://www.state.gov/e/oes/ocns/opa/marine/regional/index.htm>

habitats and ecosystems arguments of Target 6 are not systematically reported. Nonetheless, the RSP has organized a Technical Workshop on *Selecting Indicators for the State of Regional Seas* (2014, Geneva, Switzerland) which should provide some information on fisheries and resources indicators.

In the Northeast Atlantic the OSPAR and Helcom member States participate in coordinated multispecies fish surveys and plankton surveys. In the Northwest Atlantic similar surveys are conducted separately by the US and Canada, who subsequently share the data. These survey databases could constitute a core part of the annual biodiversity data that could be used in regular assessments of status and trends. However, in all cases they are considered fisheries surveys in the first instance. Although efforts to coordinate ecosystem coverage by the multispecies surveys continue to improve<sup>45</sup>, the data on non-target species taken in these surveys may be monitored and recorded at quite coarse levels, and in some cases not even managed systematically.

## 6.4 ASSESSMENTS

### 6.4.1 At global level

#### **Assessments in fisheries**

For over half a century there has been a tradition of assessing of status and trend of individual fish stocks (and in since the 1980s, for more data rich areas, multispecies assessments) to provide necessary quantitative information for setting Total Allowable Catches and quotas. Analytical methods were developed in the early 1950s (e.g. by Beverton and Holt and by Ricker) and have undergone ongoing improvements (e.g. Walters and Hilborn, 1992; Quinn and Deriso, 1999; Rosenberg et al., 2014) particularly following the introduction of the Precautionary Approach and Ecosystem approach to Fisheries, for the design and testing of precautionary Harvest Control Rules and management procedures (Smith et al., 2007) and efforts to expand practices to a variety of levels and data and technical capacities (cf. Plaganyi, 2007 for treatment of Target 6 issues in assessments). The “tradition” in fisheries assessment process is to update assessments every year for annual management plans, producing updated indicators on a yearly basis. In developing countries, however, the assessments tend to be more irregular. These developments, based on fisheries dependent or independent data, are crucial to reporting on the target species and general species arguments of Target 6.

For non-target species, regular assessments are not institutionalized. However, where multispecies surveys are conducted and catches fully recorded, and where bycatch levels are monitored, the data needed for such assessments exist. Methods for assessing more data-poor stocks have been developed (Pilling et al. 2009, Newman et al. 2014) and evaluations have found them appropriate for assessing sustainability of bycatches (Pardo et al., 2012; DFO 2012). If resources were allocated to using these data sources, and applying the appropriate methods to set reference points for the equivalent of *impaired productivity* for non-target species and some types of habitat features (Rice, 2009) reporting on the bycatch, habitat and ecosystems arguments of Target 6 could be greatly strengthened.

The assessments undertaken at global level by FAO are closely related to the statistics that organization has mandate to collect. These assessments are usually occasional, e.g.

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<sup>45</sup> <http://www.ices.dk/community/groups/Pages/WGISUR.aspx>

upon request by COFI, or from the UN Secretariat<sup>46</sup>; as an FAO input to a large technical conference (e.g. on food security) or at the initiative of FAO staff, within the responsibility of their Unit. Field Projects may also produce assessments as part of their programme. The subject covered are extremely varied: Resources potential; State of inland and marine fishery resources (by types, jurisdiction, area); State of fisheries; Causes of unsustainability; Trends in production; Contribution to food security; Trends in supply/demand/prices; Trends in volumes traded; Trends in employment; Evolution of legal frameworks; Trends in fishery management; etc.

These assessments are published in various forms, in the FAO Fisheries and Aquaculture Circulars, Reports, Proceedings and Technical papers that are freely available and usually accessible online. In addition, the Fisheries Resources Monitoring System (FIRMS) partnership and information management system maintained by FAO offer a continuous “quasi real-time” system of information regarding the state of marine resources and management decisions taken about them.<sup>47</sup>

## **Assessments of biodiversity**

### ***The CBD Global Biodiversity Outlook***

The Global Biodiversity Outlook (GBO)<sup>48</sup> is the main assessment of global biodiversity status and trends. Decided by the CBD CoP2, the assessment captures three main pieces of information:

1. A summary of the recent trends, current status and future projections relating to the targets
2. Examples of actions and issues helping to illustrate both the progress made and the challenges still faced
3. Key actions available to governments to help achieve each target. Where these actions contribute to several targets is also indicated

It is an indicator-based assessment, prepared by a working group of experts. The 4<sup>th</sup> GBO was released in 2014 (CBD, 2014) as a mid-stream assessment of progress towards the Targets. The 3<sup>rd</sup> GBO (CBD 2010) was released to inform the negotiators of the Strategic Plan and Targets, and the 5<sup>th</sup> version is planned to release the synthesis report on achievement of the Aichi Targets in 2020. The GBO is a synthesis of submissions of national reports and national assessments as well as material in the scientific literature, prepared by a complex partnership of partner organizations and individuals from Governments, NGOs and scientific networks, led by the CBD Secretariat. The material on Target 6 in GBO4 consist of trend figures for four indicators, corresponding to the 4 arguments in Target 6 identified in **Section 0**:

1. Percent of global fish stocks underexploited, fully exploited, or over-exploited, as reported in the FAO State of Fisheries and Aquaculture (SOFIA) (FAO, 2014);
2. Proportion of stocks within Safe Biological Limits (SBL) interpreting that criteria as referring to stocks able to produce MSY, fitting a line through the biannual data provided by FAO and extrapolating the trends to 2010;

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<sup>46</sup> e.g. on the state of straddling stocks and high seas stocks in the process of elaboration of the UN Fish Stock Agreement

<sup>47</sup> (<http://firms.fao.org/firms/en>).

