

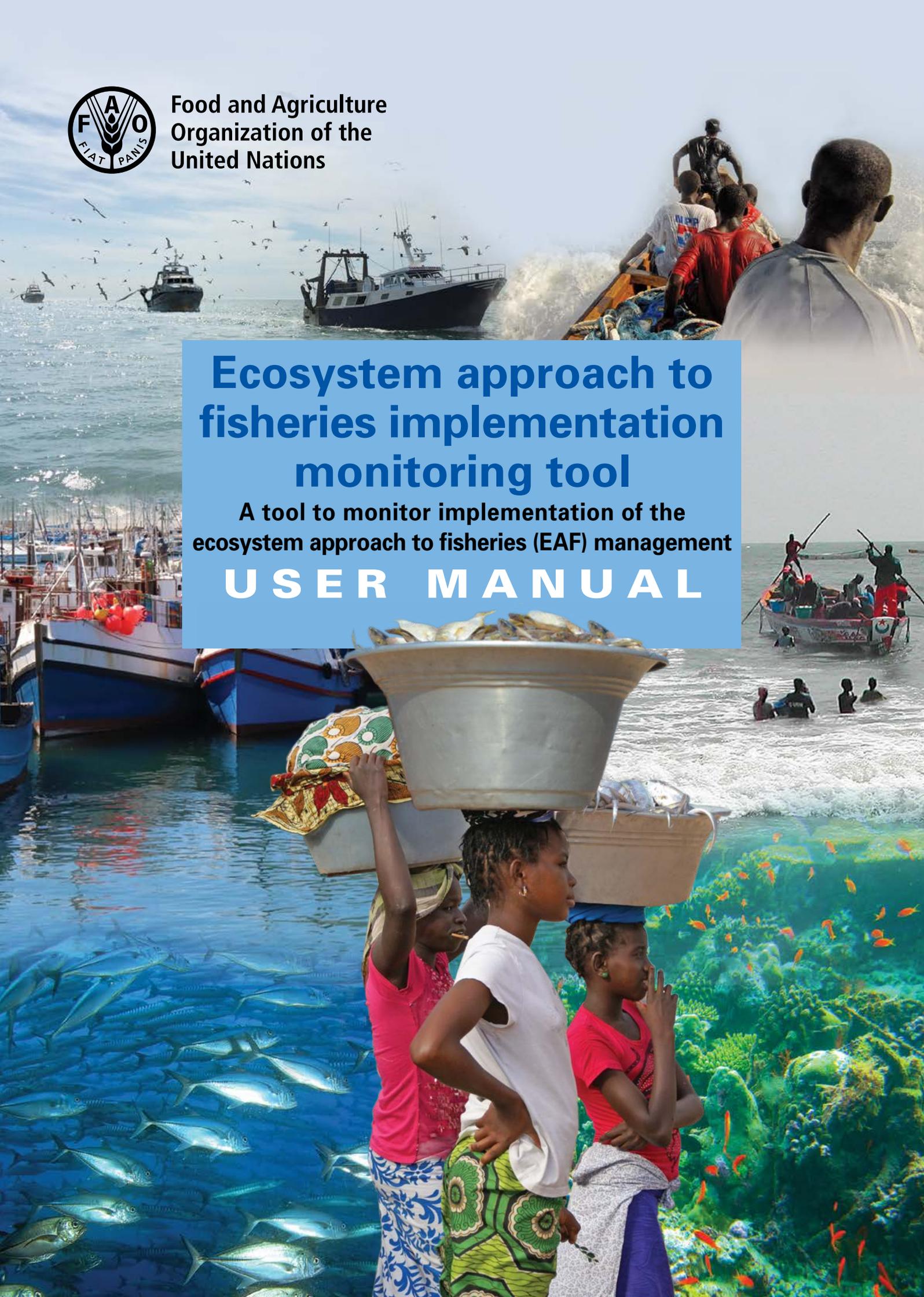


Food and Agriculture
Organization of the
United Nations

Ecosystem approach to fisheries implementation monitoring tool

A tool to monitor implementation of the
ecosystem approach to fisheries (EAF) management

USER MANUAL



Ecosystem approach to fisheries implementation monitoring tool

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User manual

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Preparation of this document

As part of the activities of the EAF-Nansen Programme, “Supporting the Application of the Ecosystem Approach to Fisheries Management Considering Climate and Pollution Impacts (GCP/GLO/690/NOR)”, the Ecosystem approach to fisheries implementation monitoring tool (EAF IMT) was developed to enable partner countries to monitor the progress of implementation of the ecosystem approach to fisheries (EAF), and the achievements in managing fisheries in a sustainable manner.

The EAF IMT is a tool for decision support and planning in the fisheries management process. It can be used by countries in strategic and operational planning processes for each of their fisheries. It will assist them to determine where they are making acceptable progress and where there continue to be gaps and difficulties to address. It also serves to monitor the achievements of Outcome 2 of the EAF-Nansen Programme, that “fisheries management institutions manage fisheries according to the EAF principles”.

This tool replaces “the tracking tool”, a first methodology that was developed in 2004 to track the implementation of EAF. This tracking system was initially very complex, and although a “light” version was then proposed, this did not provide a clear assessment, either of compliance with the EAF process, nor the EAF achievement outcomes. Additionally, EAF specificities compared to a traditional management approach were not highlighted or taken into consideration. After several consultations and review, it was agreed to develop a new tool to monitor EAF implementation in general, as well as to serve as a monitoring tool for the EAF-Nansen Programme.

The EAF IMT was developed through an expert process from 2018 to 2020. Concept and methodology workshops were organized to identify and validate the approach, structure and the scoring system. A first draft tool and manual was developed, and the tool was tested in Dar es Salaam, the United Republic of Tanzania, in April 2019, with the participation of regional experts applying it to four western Indian Ocean fisheries.

A second version was developed and training on the EAF IMT was conducted with the partner countries in Abidjan, the Republic of Côte d’Ivoire, in August 2019, and with three countries in the Gulf of Guinea for their beach seine fisheries. In September 2019, a meeting was organized to validate the revisions, to make final adjustments to the scoring system and to validate the presentation of the results (the dashboard). In November 2019, the tool was presented at the EAF-Nansen Programme Forum in Cotonou, the Republic of Benin and in January 2020, it was applied to develop the baseline and first scoring reference for the small and medium pelagic fishery in the United Republic of Tanzania.

The process of the development of the EAF IMT tool and user guide was led by Matthieu Bernardon, under the supervision, counsel and technical input of Merete Tandstad (EAF-Nansen Programme Coordinator) and an expert task force consisting of Pedro Barros, Tarub Bahri, Marcelo Vasconcelos (all from the Marine and Inland Fisheries Service of the United Nations Food and Agriculture Organization [FAO]), Modulf Overvik, Gunnstein Bakke (both from the Directorate of Fisheries, the Kingdom of Norway), Kwame Koranteng (EAF-Nansen Programme consultant) and Rick Fletcher (Commonwealth Scientific and Industrial Research Organisation, Australia). Further reviews and improvements to the tool and user guide were made by Kwame Koranteng and Rick Fletcher.

Appreciation is also extended to all the participants in the testing workshop and the subsequent training who also contributed to the development of the tool.

The EAF-Nansen Programme

The EAF-Nansen Programme, “Supporting the Application of the Ecosystem Approach to Fisheries Management Considering Climate and Pollution Impacts”, supports partner countries and regional organizations in Africa and the Bay of Bengal. The Programme improves their capacity to sustainably manage their fisheries and other uses of marine and coastal resources through the implementation of the EAF, taking into consideration the impacts of the climate and pollution.

The Programme is executed by FAO in close collaboration with the Institute of Marine Research of Bergen, the Kingdom of Norway, and funded by the Norwegian Agency for Development Cooperation (Norad). The Programme is the current phase (2017 to 2021) of the Nansen Programme which started in 1975.