<sup>48</sup> <https://www.cbd.int/gbo/>

3. Tonnage of fish receiving MSC certification since 1999, taken from MSC annual reports; and
4. Percentage of UK fish stocks harvested sustainably and at full reproductive capacity (taken from the UK national report)

GBO4 also provides a narrative interpretation of the indicators in the context of several key publications in the scientific literature. Although providing a clear general picture of recent trends in fisheries, it does not comprehensively address each element of Target 6 with systematic treatment of each element of the Target. Also, aside from the line-fitting in the second indicator, it does not impose an additional analytical burden on the GBO assessment teams, beyond narrative interpretation that synthesizes what is contained in the national and intergovernmental agency reports and published scientific literature. Reporting on other Targets contains reference to fisheries as well, but in the contexts of potential contribution to increased risk of extinction (Target 12), general Ecosystem Services (Target 14) and Biodiversity Strategies and Action Plans (Target 17). The subsequent synthesis section of the GBO is narrative extrapolation of the possible trends reported for the individual Goals and Targets. Given the efforts made in negotiating the elements of Target 6 to ensure that the main possible impacts of fisheries on biodiversity were explicitly addressed, reporting on the Target should specifically and comprehensively address all the key arguments of Target 6. We suggest in this report, that is the most effective (and only) way to obtain, in GBO5 an improved assessment of progress made.

Although the GBO is the major global assessment initiative relevant to the Aichi Targets and under the authority of the CBD, a number of other global assessment processes contribute to informing on progress towards target 6. Key assessments of the risk of extinction of individual species are conducted by the IUCN Species Survival Commission (SSC) and its expert committees, and by CITES (specifically for species at risk from international trade). The IUCN Red List assessments are recognized in several of the GNO Headline Indicators. They are made against a set of criteria adopted after significant testing and subjected to periodic reviews<sup>49</sup>. Their appropriateness for commercially exploited marine species has been debated and tested at length and although full consensus on their use has not emerged, there has been substantial convergence of views on practices and outcomes of these assessments (Mace et al., 2014). Each species assessed by either IUCN or CITES does entail significant effort in collecting as much relevant information as possible on: (i) status and trends in population structure, abundance and distribution; and (ii) major sources of mortality. Rigorous analyses are conducted on those data regarding populations' viability. Although not under the oversight of the CBD, these analyses are central to the Threatened Species argument of Target 6.

More recently, IUCN has also commenced assessments of ecosystems at risk of extinction. These assessments are also criteria-based, with many similarities with the species-at-risk assessments, in practices and in the criteria themselves<sup>50</sup>. Although the Red List of Endangered Ecosystems has not yet gained the status of the Red List of Endangered Species with regard to international biodiversity conservation policy, the profile is growing. Very few assessments of the risk of extinction of marine ecosystems have been attempted yet and, as far as we know, only in coastal environments. Some controversies about the criteria may therefore arise in their application to the ocean realm as was the case for application of the terrestrial species criteria to marine species.

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<sup>49</sup> <http://www.iucnredlist.org/technical-documents/categories-and-criteria>

<sup>50</sup> [https://www.iucn.org/about/union/commissions/cem/cem\\_work/tg\\_red\\_list/](https://www.iucn.org/about/union/commissions/cem/cem_work/tg_red_list/).

However, as progress is made, the outcomes will undoubtedly be relevant to reporting on the ecosystems arguments of Target 6.

The other two global biodiversity assessments of possible relevance to reporting on Target 6 are the Regular Process for the World Ocean Assessment (hereafter the Regular Process or WOA)<sup>51</sup>, and the Intergovernmental Panel for Biodiversity and Ecosystem Services (IPBES) Regional Assessments<sup>52</sup>.

### ***The Regular Process for the World Ocean Assessment***

The Regular Process is overseen by an Ad Hoc Open-Ended Working Group of the Whole for the UN General Assembly and as such has direct input to policy-makers. It was established in direct response to a WSSD call for a “regular process” to keep the state of the ocean, including socio-economic aspects “under regular review”. Its processes were founded on the conclusions and options developed in the Assessment of Assessments (UNEP-IOC 2009). Although its mandate explicitly excludes assessment of effectiveness of specific policies, it is charged to assess status and trends in the major ocean industries, including fishing and biodiversity components, at global and regional scales and by major taxonomic groups.

Conducted by separate teams of experts for each constituent chapter, and overseen by a Group of Experts responsible for integration of the parts, the first World Ocean Assessment was just completed in 2015 and accepted by the UN General Assembly in Resolution A/70/L235<sup>53</sup>. Just adopted on 23 December 2015, it is not available on-line at time of writing, but should be by the time of the Workshop for which this Report is being drafted. The WOA is structured in 6 sections. Section IV, focused on the Ocean as a Source of Food, contains 6 chapters, five of which contain information on status and trends in fisheries, fisheries resources, employment and food production. Section VI comprises more than 20 chapters covering status and trends in marine biodiversity considered regionally, by taxonomic groups of special concern (e.g. seabirds, marine mammals, elasmobranchs, tuna and billfish), and by major habitat of concern (e.g. mangroves, seamounts and similar deep-sea habitats, cold-water and warm-water reefs). Although some integration of trends in biodiversity with trends in pressures from industry sectors, including fishing, is contained in first WOA, the focus of the assessment was on setting benchmarks for future assessments. Thus significant information is present in the WOA that is relevant to reporting on target 6, but integration of that information in the context of the target remains to be done. The UNGA has called for a commencement of planning for the 2<sup>nd</sup> World Ocean Assessment but it will not be ready in time for reporting in 2020.

### ***The Intergovernmental Panel for Biodiversity and Ecosystem Services (IPBES)***

The IPBES process and assessments are modeled directly on the IPCC Assessment process for Climate Change and its impacts and options for mitigation. The relationship between IPBES and CBD is complex but has been carefully delineated in CBD Decision XII/25. IPBES has just commenced a series of Regional Assessments for Africa, Europe and Central Asia, Asia and Oceania, and the Americas. Each assessment will: (i) Evaluate trends in human well-being; (ii) Examine how those trends are linked to trends in ecosystem services; and (iii) how the trends in services are linked to trends in biodiversity; (iv) Identify the drivers of those trends; and (v) identify policy options in cases where

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<sup>51</sup> [worldoceanassessment.org](http://worldoceanassessment.org)

<sup>52</sup> <http://esa.org/ipbes/call-for-nominations-for-regional-assessments-and-global-scoping/>

<sup>53</sup> <http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/RES/70/235&Lang=E>

trends are of concerns and drivers have been identified. A global assessment intended to synthesize the regional assessments into a global perspective is being scoped. In addition, the Regional Assessments are restricted to the Exclusive Economic Zones (EEZs) of the countries in the regions while the Global Assessment will address the open ocean and high seas, integrating the information in the World Ocean Assessment, into the primarily terrestrially-based Regional Assessments. The latter are expected to be completed in 2018, and should be useful in reporting on Target 6 in 2020. The Global Assessment will not be available until after the 2020 CBD deadline for reporting.