The EAF-Nansen Programme’s aim is that sustainable fisheries improve food and nutrition security for people in partner countries. It builds on three pillars – science, fisheries management and capacity development – and supports partner countries to produce relevant and timely evidence-based advice to manage fisheries according to the EAF principles, and to further develop their human and organizational capacity to manage fisheries sustainably. In line with the EAF principles, the Programme adopts a broad scope, taking into consideration a wide range of impacts of human activities and natural processes on marine resources and ecosystems, including fisheries, pollution, climate variability and change.

A new state-of-the-art research vessel, the *Dr Fridtjof Nansen*, is an integral part of the Programme. A comprehensive science plan, covering a broad selection of research areas and directed at producing knowledge for informing policy and management decisions, guides the Programme’s scientific work.

The EAF-Nansen Programme works in partnership with countries, regional organizations, other United Nations agencies as well as other partner projects and institutions.

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1. PURPOSE

Working through a number of its projects, particularly the EAF-Nansen Programme, FAO has assisted several countries in Africa to understand, adopt and use an ecosystem approach in the management of their marine and coastal fisheries. The long-term objective of the project, “Supporting the Application of the Ecosystem Approach to Fisheries management considering climate and pollution impacts” (EAF-Nansen Programme, 2017–2021) is that, “sustainable fisheries improve food and nutrition security for people in partner countries”. The programme is working towards the delivery of three mutually reinforcing outcomes that are intended to contribute to the achievement of this objective.

Outcome 1: Fishery research institutions provide relevant and timely scientific advice for management.

Outcome 2: Fisheries management institutions manage fisheries according to the EAF principles.

Outcome 3: Fisheries research and management institutions have appropriate human and organizational capacity to manage fisheries sustainably.

One of the strategies designed to assist in the achievement of these three outcomes, is the development of a tool to track the level of EAF implementation by the partner countries. The EAF IMT has been developed to measure the degree to which each of the EAF principles (as outlined in the EAF-Net Toolbox¹ are being adopted and implemented. The EAF IMT is a tool for decision support and planning in the fisheries management process. It can be used by countries in strategic and operational planning processes for each of their fisheries, helping them to determine where they are making acceptable progress and where there continue to be gaps and difficulties to address.

The EAF IMT can also be used by the EAF-Nansen Programme to identify where training and other support activities should be focused. Importantly, while the tool is designed to generate scores, the most valuable benefit of its application is the discussion that the scoring process generates, and the discipline required to clearly justify each of the scores.

2. BACKGROUND

2.1 What is the ecosystem approach to fisheries?

The EAF and other related concepts (e.g. ecosystem-based management, EBM) have developed over the past 20 or more years in response to the need to implement, in a practical manner, the principles of sustainable development (WCED, 1987), the Convention on Biological Diversity (CBD) and, more recently, the Code of Conduct for Responsible Fisheries (FAO, 1995). EAF is not a new concept even though it was formally adopted at the FAO Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem (FAO, 2002), as a practical approach towards the implementation of the Code of Conduct. Subsequently, the twenty-fifth session of the FAO Committee on Fisheries in 2003 supported the role of FAO in facilitating the process of adoption of the ecosystem approach as the appropriate and practical approach to implement all these agreed principles for the management of fisheries.

According to FAO, the main purpose of the EAF is to:

“Plan, develop and manage fisheries in a manner that addresses multiple needs and desires of societies, without jeopardising the options of future generations to benefit from the full range of goods and services provided by aquatic ecosystems.

¹ www.fao.org/fishery/eaf-net

It strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties of biotic, abiotic and human components of ecosystems their interactions and applying an integrated approach...” (FAO, 2003).

Importantly, this definition highlights that while the EAF deals with all the ecological consequences of fishing, it also recognizes the social and economic implications of fishing and especially its management arrangements. Moreover, when applied in an explicit and coordinated manner, EAF is designed to assist in understanding how each of these components interact and affect the other.

To assist member countries with the broader adoption of the EAF, the FAO integrated elements from a number of relevant approaches (e.g. Chesson, Clayton and Whitworth, 1999; Charles, 2001; Fletcher *et al.*, 2002) to define a set of operational principles and guidelines for EAF (FAO, 2003, 2005; Garcia and Cochrane, 2009; De Young, Charles and Hjort, 2008). A decade later, while the application of this approach was growing, many fishery managers still saw EAF as too difficult to implement without access to expert guidance (see Bianchi and Skjoldal, 2008; Link, 2010). Crucially, many managers incorrectly perceived the EAF as largely an academic or scientific (ecosystem modelling) exercise (Fletcher, 2008; FAO, 2009).

This perception was not helped by scientists who also frequently equated the EAF with the basis for improving their understanding of all the ecological aspects associated with fishing. It was therefore concluded by FAO that if fishery managers had a better understanding of the EAF process, and easier access to relevant tools, implementation of the EAF should improve (FAO, 2009). This prompted FAO to undertake a number of initiatives to improve uptake, including the development of the EAF Toolbox (FAO, 2011–2020; Fletcher and Bianchi, 2014).

2.2 Key elements of the ecosystem approach to fisheries

The main purpose of applying the EAF in fisheries management is to more effectively plan, develop and manage fisheries. One of the principal outputs of EAF implementation will generally be a comprehensive fishery management system that seeks to ensure the sustainable use of all ecological, social and economic systems related to the fishery, not just the targeted species.

According to FAO guidelines, every fishery management system must be underpinned by a fisheries management plan. The management plan is considered as:

“A formal or informal arrangement between a fishery management authority and interested parties which identifies the partners in the fishery and their respective roles, details the agreed objectives of the fishery, and specifies the management rules and regulations which apply to it and provides other details about the fishery which are relevant to the task of the management authority” (FAO, 1997).

The level and types of management action need to be appropriate to the issue. A critical element in the EAF implementation process for fisheries management is that it helps determine what (if any) management actions are appropriate for each issue given the current level of risk, available knowledge and the management system.

2.3 The ecosystem approach to fisheries process

The EAF seeks to improve all fishery management processes by adopting risk management principles. The process is designed to help determine what level of management action, or non-action, and future research is appropriate given the level of risk, opportunities and the current level of knowledge available. The EAF process consists of four main steps, as shown in Figure 1.

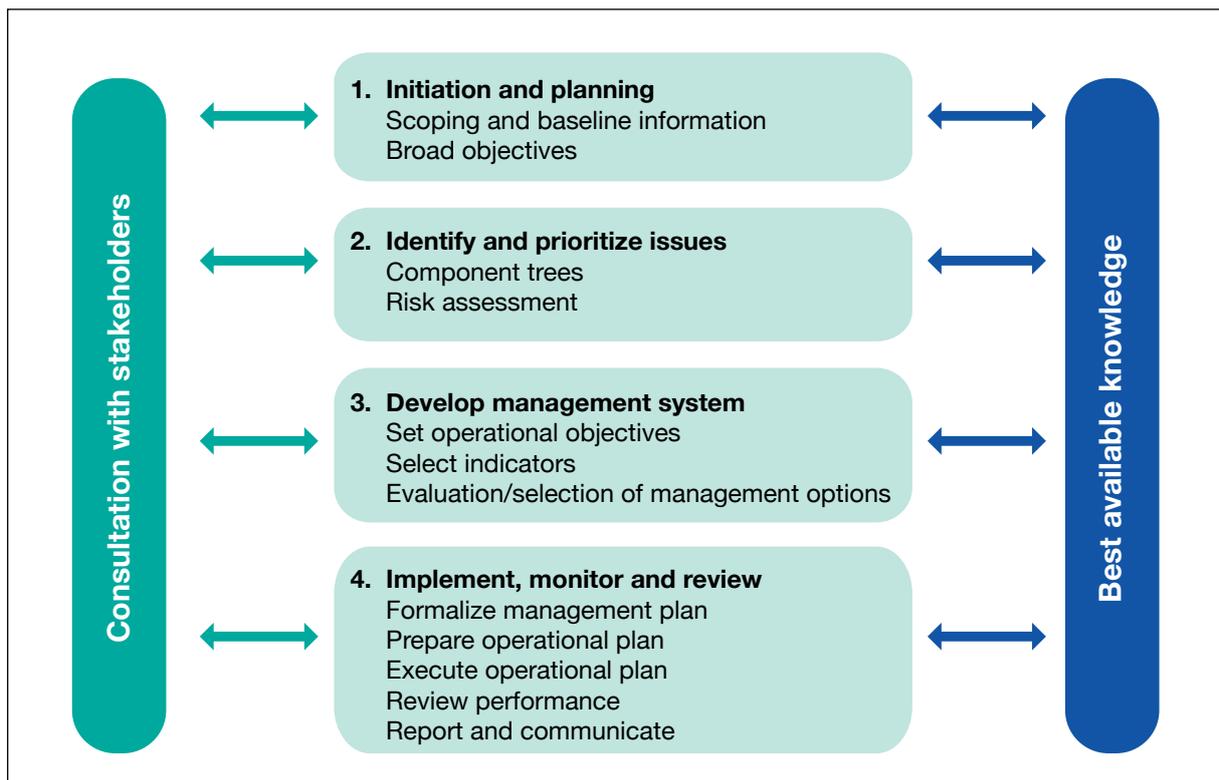


Figure 1: The four main steps in the EAF process

Step 1. Initiation and scope: based on government and stakeholder input, generate an agreed and clear definition of the fishery (scale and type) plus a shared understanding of the social, economic and ecological objectives to be achieved.