### **Other assessments**

We do not pretend to be aware of and have covered all the potential sources of assessments of interest to fisheries and Target 6. For example, Birdlife International undertakes assessments of the status and trends of sea-birds populations. A proper inventory of the potential institutions and direct contact with them would help the CBD to detect useful contributions.

The Large Marine Ecosystem (LME) Network co-funded by the Global Environment Facility (GEF) has also a cross sectoral scope and may be able to provide some information.

#### **6.4.2 At regional level**

##### **Regional fishery bodies**

The work of the regional fishery bodies has been extensively described in **Section 6.2.2**. The FAO RFBs undertake stock assessments and have progressively increased their scope to better cover the collateral impact of fisheries in terms of bycatch and damage of vulnerable habitats. Financial and human resources are generally limited and so is the capacity of the developing countries members to generate new data and assessments. The frequency of the scientific WGs is therefore irregular and the most important resources are covered as a priority. The data and information generated is generally centralized in FAO HQs central services and should be readily available within a collaboration framework between FAO and the CBD, unless they are at a scale which requires confidentiality. The assessment methods may be highly variable, depending in part of the participation of developed Parties in the work programme.

The RFMOs (including CCMLAR) are generally better funded and equipped and produce statutory assessments with mandatory regularity, particularly for fisheries managed annually through national allocations (quotas) of Total Allowable Catches (TACs). Their priority is obviously their target stock(s) but assessments regarding Ecologically Related Species (ERS) are increasing. As reported above, many RFMOs collaborate with FAO through the Fisheries and Resources Monitoring System (FIRMS) and their assessments are generally kept up to date. Few RFBs have a dual mandate. This is the case of the CCMLAR and the Sub-Regional Fishery Commission (SRFC, Dakar) which might be able to report also respectively on Antarctic and west African coastal habitats. on RFMOs

##### **Regional biodiversity assessments**

The regional assessments of particular relevance to reporting on Target 6 are the assessments of ocean spaces against EBSAs and VMEs criteria. These assessments, in terms of presence/absence of important biodiversity components, have been completed by essentially all RFBs (for application of the VME criteria) and CBD has identified EBSAs in

nearly all the oceans beyond national jurisdictions<sup>54</sup>. The RFB assessments VMEs have identified areas that have properties that make them particularly vulnerable to impacts by various gears (particularly trawling) and deserve immediate protection from fisheries (in the case of VMEs). The CBD assessments of areas against EBSA criteria highlight areas of high significance to biodiversity and should be considered by States for special cross-sectoral management regimes. However, in almost no places have assessments of the status of the biodiversity in these areas been conducted, either descriptively or in reference to any specified ecological benchmarks representing thresholds of sustainable impacts. Indeed, the EBSA identification process avoided carefully to address the sources of impact and potential management issues, as instructed by its Parties. The assessments may still help in reporting on Target 6, in the context of evaluating distribution of fishing effort and removals against the positions of VMEs and EBSAs where and when such spatial distributions are known. However, status and trends of the areas are not expected from those assessments, at least not in time for the 2020 reporting deadline.

## 6.5 REPORTING

The international policy instruments adopted at the UN, FAO or CBD levels are usually accompanied by a process of reporting on progress made towards implementation, allowing also to some extent a progressive adaptation of objectives and approaches from lessons learned. The statistics and other data collected are usually made available on the web unless covered by confidentiality agreements (as is the case for high resolution fishery data, by vessel or company) and this aspect was addressed in **Section 6.3**. Assessments are usually published in a more or less formal way, in serial or occasional publications and/or on the websites of relevant organizations. These aspects were also briefly addressed in **Section 6.4**.

This section looks briefly at existing reporting commitments at higher level, to governing bodies and the public at large with the view to develop synergies between them and reporting on Target 6, limiting duplications and reducing marginal costs to States and other reporting institutions.

### 6.5.1 Reporting at FAO

FAO reports to COFI and through it to the FAO Council and Conference. The Secretariat elaborates reports on issues raised and action requested by COFI in meeting documents. COFI reports are available on the FAO website (<http://www.fao.org/cofi/en/>) and regularly published in the FAO Fisheries Reports Series. The COFI meeting documents are available online since the 1997 COFI session in a COFI meetings archive<sup>55</sup> and can be used, for example, to analyze COFI's follow up on key issues.

The highest level of reporting of FAO on fisheries is its biennial report often of a quality deserving future use on The State of Fisheries and Aquaculture (SOFIA), a "flagship" publication presented at every COFI meeting. While its detailed content varies between issues, reports tend to span the entire realm of FAO's work. The first, rather constant part offers status and trends of: production (fisheries and aquaculture), employment fishing fleets, fishery resources, utilization and processing, trade and commodities, consumption, governance and policy. The second part changes depending on the programme of work and reports by selected issues, reflecting key work done at HQs or in field projects (gender issues, the ecosystem approach, Balanced harvest, fishing safety, food safety, MPAs as

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<sup>54</sup> <https://www.cbd.int/ebsa/#/>

<sup>55</sup> (<http://www.fao.org/fishery/about/cofi/meetings/en>).

fishery management tools; feed supplies in aquaculture; ecolabelling, etc.). The outlook closing section offers a prospective view on fisheries (e.g. their role in sustainable food production systems).

The largest report of FAO in absolute is obviously its website. The Fisheries Global Information System (FIGIS)<sup>56</sup> that powers the Fisheries Department website was established to fulfill the need to report accurately, thoroughly and timely on the state of world fisheries. It interconnects groups of institutional partnerships into a network of information delivery initiatives, acts as a reference on FAO information management policy, and delivers expert knowledge, software tools, collaborative mechanisms, and interoperability solutions to a broad range of needs in fisheries information. Finally, it is the privileged tool for implementation of the Strategy for Improving Information on Status and Trends of Capture Fisheries (STF) adopted in 2003.