Step 2. Identification of assets, issues and priorities: identify all relevant resource “assets”, community outcomes and the issues affecting their management (generated either by the fishery or external factors) and determine priorities for direct action to best achieve objectives.

Step 3. Development of management system: develop a management system to cost-effectively and holistically deal with all high priority issues that includes clear operational objectives and the ability to monitor and assess performance.

Step 4. Implementation, monitoring and performance review: document the actions to implement the management system, monitor their completion, and evaluate and report on their performance in delivering acceptable community outcomes.

3. GENERAL DESCRIPTION OF THE EAF IMPLEMENTATION MONITORING TOOL

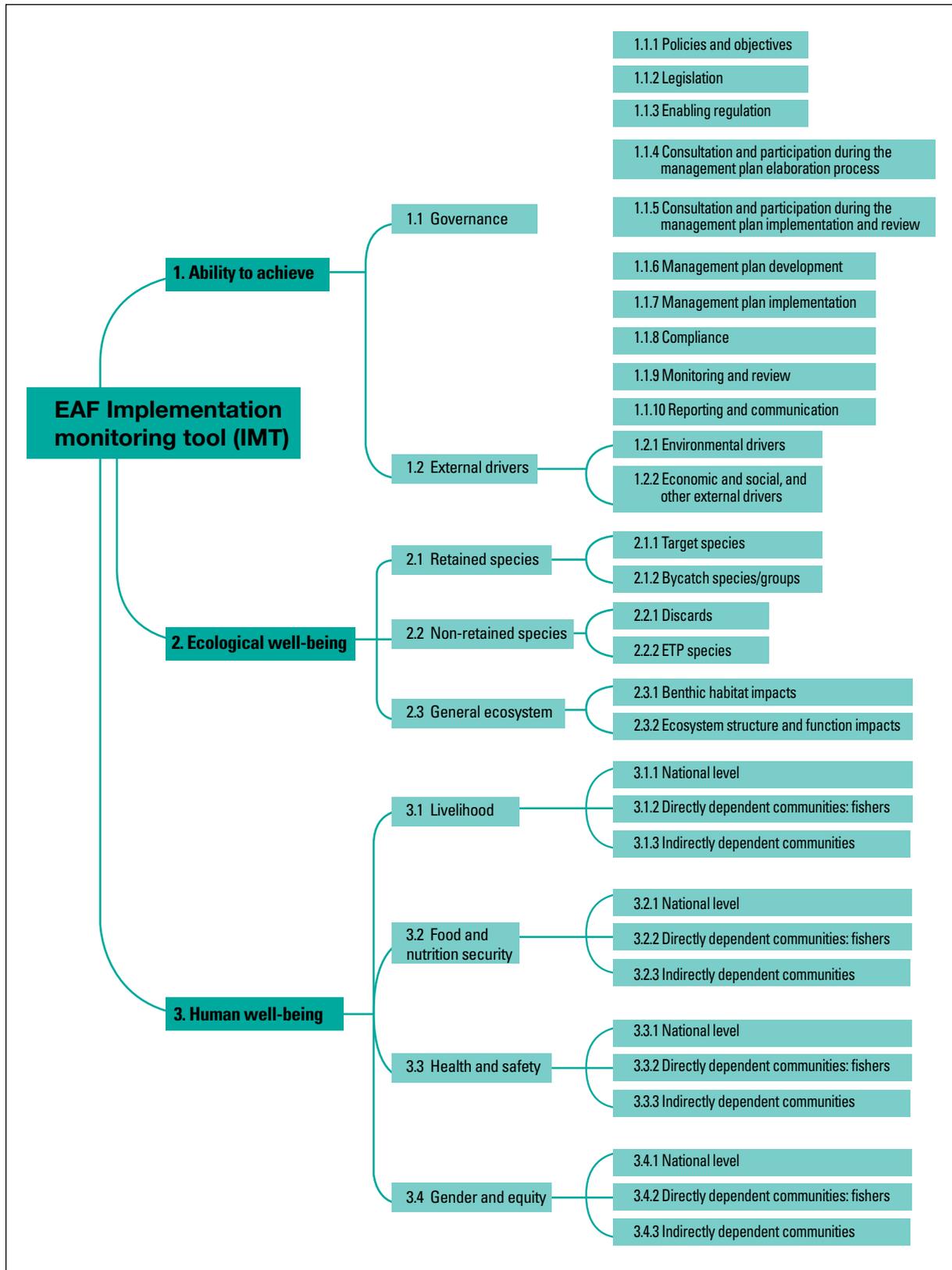


Figure 2: EAF IMT structure

The structure of the EAF IMT is based on the three main EAF components of the “component tree” of risk analysis: ecological well-being, human well-being and ability to achieve, as elaborated below.

- “Ability to achieve” refers to the management and institutional “systems” in place, or proposed (also called governance), to deliver the outcomes wanted. It also takes into account the external “drivers” (not controlled by the fishery) which may be affecting performance.
- “Ecological well-being” refers to all ecological “assets” (e.g. stocks, habitats, ecosystems) relevant to the fishery and the ecosystem where it occurs, as well as the issues and impacts generated by the fishery that may be affecting them.
- “Human well-being” is defined by FAO as “a condition in which all members of society are able to determine and meet their needs and have a large range of choices to meet their potential” (Garcia *et al.*, 2003). There are a lot of elements of human well-being and they are grouped into four categories (livelihood, food and nutrition security, health and safety, and gender and equity).

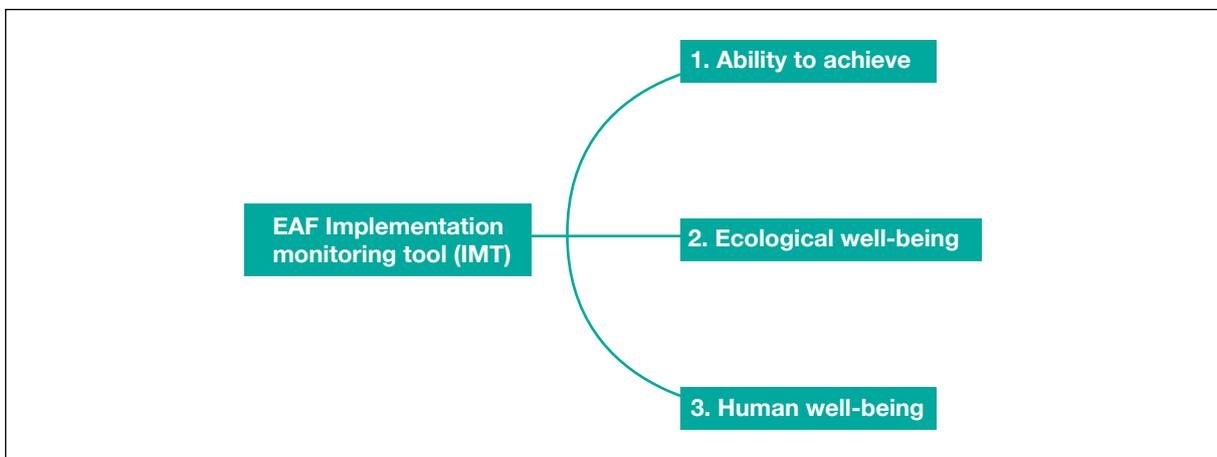


Figure 3: The three components of EAF used in the EAF IMT

The component tree is a way to structure various issues associated with a fishery system into their related groups (governance systems and external drivers, ecological assets, human well-being [social and economic outcomes]) in a visual and structured manner. It helps to minimize the chance of missing all relevant issues. The components in the generic trees represent the more common types of issues that have been previously recognized to be relevant and are useful as starting points (FAO, 2011–2020).