Operating within FIGIS, the Fisheries and Resources Monitoring System (FIRMS)<sup>57</sup> was developed to complement the paper-based global assessments of the state of marine resources occasionally produced by FAO staff when enough new information was available into a quasi-real time monitoring system directly fed by institutional partners (particularly RFBs) into an FAO managed information system. FIRMS primary aim is to provide access to a wide range of high-quality information on the global monitoring and management of fishery marine resources. It contains databases and fisheries resources and fisheries fact sheets and organizes the collaboration between partners NGOs to collate information at global level. Of particular relevance to Target 6 is the fact that FIRMS holds and updates the stock assessments undertaken by partner RFMOs. For each species population recorded, FIRMS offers information on: history, habitat and biology, geographical distribution, water area, resource structure, exploitation, management, state of stocks and trends.

In direct relation to reporting on biodiversity, the 13<sup>th</sup> FAO Commission on Genetic Resources for Food and Agriculture (CGRFA13) decided, in 2011, to elaborate the first report on The State of the World's Biodiversity for Food and Agriculture<sup>58</sup> to be presented at the CGRFA16, in 2017). The Report will contribute to FAO's Strategic Objective 2 (Increase and improve provision of goods and services from agriculture, forestry and fisheries in a sustainable manner) which recognizes the importance of ecosystem services and biodiversity in supporting sustainability in agricultural production systems. It will provide the first integrated global assessment of biodiversity for food and agriculture provide a comprehensive description of the state and use of the world's biodiversity for food and agriculture and its current and potential contributions to food security, nutrition, livelihoods, human well-being and the maintenance of a healthy planet. The report intends to be a milestone in the 2011-2020 United Nations Decade on Biodiversity and hence a substantial contribution to the report on the implementation of Aichi Targets (including Target 6) and CBD's Strategic Plan. The CGRFA will take full advantage of existing information sources, including sectoral assessments, and information provided by countries through the submission of national reports (expected for the end of 2015), reports from international organizations and inputs from other relevant stakeholders and thematic studies.

In parallel and logically in synergy, a report on implementation of Target 6, integrating many of the information collected and generated by FAO, is contemplated within the collaborative framework of the CBD-mandated Biodiversity Indicators Partnership (BIP).

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<sup>56</sup> <http://www.fao.org/fishery/figis/en>

<sup>57</sup> <http://firms.fao.org/firms/en>

<sup>58</sup> <http://www.fao.org/nr/cgrfa/biodiversity/sowbfa/en/>

One can only conclude that the question is therefore not whether FAO will contribute to Target 6 implementation but how the amount of information available can usefully and sensibly be aggregated and its elaboration coordinated with the recipients of the different, complementary, overlapping, indicators in different but connected reporting processes. It is also to agree on what is intended to be measured, how, at what scale, and on how should changes be interpreted, identifying causes.

### 6.5.2 Reporting at the CBD

The CBD has two main vehicles for Reporting on the status and trends in biodiversity. The first is the GBOs already discussed in **Section 6.3.1**. Released about every five years, they both report on progress relative to the biodiversity targets and Strategic Plan currently in place, and inform the planning for the next strategic planning iteration and associated targets. The structure of the GBOs is strongly oriented around the structure of the Strategic Plan and targets with currency at the time of drafting,

Likewise, reporting of national implementation of the Convention is being undertaken through “National Reporting” system (<https://www.cbd.int/reports/>). Article 26 of the Convention states that the objective of national reporting is to provide information on measures taken for the implementation of the Convention and the effectiveness of these measures. In accordance with Article 6, measures to be addressed, in light of specific national circumstances, are reflected in the national biodiversity strategy and action plan (NBSAPs)<sup>59</sup>. The NBSAPs are prepared by each Party to the Convention on similar half-decadal intervals. They are one of the major inputs to the GBOs. Through the NBSAPs, Parties report both the national plans for implementing the commitments in the decadal CBD Strategic Plan and the progress made, at mid-stream and at the conclusion of Plan. The structure of the NBSAPs is modeled closely on the structure of the Strategic Plan, with extensive guidance provided on how they are to be prepared<sup>60,61</sup>, including supporting training in the preparation.<sup>62 63</sup> However, the NBSAPs are not to be viewed as a potential source of information for preparing progress reports on the elements of Target 6. Rather they are the vehicle the CBD will use to receive those reports from Parties. It will then have that information synthesized with other reports, assessments, and scientific literature in preparation of the GBOs.

The sixth national report, to be submitted by CBD Parties probably in the first half of 2019, will provide a key source of information for assessing progress towards each of the Aichi Targets included in the CBD Strategic Plan for Biodiversity for 2011-2020. The format for the sixth national report is designed to allow countries to assess progress towards national targets set in line with the Aichi Targets and national contributions to the achievement of the Aichi Targets including those targets in the updated Global Strategy for Plant Conservation for 2011-2020. In making such assessments, countries can draw upon information concerning the implementation of their updated national biodiversity strategies, mainstreaming of biodiversity into relevant sectors and other actions for the implementation of the Convention including its thematic programmes and cross-cutting issues. The sixth national report will also allow countries to report on progress in the implementation of the CBD Resource Mobilization Strategy, using a revised financial reporting framework contained in annex II to CBD COP decision XII/3. Overall the sixth

<sup>59</sup> <https://www.cbd.int/nbsap/default.shtml>

<sup>60</sup> <https://www.cbd.int/nbsap/doc/guidelines/hagen-nbsap-guidelines-en.pdf>

<sup>61</sup> <https://www.cbd.int/nbsap/guidance-tools/guidelines.shtml>

<sup>62</sup> <https://www.cbd.int/doc/training/nbsap/b1-train-intro-nbsap-revised-en.pdf>