3.1 Methodology of scoring

Ecological and human well-being

The scoring protocol used for each of the five elements of ecological well-being (target species, bycatch species, non-retained species, benthic habitats and ecosystem structure and function), and the four categories of human well-being (livelihood, food and nutrition security, health and safety, gender mainstreaming and equity) have three scoring categories that reflect the EAF risk-based methodology.

- **Category A (assessment). Identification and assessment of EAF issues against agreed objectives**

This category evaluates if there is already sufficient understanding about the relevant EAF issues for each fishery, including having confidence in their identification and assessment of their risks. This category is especially relevant when initiating the implementation of EAF.

- **Category M (management). Management measures appropriate to risks, developed and implemented**

This category measures if the management procedures and systems are appropriate given the current risks identified for each EAF issue, and if these measures are now being implemented. This category will be more relevant to measure after the assessment phase has been completed.

- **Category AO (achieving objectives). Moving towards agreed objectives**

This category evaluates the outcomes of the management system, and to what degree the management system is moving towards delivering each of the agreed objectives and desired outcomes. This category is likely to be relevant and measurable after the management measures have been in place for a suitable period of time.

Note that it is not necessary (and may not be useful) to do Category M, and definitely not Category AO, unless you have progressed sufficiently and had your management in place for some time.

Ability to achieve

External drivers: Because external drivers only impact the ability to achieve agreed objectives for ecological and human well-being (as outlined above), only two of the assessment categories are relevant:

- **Category A (assessment)** – identification and assessment of EAF issues against agreed objectives
- **Category M (management)** – management measures appropriate to risks, developed and implemented.

Governance: The governance elements (policies and objectives, legislation, enabling regulations, reporting and communication) are scored directly using a single scoring table based on the extent to which these have been developed in accordance with EAF principles.

Use of the scoring systems and categories

This tool is designed to assist with strategic planning to enable partner countries to improve their adoption of EAF, not as a compliance tool. It can be used in different ways, depending on the circumstances and requirements of a specific country. The EAF IMT allows for the level of EAF implementation to be assessed at multiple levels, including the EAF component level and the global or entire EAF level. It also allows for this scoring to be done at the category (assessment, management and outcome) levels. The scoring procedure for each EAF component can also use equal weightings, or they can be adjusted based on specific priorities within the partner country.

How should the EAF IMT be applied?

One of the most critical elements of the EAF is that it encourages a high level of participation from all relevant stakeholders. It is expected that the EAF IMT can also be used to assist with this engagement as stakeholder input can be achieved through a variety of means, including community meetings, formal stakeholder workshops and focused discussions using EAF presentation materials. Experience with the use of other EAF planning tools has found that a two-stage process is often the most effective in achieving useful outcomes.

Stage 1: A small group of experts

Considering the levels of information that are needed to complete the full EAF IMT, it is recommended that a small group with relevant expertise, knowledge and experience, provide comprehensive input to undertake an initial assessment for each fishery. This group could be selected from members of the EAF National Task Group (NTG) or the entire membership of the NTG. Ideally, it should be a group of six to ten people (made up of scientists, fisheries managers and fishers) with a champion to lead the exercise.

During this process, it could be determined whether all, or only some, scoring categories are relevant for the fishery. For each of these, using the EAF IMT scoring template, agree on indicative scores and document suitably detailed justifications for these together with the source materials that were used. Use the scoring rationale template (Annexure 1)

Stage 2: Validation of scoring during a workshop

The second stage is a more inclusive process with wider participation of stakeholders, to review and validate the score and the justification provided.

During this workshop, it is often valuable to have a dedicated facilitator. Prior stakeholder training sessions could also be useful to introduce the tool and to facilitate the comprehension and the participation of stakeholders.

When to use this tool

The tool should be applied as a regular part of the fisheries management cycle. It needs to be linked to the work being undertaken to improve the management systems and operational planning. Once these management plans are developed and operational, the tool may not always need to be applied annually, but it is important that its use is considered a part of the normal management review cycle.

4. HOW TO USE THE EAF IMPLEMENTATION MONITORING TOOL

This section is broken down into three parts, one for each of the EAF components:

- 1. Ability to achieve;**
- 2. Ecological well-being; and**
- 3. Human well-being.**

Generally, the “ability to achieve” component appears in last position, in particular in the representation of the tree of the EAF. In the EAF IMT, however, and for reasons of consistency and logical sequence, the “ability to achieve” component is placed first. Experience demonstrates that it is preferable to first review all the elements of governance.

4.1 Ability to achieve

This represents the management and institutional “systems” in place or proposed to deliver the wanted outcomes (e.g. access and tenure systems, compliance, democratic processes, conflict resolution, stakeholder participation), along with the external “drivers” (not controlled by the fishery) which may be affecting performance. This component contains two subcomponents: governance and external drivers.

As shown in the figure below, the governance subcomponent contains 12 elements to evaluate:

1. Policies and objectives;
2. Legislation;
3. Enabling regulation;
4. Consultation and participation during the management plan elaboration process;
5. Consultation and participation during the implementation and review;
6. Management plan development;
7. Management plan implementation and review;
8. Compliance;

9. Monitoring and review;
10. Reporting and communication;
11. Environmental drivers;
12. Economic, social and other external drivers.

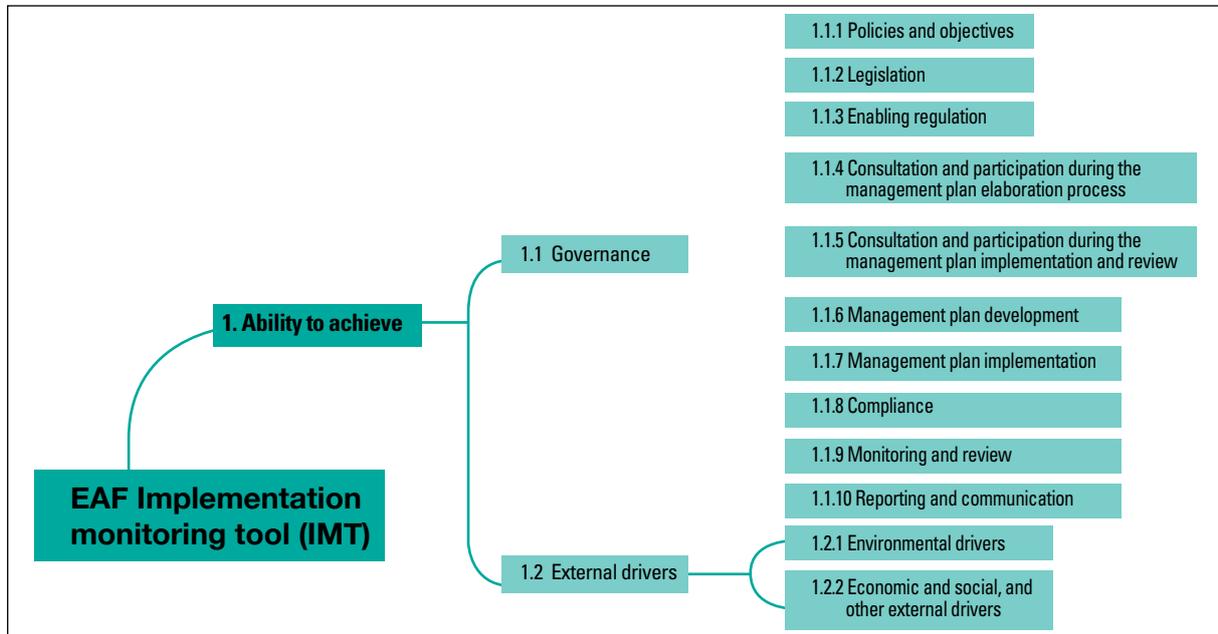


Figure 4: Structure of the “ability to achieve” component

4.1.1 Policies and objectives

Desired outcome: There are adequate policies in place, including a set of agreed objectives, which explicitly define desired ecological, social and economic outcomes for the fishery.