<sup>63</sup> <https://www.cbd.int/doc/training/nbsap/b2-train-prepare-update-nbsap-en.pdf>

national reports are expected to be outcome-oriented and based on hard data and use of indicators. It should be highlighted that different from the previous national reports, in the sixth national report CBD Parties will not only report on actions they have taken for the implementation of the Convention and its Strategic Plan for 2011-2020, but also are required to evaluate the effectiveness of their policies and actions. This is very important for assessing the impacts of implementation actions and identifying gaps for future actions. Considering that the Aichi Targets cover a wide range of issues including fisheries, the draft guidelines for the sixth national report encourage CBD Parties to use various sources of information for assessment of progress towards these targets, including those reports submitted to related Conventions, organizations and forums. For example, while reporting on progress towards Target 6, CBD Parties could use or cross-reference information contained in the relevant reports submitted to the FAO. A resource manual is being developed for this purpose. Meanwhile, the CBD Secretariat has developed an on-line reporting tool as requested in CBD COP decisions VIII/14 and XII/29 to facilitate the sixth round of national reporting and beyond. The format for the sixth national report as designed now will allow countries to deploy sections of the report through the on-line reporting tool any time they have been completed. With this, CBD Parties can submit sections of the report any time before the deadline instead of submitting the whole report at one time. More importantly, more regular submission of information concerning progress towards the Aichi Targets through the on-line reporting tool will allow CBD bodies in particular CoP meetings before 2020 to have more information for their reviews and decision-making, thus enhancing actions to implement the Strategic Plan for 2011-2020. The CBD sixth national report will also contribute to the review of the implementation of Sustainable Development Goals adopted in September 2015 as part of the post-2015 Development Agenda, in particular Goals 14 and 15 and associated targets.

## 7. CONCLUSION: REPORTING ON TARGET 6

CBD Target 6 is more than relevant for FAO. It touches on the whole agenda for fisheries and places fisheries sustainability and the sustainable use of biodiversity squarely in an ecosystem context.

Reporting on Target 6 assess fisheries' sustainability in relation to 4 main arguments: (i) Status and trends in target species/stocks; (ii) Action taken to correct the situation of depleted species/stocks and recovery plans; (iii) Action in favor of threatened species and Vulnerable Marine Ecosystems; and (iv) the degree to which the ecosystem and biodiversity as a whole is within "safe ecological limits" as reflected by the state of their structure and function.

A draft matrix has been produced which, for these 4 arguments identifies indicators of policy development, legal frameworks adaptation, strategies and measures adopted, resulting trends in state of resources and habitats, and evidence of high outcomes.

A large suite of potential indicators has been identified to report on these arguments without considering whether they were universally accessible or affordable but indicating nonetheless what were probably the minimum requirements for a decent factual report and what would be really nice to obtain too (and might be available only in a few places).

The commitments already made by FAO in relation to responsible fisheries and CBD in relation to Target 6 have been briefly looked at. They are largely (overlapping) for what regards the bio-ecological aspects of fisheries as Target 6 does not deal explicitly with

social and economic dimensions of fisheries. However, these dimensions are covered in other cross-cutting Targets which are not considered at this meeting.

In conclusion, the information available indicates that the potential for FAO and the fishery community (including RFBs) to provide substantial amounts of information to the Target 6 implementation report is high. The commitment of FAO to do so, directly expressed in its technical instances (such the CGRFA) and to the BIP Partnership has already been made. That commitment could be confirmed specifically for fisheries by COFI in July 2016. The problem might be the amount of work needed, if not already planned, to aggregate the information in very few high level but meaningful coherent indicators at regional/global level or to provide CBD with a nested set of global and regional assessments and some example of trends at lower level (types of resources, sub-regions). A successful outcome in this regard requires a collaboration between FAO, CBD, the RSOs and RFBs and with WCMC which is in charge of producing the next Global Biodiversity Outlook that will constitute the report on Aichi Targets implementation and the major contribution to the UN decade on Biodiversity 2011-2020.

The expanded collaboration between FAO and CBD in reporting on the performance of fisheries relative to Target 6 faces the challenge of reaching an agreement on the situation despite differences in mandate, culture, risk perceptions, etc. The large overlap of the concepts of “sustainable use of biodiversity” and “responsible fisheries” is an asset in that regard. It may help avoiding the divergence in assessments and management advice of the last two decades, between FAO, CITES, IUCN and TRAFFIC, regarding assessment and management of extinction risk for “fishery species” (Mace et al., 2014). Such situations may harm both the credibility of the organizations involved and the future of the stocks and human populations concerned. The solution is in an early agreement in interpreting the data trends that should be explored as part of the early stages of the collaboration.

The Expert meeting should advise on:

1. The indicators to be elaborated (i.e. likely to be doable within the time available), the data needed, the calculation, etc.;
2. The origin of the data and the collaborations that need to be established (within FAO, between FAO, CBD, RFMOs, etc.)
3. The suggested responsibilities for elaborating the indicators and agreeing on conclusions (if relevant);
4. The process of transmission of the information, its format (for data and graphics), the text attached to indicators to describe and discuss the trends observed; and the timing needed to be able to conclude the report by 2020.

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## ANNEX I - TARGET 6 - Technical Rationale extended<sup>64</sup>

This Annex is drawn verbatim from the CBD Technical Rationale as it appears in the CBD citation given in the footnote. It is reported as technical background provided by one of the sponsors of this workshop document.

**Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.**

### Target 6

*By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that: (1) overfishing is avoided, (2) recovery plans and measures are in place for all depleted species, (3) fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and (4) the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits<sup>65</sup>*

### Technical rationale

Overexploitation, including that which results from illegal, unreported and unregulated (IUU) fishing, is the main pressure on marine ecosystems globally, leading to the loss of biodiversity and ecosystem structure<sup>66</sup>. Global marine capture fisheries are yielding lower harvest and contributing less to the global economy than they could do under stronger policies to manage fish stocks in a way that is sustainable. The World Bank estimates that this situation represents a lost profitability of some \$50 billion per year and puts at risk some 27 million jobs directly and the well-being of more than one billion people<sup>67</sup>. The main drivers of overexploitation, such as subsidies leading to overcapacity, generally reflect governance failure at international, regional and national levels. Better management of harvested marine resources, such as through the increased use of ecosystem based approaches and the establishment of recovery plans for depleted species, is needed to reduce pressure on marine ecosystems and to ensure the sustainable use of marine resource stocks. For example it is estimated that the global fishing fleet is currently 2.5 times larger than what the oceans can sustainably support. However, models suggest that, for some fisheries, on average, modest (~10%) reductions in catch could halve the pressure on marine ecosystems while also contributing to the long-term profitability and sustainability of fishing<sup>68</sup>. (Where fisheries are already managed sustainably, no further reductions in fishing pressure may be needed, while in some areas greater reductions might be warranted.) Such a reduction in fishing pressure would substantially diminish the likelihood of fishery collapses. Other examples of destructive harvesting and management practices include bottom trawling and dynamite fishing, which physically damage marine environments, such as coral reefs and seamounts, which serve as habitats for marine biodiversity.