Table 1: Policies and objectives

Scoring	0	1	2	3
Policies and objectives	No clear EAF-based policies or agreed objectives are in place.	Appropriate EAF-based policies, including identification of a set of agreed objectives considering EAF principles, are under development.	Appropriate policies and agreed objectives are in place that address most EAF principles.	There is a full set of policies and agreed objectives that address all EAF principles.
Scoring rationale	As above.	As above.	As above.	There is an holistic set of policies and objectives that: <ul style="list-style-type: none"> • have explicit objectives that cover ecological, economic and social outcomes; • use participatory processes in the development of agreed objectives and for decision making; • are precautionary and risk-based; • encourage the development of formal management plans.

Relevant EAF Toolbox references: EAF Step 1.2 – Defining the fishery, societal values and high-level objectives. www.fao.org/fishery/eaf-net/topic/166250

4.1.2 Legislation

Desired outcome: There are suitably binding and effective legal instruments that enable an efficient management system to be developed, implemented and enforced.

Table 2: Legislation

Scoring	0	1	2	3
Legislation	Legislation is inadequate to address agreed objectives.	Legislation is adequate for meeting a few of the agreed objectives.	Legislation is adequate for meeting most of the agreed objectives.	Legislation is adequate for meeting all of the agreed objectives.
Scoring rationale	The legislation (Fisheries Act and other relevant acts) currently does not enable suitable regulations to be developed to address the agreed objectives. Major amendments to the current legislation would be required before significant progress could be made.	Legislation is adequate for the implementation of only a few appropriate management measures. Some act amendments are needed.	Legislation is adequate for the implementation of most of the appropriate management measures identified. Some amendment may be needed in the future.	There are no constraints in the legislation to develop and implement the necessary management measures to meet the agreed objectives.

4.1.3 Enabling regulation

Desired outcome: There are suitably binding and effective regulations, that enable an efficient management system to be implemented and enforced.

Table 3: Enabling regulation

Scoring	0	1	2	3
Enabling regulation	Regulations are inadequate to address agreed objectives.	Regulations are adequate for meeting a few of the agreed objectives.	Regulations are adequate for meeting most of the agreed objectives.	Regulations are adequate for meeting all of the agreed objectives.
Scoring rationale	The regulations currently do not enable addressing the agreed objectives. This means amendments to the current regulations would be required before significant progress could be made.	Regulations are adequate for the implementation of only a few appropriate management measures.	Regulations are adequate for the implementation of most of the appropriate management measures identified.	There are no constraints in the regulations to implement the necessary management measures to meet the agreed objectives.

4.1.4 Consultation and participation during the management plan elaboration process

Desired outcome: The decision-making process includes effective stakeholder consultation and appropriate participation and use of the best available knowledge during the management plan elaboration process. This should be done by recognizing and respecting existing forms of organization, traditional and local knowledge and practices of communities, including indigenous peoples and ethnic minorities.

Table 4: Consultation and participation planning

Scoring	0	1	2	3
Consultation and participation during the management plan elaboration process	No consultation and participation process is in place.	Minimal consultation and participation process is in place.	A consultation process is in place but there is inadequate participation in decision making.	Appropriate consultation and participation is incorporated in decision making.
Scoring rationale	No or few stakeholders have been consulted.	Only some stakeholders are consulted and only on certain issues.	All stakeholders are consulted but their input is not appropriately considered.	Within a suitably formalized framework, all stakeholders are consulted and their inputs to planning are appropriately considered.

Relevant EAF Toolbox references: Consultation tools.
www.fao.org/fishery/eaf-net/toolbox/planning/consultation/en
EAF tools – Examples of “best practice” management plans.
www.fao.org/fishery/eaf-net/eaftool/eaf_tool_35/en

4.1.5 Consultation and participation during the management plan implementation and review

Desired outcome: The decision-making process includes effective stakeholder consultation and appropriate participation and the use of the best available knowledge during the management plan implementation and review. This should be done by recognizing and respecting existing forms of organization, traditional and local knowledge and practices of communities, including indigenous peoples and ethnic minorities.

Table 5. Consultation and participation – decision-making

Scoring	0	1	2	3
Consultation and participation during the management plan implementation and review	No consultation and participation process is in place.	Minimal consultation and participation process is in place.	A consultation process is in place but there is inadequate participation in decision making.	Appropriate consultation and participation are incorporated in decision making.
Scoring rationale	No or few stakeholders have been consulted.	Only some stakeholders are consulted and only on certain issues.	All stakeholders are consulted but their input is not appropriately considered.	Within a suitably formalized framework, all stakeholders are consulted and their inputs to decision making are appropriately considered.

Relevant EAF Toolbox references: Consultation tools.
www.fao.org/fishery/eaf-net/toolbox/planning/consultation/en

4.1.6 Management plan development

Desired outcomes: There is a clear set of appropriately binding management measures and arrangements (e.g. allocation of access, catch control, harvest strategy, etc.) designed, to achieve each of the agreed objectives.

Table 6: Management plan development

Scoring	0	1	2	3
Management plan development	There is no management plan.	A management plan is under development or developed but does not address all agreed objectives.	A management plan has been developed but not formally adopted.	A management plan, preferably including a formal harvest strategy, has been developed and formally adopted.
Scoring rationale	As above.	As above.	As above.	As above.

Relevant EAF Toolbox references: EAF Step 3.3 Management option evaluation and selection. www.fao.org/fishery/eaf-net/topic/166258; EAF Step 4.2 Formalization of the Management Plan. www.fao.org/fishery/eaf-net/topic/166261

4.1.7 Management plan implementation and review

Desired outcomes: There is a clear set of appropriately binding management measures and arrangements (e.g. allocation of access, catch control, harvest strategy, etc.) implemented and reviewed to achieve each of the agreed objectives. The fisheries management cycle (FMC) is operational. The FMC is a tool for implementing the fisheries management plan and sets out the main activities that research and management are to undertake periodically, and when they are to be undertaken.

Table 7: Management plan implementation and review

Scoring	0	1	2	3
Management plan implementation and review	A management plan has not been implemented.	A management plan has been partially implemented.	A management plan has been implemented but not reviewed.	A management plan has been implemented and reviewed.
Scoring rationale	No operational and annual work plan has been developed.	Some of the plan has operated for at least one full decision-making cycle.	The full plan has operated for at least one full decision-making cycle.	The plan has operated for at least one full decision-making cycle of the harvest strategy and its performance has been independently reviewed.