### Implementation

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<sup>64</sup> provided in document COP/10/INF/12/Rev.1

<sup>65</sup> (Goal numbering added for the purpose of this report).

<sup>66</sup> Worm, B, et al. (2006). Impacts of Biodiversity Loss on Ocean Ecosystem Services. *Science*, 314(5800), 787-790.

<sup>67</sup> The Economics of Ecosystems and Biodiversity. (2009) TEEB for Policy Makers, Summary.

<sup>68</sup> Worm, B, et al. (2009). Rebuilding Global Fisheries. *Science*, 325(5940), 578-585.

The specific target should be regarded as a step towards ensuring that all marine resources are harvested sustainably, are within safe ecological limits and that fisheries have no significant adverse impacts on threatened species of vulnerable ecosystems. Actions that build upon existing initiatives such as the Code of Conduct for Responsible Fishing could help to ensure this. Actions taken to reach this target would help to ensure implementation, with respect to marine living resources, of the United Nations Convention on the Law of the Sea and its 1995 Implementation Agreement of its Provisions relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks<sup>69</sup>. Progress towards this target would also contribute to fisheries targets set during the 2002 World Summit on Sustainable Development<sup>70</sup> and build upon the diverse approaches and tools agreed upon there: the Ecosystem Approach; the elimination of destructive fishing practices; the establishment of representative networks of marine protected areas; and time/area closures for the protection of nursery grounds. This target would also contribute to the Johannesburg Plan Of Implementation (JPOI)<sup>71</sup>. In situations where fisheries are shared by several countries in a region, mechanisms, such as multilateral strategies, may need to be developed to allow for a coordinated approach to resource management. The programme of work on marine and coastal biodiversity is the most relevant to this target, along with the sustainable use cross-cutting issue.

### Indicators and baseline information

Indicators to measure progress towards this target include the Marine Trophic Index, the proportion of products derived from sustainable sources and trends in abundance and distribution of selected species. However, for several of these indicators, additional data would assist with monitoring progress. Other possible indicators include the proportion of collapsed species, fisheries catch, catch per unit effort, and the proportion of overexploited stocks. Baseline information for several of these indicators is available from the work conducted by the Food and Agriculture Organization of the United Nations<sup>72</sup>. Possible process indicators could include the incidence of cooperation with the scientific bodies of Regional Fisheries Management Organizations.

### Milestones

*Possible milestones for this target include:*

- By 2012, Parties should have taken steps to address the management of fishing capacity for international fisheries requiring urgent attention, with priority being

<sup>69</sup> Target 31(b) of the Johannesburg Plan of Implementation reads: Ratify or accede to and effectively implement the relevant United Nations and, where appropriate, associated regional fisheries agreements or arrangements, noting in particular the 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<sup>17</sup> and the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.

<sup>70</sup> Targets adopted in the Johannesburg Plan of Implementation include: the application by 2010 of the Ecosystem Approach; to establish representative networks of marine protected areas by 2012; to put into effect the international plans of action of the FAO, in particular the International Plan of Action for the Management of Fishing Capacity by 2005 and the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing by 2004.

<sup>71</sup> In particular Target 16 of the plan which states "To achieve sustainable fisheries, the following actions are required at all levels: (a) Maintain or restore stocks to levels that can produce the maximum sustainable yield with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015" ([http://www.un.org/esa/sustdev/documents/WSSD\\_POI\\_PD/English/POIToc.htm](http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm)).

<sup>72</sup> <sup>20</sup> Food and Agriculture Organization (2009). The State of World Fisheries and Aquaculture 2008. FAO Fisheries and Aquaculture Department, Rome.

given to those harvesting transboundary, straddling, highly migratory and high seas stocks which are overexploited, depleted or recovering;

- By 2012, Parties should have eliminated destructive fishing practices;
- By 2012, Parties should develop or update national assessments of fishing capacity and national plans for the management of fishing capacity, in line with the Ecosystem Approach, in order to halve the pressure on marine ecosystems by 2015 and end overfishing in both domestic and foreign waters by 2020;
- By 2012, Parties should have submitted alternative fishing plans that comply with the principles of sustainability (economic and ecosystem) and should have begun to implement them so that, by 2020, they are fulfilling their goal to eliminate destructive fishing practices;
- By 2012, Parties have taken steps to address the management of international fisheries requiring urgent attention, with priority being given to transboundary, highly migratory and high seas stocks that are significantly overfished;
- By 2012, Parties should develop or update national assessments of fishing capacity and national plans for the management of fishing capacity, in line with the Ecosystem Approach, in order to halve the pressure on marine ecosystems from unsustainable fishing by 2015;
- By 2012, Parties should have taken all actions relevant to a responsible Flag State, especially with respect to its fishing vessels operating on the high seas;
- By 2012, Parties have prohibited subsidies that contribute to overcapacity and overfishing through the implementation of a transparent and enforceable mechanism<sup>73</sup>;
- By 2012(2014), Parties have agreed, through appropriate Regional Fisheries Management Organizations, arrangements, or through the Food and Agriculture Organization, to collect, exchange and publish basic fisheries data necessary for the proper management of fisheries<sup>74</sup>;
- By 2015, Parties should have restored stocks to levels that can produce maximum sustainable yield<sup>75</sup>;
- By 2015, pressure on marine ecosystems from fishing is halved at the global level;
- By 2015, Parties should have restored XX per cent of fish stocks to levels that can produce maximum sustainable yield;
- By 2015, Parties are implementing measures for the sustainable management of bycatch and have reduced the level of discard by 50 per cent.

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<sup>73</sup> WTO Pledge 2005 Hong Kong Ministerial Text.

<sup>74</sup> Cf UN Fish Stocks Agreement, Annex I, Article 3.

<sup>75</sup> Johannesburg Plan of Implementation paragraphs. 30-32.

## ANNEX 2 – FAO Fishery policy and management instruments

The different FAO bodies have developed and adopted a number of instruments, conventions and agreements reflecting FAO members' commitments<sup>76</sup> in relation to fisheries sustainability including its collateral impact on biodiversity and the ecosystem: fisheries, these instruments include:

1. An overarching code of modern fisheries ethics: *The 1995 Code of Conduct for Responsible Fisheries (CCRF)* which integrates requirements from the LOSC and the CBD as well as the guidance emerged from UNCED in 1992, combining fisheries and environmental ethics. It is the reference set of policy principles and guidance. Its relevance for ecosystems and biodiversity has been enhanced by the adoption of the Ecosystem Approach to Fisheries (EAF, also referred to as Ecosystem-Based Fisheries Management, EBFM) in 2001.
2. Strategies such as *The Strategy for Improving Information on Status and Trends of Capture Fisheries (STF 2003)* that provide a framework for the improvement of knowledge and understanding of fishery status and trends. The action required from the FAO Secretariat and Parties fall under nine major areas: (i) Setting up a global inventory of fish stocks and fisheries; (ii) Development of data collection systems for small-scale and multispecies fisheries; (iii) Development of criteria and methods for ensuring information quality and security ; (iv) Development of arrangements for the provision and exchange of information; (v) Support to and participation in the Fisheries Global Information System (FIGIS); (vi) Sustaining data collection and information systems; (vii) Expanding the scope of information on status and trends of fisheries, including the need to incorporate ecosystem considerations into fisheries management; (viii) Capacity-building in developing countries; and (ix) Participation in working groups in assessing the status and trends of fisheries<sup>77</sup>. A parallel strategy has been adopted regarding status and trends in aquaculture.
3. International plans of Action (IPOAs). Voluntary instruments elaborated within the framework of the CCRF, IPOAs apply to all States and entities and to all fishers. The implementation of IPOAs occurs through the adoption and implementation of National Plans of Action (NPOAs). Examples of such plans include: the 1999 International Plan of Action for: (i) *Reducing Incidental Catch of Seabirds in Longline Fisheries (IPOA-seabirds)*; (ii) *Conservation and management of sharks (IOPA-Sharks)*; and (iii) *Management of fishing capacity (IPOA-Capacity)* as well as the 2001 *IPOA to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU)*. These IPOAs have been subsequently endorsed by the FAO Council. They all include agreed objectives and guidance regarding data collection, assessment and performance monitoring. The role of FAO Secretariat in implementation is to facilitate the development of NPOAs and to report, at COFI, on progress made in their implementation.

<sup>76</sup> FAO tools and guidance to assist the implementation of the Convention on Biological Diversity and the Strategic Plan for Biodiversity 2011-2020.

[http://www.fao.org/fileadmin/templates/biodiversity\\_paia/FAO\\_Instruments\\_Strategic\\_Plan\\_Aichi\\_Targets.pdf](http://www.fao.org/fileadmin/templates/biodiversity_paia/FAO_Instruments_Strategic_Plan_Aichi_Targets.pdf)

<sup>77</sup> <http://www.fao.org/fishery/code/strategies/en>; <http://www.fao.org/fishery/fishcode-stf/about/en>

4. International and Technical Guidelines<sup>78</sup>. Many detailed guidelines have been elaborated by FAO to facilitate the implementation of adopted strategies and IPOAs. Of particular and direct relevance to Target 6 and the minimization of environmental collateral impact are:

- International Guidelines on:
  - *Bycatch Management and Reduction of Discards (2011);*
  - *Management of Deep-sea Fisheries in the High Seas (2009);*
  - *Flag State performance;*
- Technical Guidelines on:
  - *Precautionary Approach to capture fisheries and species introduction (1996);*
  - *Fishing operations (1996);*
  - *Fisheries management (1997);*
  - *Indicators for sustainable development of marine capture fisheries (1999);*
  - *Conservation and management of sharks (2000);*
  - *Implementation of the IPOA-IUU (2002)*
  - *Ecosystem Approach to fisheries (2003);*
  - *Ecolabelling of Fish and Fishery Products from Marine Capture Fisheries (2005);*
  - *Management of fishing capacity (2008);*
  - *Reduction of sea turtle mortality in fishing operations (2009);*
  - *Information and knowledge sharing (2009);*
  - *Better practices to reduce incidental catch of seabirds in capture fisheries (2009);*
  - *MPAs and fisheries (2011);*
  - *Ecolabelling of Fish and Fishery Products from Inland Capture Fisheries (2011);*

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<sup>78</sup> International guidelines are formally adopted by COFI. Technical guidelines are prepared under the FAO Secretariat responsibility. Both are non-binding instruments.