Relevant EAF Toolbox references: EAF Step 4.3 Review performance of the Management system. www.fao.org/fishery/eaf-net/topic/166262

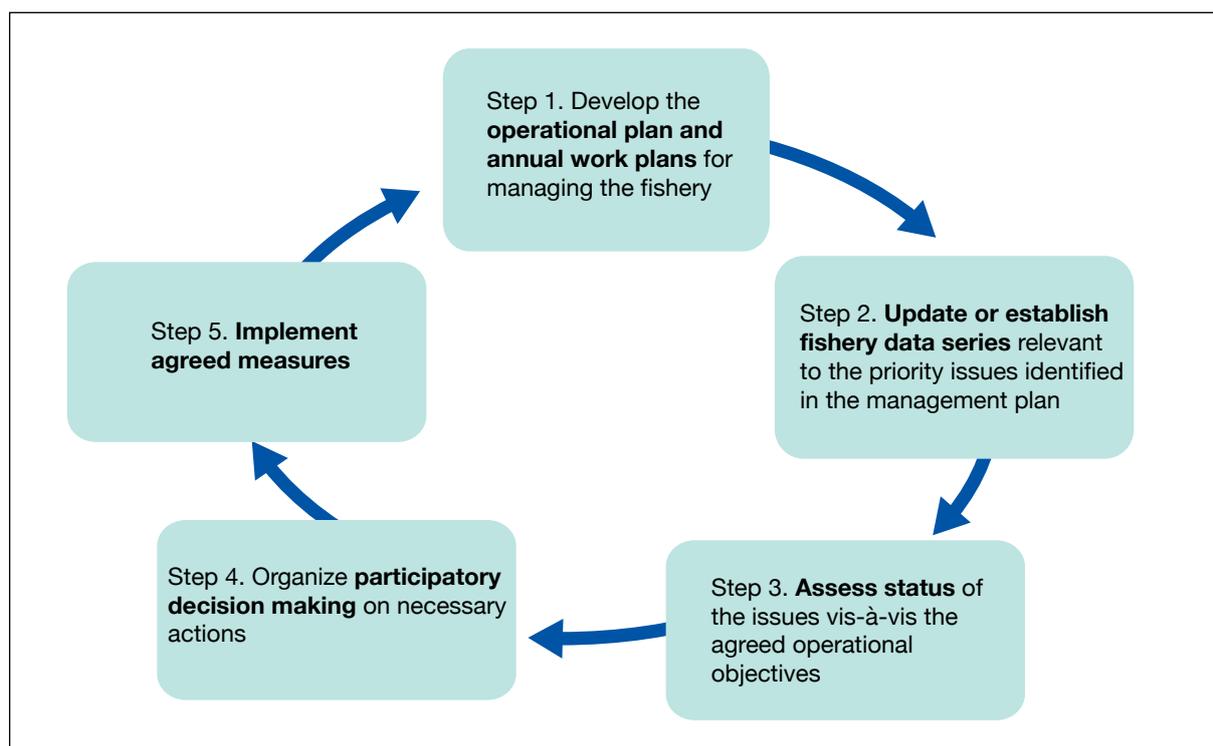


Figure 5: The fisheries management cycle

4.1.8 Compliance

Desired outcome: There are appropriate control, surveillance and enforcement mechanisms ensuring sufficient compliance with the fishery's management plan. Local, national and regional scale should be considered.

Table 8: Compliance

Scoring	0	1	2	3
Compliance	There is no effective compliance system.	A compliance system is under development, or only addresses a few of the relevant management measures.	A compliance system has been developed and addresses most of the relevant management measures.	A compliance system has been developed and fully addresses the management plan.
Scoring rationale	There are either no active compliance programmes or these are largely ineffective, leading to high levels of non-compliance.	As above.	As above.	There are effective compliance and enforcement programmes that ensure all fishing sectors appropriately adhere to all the relevant regulations, and management arrangements.

Relevant EAF Toolbox references: EAF Step 4.3 Fisheries Enforcement and Compliance Tool. www.fao.org/fishery/eaf-net/eaftool/eaf_tool_12

4.1.9 Monitoring and review

Desired outcome: There is an effective monitoring and review programme to assess the performance of the management plan towards achieving the agreed objectives.

Table 9: Monitoring and review

Scoring	0	1	2	3
Monitoring and review	There is no monitoring and review system in place.	A monitoring system is under development, or currently only addresses part of the management plan requirements.	Most parts of the system are operational.	The monitoring system covers all data requirements and has been developed and is fully functional.
Scoring rationale	As above.	As above.	As above.	The monitoring system has been in operation for at least one full season and the data has proved sufficiently effective for decision-making.

Relevant EAF Toolbox references: EAF step 4.4: Reporting, communication and auditing of performance. www.fao.org/fishery/eaf-net/topic/166263

4.1.10 Reporting and communication

Desired outcome: There is an effective reporting and communication programme to keep stakeholders informed about the status of the fishery, performance and any change in the management settings.

Table 10: Reporting and communication

Scoring	0	1	2	3
Reporting and communication	There is no reporting and communication system in place or any system under development.	A system is in place, or currently only addresses part of the management plan requirements.	Most parts of the system are operational.	The reporting system is fully functional.
Scoring rationale	As above.	As above.	Public or regular reports are available for most elements.	There is regular public reporting on fishery status and risks.

Relevant EAF Toolbox references: EAF Step 4.4 Reporting, communication and auditing of performance. www.fao.org/fishery/eaf-net/topic/166263

4.1.11 Environmental drivers

Desired EAF outcomes: Understanding the potential impacts of environmental drivers on the fishery (e.g. climate change and pollution) and incorporating measures appropriate to the risk within the fishery management plan.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks of the environmental drivers on the fishery achieving appropriate outcomes and other agreed objectives.

Table 11: Environmental drivers/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment has been conducted of the relevant risks and opportunities of the impacts of environmental drivers on the fishery.	Only some of the relevant opportunities or risks of impacts of environmental drivers on the fishery have been identified or assessed.	Most of the relevant opportunities or risks of impacts of environmental drivers on the fishery have been identified or assessed.	There is a comprehensive identification and assessment of the relevant opportunities or risks of the impacts of environmental drivers on the fishery.

Relevant EAF Toolbox references: EAF Step 2 – Identification of assets, issues and their priority.

Fisheries management and other measures appropriately consider environmental risks

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk related to the impacts of environmental drivers on the fishery, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 12: Environmental drivers/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures appropriately consider environmental risks	There is no consideration of risk issues and opportunities.	There is some consideration of a few risk issues and opportunities.	There is adequate consideration for most risk issues and opportunities within the management system.	There is adequate consideration for all identified risk issues and opportunities within the management system.
Scoring rationale	As above.	As above.	As above.	As above.

Relevant EAF Toolbox references: EAF Step 3.3 Management option evaluation and selection. www.fao.org/fishery/eaf-net/topic/166258

4.1.12 Economic, social and other external drivers

Desired EAF outcome: Understanding the potential impacts of external socio-economic or other drivers on the fishery and incorporating measures appropriate to the risk within the fishery management plan.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment

of the risks of the economic, social and other external drivers on the fishery achieving appropriate outcomes and other agreed objectives.

Table 13: Economic, social and other external drivers/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	There has been no assessment.	Few elements have been assessed.	Most elements have been assessed.	A comprehensive assessment has been completed.
Scoring rationale	No identification or assessment has been made of the relevant risks and opportunities of the impacts of external economic, social and other external drivers on the fishery.	Only some of the relevant opportunities or risks of the impacts of external economic, social and other external drivers on the fishery have been identified or assessed.	Most of the relevant opportunities or risks of the impacts of external economic, social and other external drivers on the fishery have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks of the impacts of external economic, social and other external drivers on the fishery.

Relevant EAF Toolbox references: EAF Step 2 – Identification of assets, issues and their priority.

Fisheries management and other measures appropriately consider socio-economic risks or opportunities

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk concerning the impacts of the economic, social and other external drivers on the fishery, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 14: Economic, social and other external drivers/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures appropriately consider socio-economic and other external drivers risk	There is no consideration of risk issues and opportunities.	There is some consideration for a few risk issues and opportunities.	There is adequate consideration for most risk issues and opportunities within the management system.	There is adequate consideration for all identified risk issues and opportunities within the management system.
Scoring rationale	There is no consideration of the relevant risks or opportunities of the impacts of socio-economic and others external drivers.	As above.	As above.	As above.

Relevant EAF Toolbox references: EAF Step 3.3.

Now that all the elements of the “ability to achieve” component have been noted, all the scores and the detailed justification of each score are summarized in Table 15. The EAF Implementation Monitoring Tool scoring rationale (Annexure 1) can also be used.

Table 15: Ability to achieve score

Governance	Score	Justification
Policies and objectives		
Legislation		
Enabling regulation		
Compliance		
Consultation and participation during the management plan elaboration process		
Consultation and participation during the management plan implementation and review		
Management plan development		
Management plan implementation		
Monitoring and review		
Reporting and communication		
TOTAL		

External driver	Category A: Assessment	Category M: Management	Total
Environmental drivers			
External economic, social and other external drivers			
TOTAL			

4.2 Ecological well-being

This component concerns all ecological “assets” (e.g. stocks, habitats, ecosystems) relevant to the fishery and the ecosystem in which it occurs, and the issues and impacts being generated by the fishery that may be affecting them.