## ANNEX 3 – Decisions of relevance to fisheries and Target 6 taken at CBD COPs

Decision Year	Fisheries Provisions
V/3 2000	13. Suggests that the Subsidiary Body on Scientific, Technical and Technological Advice consider the following issues and prioritize them as appropriate: the use of unsustainable fishing practices, including the effects on marine and coastal biological diversity of the discard of by-catch; the lack of use of marine and coastal protected areas in the context of management of marine and coastal living resources; and the economic value of marine and coastal resources, including sea grasses, mangroves and other coastal ecosystems; as well as capacity-building for undertaking stock assessments and for economic evaluations;
VI/5 2002	7. Agrees that further technical advice is required to support the implementation of the programme elements related to sustainable use and to support the work of developing countries in achieving sustainable use of their marine and coastal areas, including in relation to tourism and fishing, and requests the Executive Secretary to work with the Food and Agriculture Organization of the United Nations and other relevant organizations to develop that advice and support;
VII/5 2004	19. Notes that the Plan of Implementation of the World Summit on Sustainable Development promotes the conservation and management of the oceans, and agreed to develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, the elimination of destructive fishing practices, the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks, by 2012 and time/area closures for the protection of nursery grounds and periods, ... 45 (f). Use of selective fishing gear in order to avoid or minimize by-catch in cases where seed are collected from nature; 45 (l). Use of selective methods in industrial fisheries to avoid or minimize by-catch
VIII/21 2006	3. Concerned about the threats to ...resources in the deep seabed beyond national jurisdiction, requests Parties and urges other States, having identified activities and processes under their jurisdiction and control which may have significant adverse impacts on deep seabed ecosystems and species in these areas, as requested in paragraph 56 of decision VII/5, to take measures to urgently manage such practices in vulnerable deep seabed ecosystems with a view to the conservation and sustainable use of resources, and report on measures taken as part of the national reporting process; 6. Recognizes also that the United Nations Convention on the Law of the Sea regulates activities in the marine areas beyond national jurisdiction, and urges Parties and other States to cooperate within the relevant international and/or regional organizations in order to promote the conservation, management and sustainable use of marine biodiversity in areas beyond national jurisdiction, including deep seabed genetic resources;
IX/20 2008	2. Taking into account the role of Food and Agriculture Organization of the United Nations, requests the Executive Secretary in collaboration with the Food and Agriculture Organization of the United Nations, Parties, other Governments, and relevant organizations, to compile and synthesize available scientific information on the impacts of destructive fishing practices, unsustainable fishing, and illegal, unreported, and unregulated (IUU) fishing on marine biodiversity and habitats, and make such information available for consideration, at a future meeting of the Subsidiary Body on Scientific, Technical and Technological Advice prior to the tenth meeting of the Conference of the Parties;
X/29 2010	13(g) Further efforts, in collaboration with the Food and Agriculture Organization of the United Nations and relevant international and regional organizations, including regional fisheries management organizations (RFMOs), as appropriate, and in accordance with international law, including the United Nations Convention on the Law of the Sea, to ensure the sustainability of fisheries, by managing the impacts of fisheries on species and the wider ecosystem to achieve the outcomes of Target 6 of the Strategic Plan for Biodiversity 2011-2020, through implementing the ecosystem approach; eliminating illegal, unreported and unregulated (IUU) fishing; minimizing the detrimental impacts of fishing practices; mitigating and managing by-catches sustainably and reducing discards, in order to attain a sustainable exploitation level of marine fishery resources and thereby contributing to a good environmental status in marine and coastal waters;

	<p>53. In view of the identified information gaps and constraints in undertaking the scientific review due to limited resources available for the initial collaboration efforts with the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Environment Programme (UNEP), and noting an urgent need to further review, in accordance with international law, including the United Nations Convention on the Law of the Sea, the impacts of unsustainable fishing, such as destructive fishing practices, overfishing, and illegal, unreported and unregulated (IUU) fishing, on marine and coastal biodiversity and habitats, building upon the initial efforts, requests the Executive Secretary to collaborate with the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), regional fisheries management organizations (RFMOs), as appropriate, and in accordance with international law, including the United Nations Convention on the Law of the Sea, the Fisheries Expert Group (FEG) of the Commission on Ecosystem Management (CEM) of the International Union for the Conservation of Nature (IUCN), and other relevant organizations, processes, and scientific groups, subject to the availability of financial resources, on the ad hoc organization of a joint expert meeting, where possible through existing assessment mechanisms, to review the extent to which biodiversity concerns, including the impacts on marine and coastal biodiversity of pelagic fisheries of lower trophic levels, are addressed in existing assessments and propose options to address biodiversity concerns and report on the progress of such collaboration at a future meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) prior to the eleventh meeting of the Conference of the Parties;</p>
	<p>54. Encourages Parties and other Governments to fully and effectively implement paragraphs 113 through 130 of the United Nations General Assembly resolution 64/72 on responsible fisheries in the marine ecosystem, addressing the impacts of bottom fishing on vulnerable marine ecosystems and the long-term sustainability of deep-sea fish stocks, in areas beyond national jurisdiction, in particular paragraphs 119 and 120 of the resolution, calling on States and/or regional fisheries management organizations (RFMOs), consistent with the Food and Agriculture Organization of the United Nations International Guidelines for the Management of Deep-Sea Fisheries in the High Seas and consistent with the precautionary approach, to conduct impact assessments, conduct further marine scientific research and use the best scientific and technical information available to identify areas where vulnerable marine ecosystems are known or likely to occur, either adopt conservation and management measures to prevent significant adverse impacts on such ecosystems or close such areas to fishing, and adopt measures to ensure the long-term sustainability of deep-sea fish stocks (both target- and non-target stocks), and not to authorize bottom-fishing activities until such measures have been adopted and implemented;</p>

## ANNEX 4 – List of FAO statistical data collections of relevance to Target 6

The 1945 Convention instituting the Food and Agriculture Organization (FAO) provides that the Organization shall promote and recommend national and international action with respect to, *inter alia* the conservation of natural resources and the adoption of improved methods of production (Article 1. 2). Towards this end, the Organization is mandated to collect, analyse, interpret and disseminate information relating *inter alia* to fisheries and marine products. This mandate has led to a long tradition in FAO to collect and disseminate statistics and assessments on fisheries and fishery resources in its serial and occasional publications.

### Statistical Collections

Global Production  
Global Capture Production  
Global Tuna Catches by Stock

Atlas of Tuna and Billfish Catches  
Global Number of Fishers  
Fishery Commodities and Trade  
Consumption of Fish and Fishery Products

CECAF (Eastern Central Atlantic) Capture Production  
GFCM (Mediterranean and Black Sea) Capture Production  
RECOFI (Regional Commission for Fisheries) Capture Production  
Southeast Atlantic Capture Production

### Records Collections

ASFIS List of Species for Fishery Statistics Purposes  
Database on Port State Measures  
FAO Fisheries Glossary - more about  
FAO Fishing Vessels Finder (FVF) - more about  
High Seas Vessels Authorization Record (HSVAR) - more about

### Fact Sheets Collections

Cultured Aquatic Species Information Programme (CASIP) - fact sheets - more about  
EAF Planning and Implementation Tools - more about  
National Fishery Sector Overview (NFSO) - more about  
Regional fishery bodies (RFB) - fact sheets - more about

### Maps Collections

Compilation of aquatic species distribution maps of interest to fisheries - more about

**FAO CCRF Questionnaire to insert**

(To be provided at the meeting)

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