This component has three subcomponents and six elements to evaluate:

1. Retained species:
 - a. Target species
 - b. Bycatch species
2. Non-retained species:
 - a. Discards and
 - b. Endangered, threatened and protected (ETP) species
3. General ecosystem
 - a. Benthic habitats
 - b. Ecosystem structure and function.

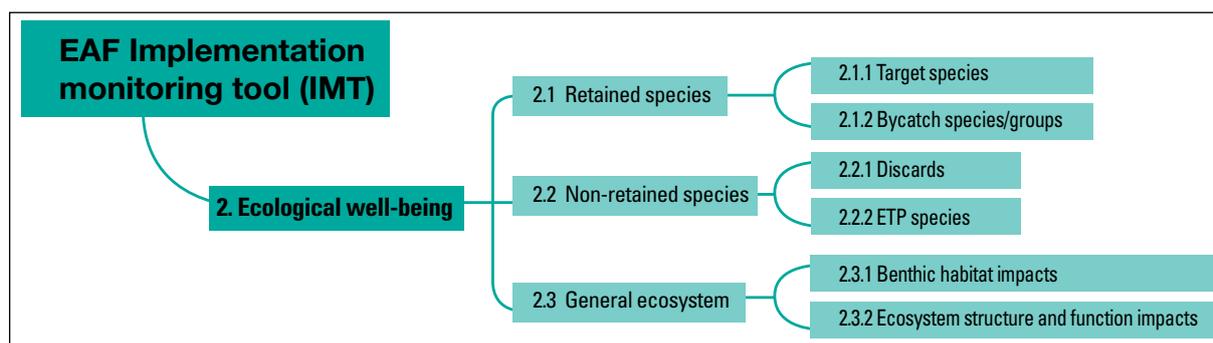


Figure 6: Structure of the EAF ecological well-being component

4.2.1 Target species

Target species are defined as those species that are primarily sought by the fishers in a particular fishery, or are the subject of directed fishing effort in a fishery. There may be primary as well as secondary target species (Garcia, 2009).

Desired outcome: Each of the target species (stock) is at or above agreed reference and performance level (e.g. threshold reference point) for each of the agreed objectives (e.g. ecological: biomass maximum sustainable yield [BMSY]; economic: biomass maximum economic yield [BMEY]; social: spatial distribution, etc).

A. Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based upon all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the assessment of risk status of the target species and the associated management advice.

Table 16: Target species/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Low level of confidence in the assessment and management advice.	Variable levels of confidence in the assessment and management advice for the target species against agreed objectives.	High level of confidence in the assessment and management advice for all target species against agreed objectives.
Scoring rationale	No formal or informal assessment of stock status for any of the target species.	There is some formal or informal assessment of stock status for some of the target species, but very high levels of uncertainty in the assessment and in the associated advice.	There are some of the target species or some of the objectives with an acceptable level of confidence in the assessment and advice, and other target species and objectives where the confidence level is not acceptable.	There is a comprehensive assessment and management advice system based on: <ul style="list-style-type: none"> • reliable data • clear objectives • robust assessment • clear management advice.

Relevant EAF Toolbox references: Step 2.1 – Asset and Issue identification. www.fao.org/fishery/eaf-net/topic/166253; EAF Toolbox Step 2.2 – Issue prioritization and risk assessment. www.fao.org/fishery/eaf-net/topic/166254

B. Management measures appropriate to risk developed and implemented

Expected EAF outcome: Management measures appropriate to address the target species risks, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 17: Target species/scoring category M

Scoring	0	1	2	3
Management measures appropriate to risk developed and implemented	No appropriate management measures are in place.	Appropriate management measures are under development.	Appropriate management measures have been developed but are not fully implemented.	Adequate management measures have been developed and are being implemented.
Scoring rationale	There are no appropriate management measures in place or under development. Any current management measures are considered ineffective or inadequate to begin addressing the identified risks.	There are no appropriate measures in place, but processes are underway for their development.	This requires an integrated set of management measures within a suitably formalized management plan. These measures could include: <ul style="list-style-type: none"> • indicators • performance measures • harvest strategy • integrated set of fishing regulations (e.g. catch and effort control). 	There is an integrated set of management measures within a properly formalized management plan which has been fully operational for at least one fishing season.

Relevant EAF Toolbox references: Step 3 – Development of the EAF management system. www.fao.org/fishery/eaf-net/toolbox/planning/step-3/en

C. Achieving agreed objectives

Expected EAF outcome: The management system progresses towards meeting agreed objectives and desired outcomes.

Table 18: Target species/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale	As above.	As above.	As above.	As above.

Relevant EAF Toolbox references: Step 3.2 – Indicator and performance measure selection. **EAF Tool** – Reviews and Summaries of Indicators and Performance Measures for Use in EAF www.fao.org/fishery/eaf-net/eaftool/eaf_tool_39

4.2.2 Retained bycatch (non-target) species/group

Defined as those species that are retained by the fishery, other than those that are being targeted.

Desired outcome: Keep stock level of bycatch species above suitable reference level (e.g. BMSY) and the catch level does not hinder recovery if bycatch species are below biological limit.

If there is no bycatch species/group in the fishery, or if the total level of retained bycatch is less than five percent of the total catch by weight, then only the assessment scoring category needs to be formally evaluated. For scoring Categories M and AO it would be not applicable.

A. Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the assessment of risk status of the bycatch species and the associated management advice.

Table 19: Bycatch species/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Low level of confidence in the assessment and management advice.	Variable levels of confidence in the assessment and management advice for the bycatch species against agreed objectives.	High level of confidence in the assessment and management advice for all bycatch species against agreed objectives.
Scoring rationale	No formal or informal assessment of stock status for any of the bycatch species.	There is some formal or informal assessment of stock status for some of the bycatch species, or very high levels of uncertainty in the assessment and in the associated advice.	There are some of the target species or some of the objectives with acceptable levels of confidence in the assessment and advice, and other bycatch species/objectives where confidence levels are not acceptable.	There is a complete assessment and management advice system based on: <ul style="list-style-type: none"> • reliable data • clear objectives • robust assessment • clear management advice.

Relevant EAF Toolbox references: EAF steps 2.1 and 2.2.

B. Management measures appropriate to risks developed and implemented

Expected EAF outcome: Management measures appropriate to addressing the bycatch species risk, which are also consistent with each of the other agreed objectives, have been developed and implemented. If there is no retained bycatch species/group in the fishery, this category is not applicable.

Table 20: Retained bycatch species/scoring category M

Scoring	NA	0	1	2	3
Management measures appropriate to risk level developed and implemented	Not applicable.	No appropriate management measures in place.	Appropriate management measures are under development.	Appropriate management measures have been developed but are not fully implemented.	Adequate management measures have been developed and are being implemented.
Scoring rationale	There is no bycatch, or the level of bycatch is less than five percent of the total catch by weight.	There are no appropriate management measures in place or under development. Any current management measures are considered ineffective or inadequate to begin addressing the identified risks.	There are no appropriate management measures in place, but processes are underway for their development.	There is an integrated set of management measures within a suitably formalized management plan.	There is an integrated set of management measures within a properly formalized management plan, which has been fully operational for at least one fishing season.

Relevant EAF Toolbox references: EAF Steps: 3.2 and 3.

C. Achieving agreed objectives

Expected EAF outcome: The management system progresses towards meeting agreed objectives and desired outcomes.

If there is no retained bycatch species/group in the fishery, then this aspect will not be evaluated and will be not applicable.

Table 21: Retained bycatch species/scoring category AO

Scoring	NA	0	1	2	3
Achieving agreed objectives	Not applicable.	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale	There is no bycatch, or the level of bycatch is less than five percent of the total catch by weight.	As above.	As above.	As above.	As above.

Relevant EAF Toolbox references: EAF indicators.

4.2.3 Non-retained species (non-endangered, threatened and protected species)

These are non-ETP species that have no economic value and are all discarded. Note, this does not include the discarded individuals of those species that are generally retained. These impacts are covered above.

Desired outcome: The impact of the fishery on non-retained species is at acceptable levels and meets relevant international obligations and treaties.

If there are no non-retained species/group in the fishery, or if the level of discards is less than five percent of the total catch by weight, then only an assessment needs to be completed. If the assessment indicates no risk issues, then the M and OA scores will be not applicable.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the assessment of risk of fishery impacts on discards and the associated management advice.

Table 22: Non-retained/discarded species/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Low level of confidence in the assessment and management advice.	Variable levels of confidence in the assessment and management advice for the discards against agreed objectives.	High level of confidence in the assessment and management advice for all discards against agreed objectives.
Scoring rationale	No formal or informal assessment of stock status for any of the discard species.	There is some formal or informal assessment of stock status for some of the discards, but very high levels of uncertainty in the assessment and in the associated advice.	There are some of the discards or some of the objectives with acceptable levels of confidence in the assessment and advice, and discards/objectives where the confidence level is not acceptable.	There is a complete assessment and management advice system, based on: <ul style="list-style-type: none"> • reliable data • clear objectives • robust assessment • clear management advice.

Management measures appropriate to risks developed and implemented

Expected EAF outcome: Management measures appropriate to addressing the non-retained species' risks, which are also consistent with each of the other agreed objectives, have been developed and implemented. If there are no discard species in the fishery, then this aspect will not be evaluated and will be not applicable.

Table 23: Non-retained species/discards/scoring category M

Scoring	NA	0	1	2	3
Management measures appropriate to risk developed and implemented	Not applicable.	No appropriate management measures in place.	Appropriate management measures are under development.	Appropriate management measures have been developed but not fully implemented.	Adequate management measures have been developed and are being implemented.
Scoring rationale	No discards.	There are no appropriate management measures in place or under development. Any current management measures are considered ineffective or inadequate to begin addressing the identified risks.	There are no appropriate measures in place, but processes are underway for their development.	There is an integrated set of management measures within a suitably formalized management plan.	There is an integrated set of management measures within a properly formalized management plan which has been fully operational for at least one fishing season.

Relevant EAF Toolbox references: EAF Steps 3.2 and 3.3.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards meeting agreed objectives and desired outcomes.

If there are no discarded species in the fishery this aspect is not applicable.

Table 24: Non-retained species/discards/scoring category AO

Scoring	NA	0	1	2	3
Achieving agreed objectives	Not applicable.	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale	No discards.				

Relevant EAF Toolbox references: EAF indicators.

4.2.4 Non-retained species (endangered, threatened and protected species)

ETP species recognized by national legislation and/or binding international agreements to which the jurisdictions controlling the fishery under assessment are party.

Desired outcome: The impact of the fishery on ETP species is at acceptable levels and meets relevant international obligations and treaties.

If there is robust information to confirm that there are no catches of ETP species/group in the fishery, then only the assessment scoring is needed. The other categories would be not applicable.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the assessment of risk of fishery impacts on ETP species and the associated management advice.

Table 25: Non-retained species – ETP species/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Low level of confidence in the assessment and management advice.	Variable levels of confidence in the assessment and management advice for the discards against agreed objectives.	High level of confidence in the assessment and management advice for all ETP species against agreed objectives.
Scoring rationale	There is no formal or informal assessment of stock status for any of the ETP species.	There is some formal or informal assessment of stock status for some of the ETP species, but very high levels of uncertainty in the assessment and in the associated advice.	There are some of the ETP species or some of the objectives with acceptable levels of confidence in the assessment and advice, and discards/objectives where the confidence level is not acceptable.	There is a complete assessment and management advice system based on: <ul style="list-style-type: none"> • reliable data • clear objectives • robust assessment • clear management advice.

Management measures appropriate to risks developed and implemented

Expected EAF outcome: Management measures appropriate to addressing the non-retained species' risks, which are also consistent with each of the other agreed objectives, have been developed and implemented.

If there is no catch of ETP species in the fishery, then this aspect will not be evaluated and is not applicable.

Table 26: Non-retained species – ETP species/scoring category M

Scoring	NA	0	1	2	3
Management measures appropriate to risk level developed and implemented	Not applicable.	No appropriate management measures in place.	Appropriate management measures are under development.	Appropriate management measures have been developed but not fully implemented.	Adequate management measures have been developed and are being implemented.
Scoring rationale	No ETP species.	There are no appropriate management measures in place or under development. Any current management measures are considered ineffective or inadequate to begin addressing the identified risks.	There are no appropriate management measures in place, but processes are underway for their development.	There is an integrated set of management measures within a suitably formalized management plan.	There is an integrated set of management measures within a properly formalized management plan which has been fully operational for at least one fishing season.

Relevant EAF Toolbox references: EAF Steps 3.2 and 3.3.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards meeting agreed objectives and desired outcomes.

If there is no catch of ETP species in the fishery, then this aspect will not be evaluated and is not applicable.

Table 27: Non-retained species – ETP species/scoring category AO

Scoring	NA	0	1	2	3
Achieving agreed objectives	Not applicable.	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale	No ETP species.				

Relevant EAF Toolbox references: EAF indicators.

4.2.5 General ecosystem – benthic habitat impacts

Desired Outcome: The fishery does not cause an unacceptable impact on habitats.

Appropriate assessment completed against agreed objectives

If there is no interaction with the benthic habitats (e.g. as in pelagic trawling), then this aspect will not be totally evaluated. Only the assessment scoring category will be completed; scoring categories M and AO will be not applicable.

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the assessment of risk of impacts of the fishery on benthic habitats and the associated management advice.

Table 28: Benthic habitat impacts/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Low level of confidence in the assessment and management advice.	Variable levels of confidence in the assessment and management advice for the benthic habitat against agreed objectives.	High level of confidence in the assessment and management advice for benthic habitat impacts against agreed objectives.
Scoring rationale	There is no formal or informal assessment of the impact of the fishery on benthic habitats.	There is some formal or informal assessment of the impact of the fishery for some benthic habitats, but very high levels of uncertainty in the assessment and in the associated advice.	There are some of the benthic habitat impacts or some of the objectives with acceptable levels of confidence in the assessment and advice, and other benthic habitat impacts/objectives where the confidence level is not acceptable.	There is a complete assessment and management advice system based on: <ul style="list-style-type: none"> • reliable data • clear objectives • robust assessment • clear management advice.

Relevant EAF Toolbox references: Relevant EAF steps 2.1 and 2.2.

Management measures appropriate to risks developed and implemented

If there is no interaction with the benthic habitats, then this aspect will not be evaluated and is not applicable.

Expected EAF outcome: Management measures appropriate to addressing the benthic habitat impacts' risks, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 29: Benthic habitat impacts/scoring category M

Scoring	NA	0	1	2	3
Management measures appropriate to risk level developed and implemented	Not applicable.	No appropriate management measures in place.	Appropriate management measures are under development.	Appropriate management measures have been developed but not fully implemented.	Adequate management measures have been developed and are being implemented.
Scoring rationale	There is no interaction with the benthic habitat.	There are no appropriate management measures in place or under development. Any current management measures are considered ineffective or inadequate to begin addressing the identified risks.	There are no appropriate management measures in place, but processes are underway for their development.	There is an integrated set of management measures within a suitably formalized management plan.	There is an integrated set of management measures within a properly formalized management plan, which has been fully operational for at least one fishing season.

Relevant EAF Toolbox references: EAF Steps: 3.2 and 3.3.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards meeting agreed objectives and desired outcomes.

If there is no interaction with the benthic habitat, then this aspect will not be evaluated and is not applicable.

Table 30: Benthic habitat impacts/scoring category AO

Scoring	NA	0	1	2	3
Achieving agreed objectives	Not applicable.	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale	No interaction with benthic habitat.				

Relevant EAF Toolbox references: EAF indicators.

4.2.6 Ecosystem structure and function impacts

Desired outcome: The fishery does not cause unacceptable impacts on the wider ecosystem (including trophic structure and function).

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the assessment of risk of impacts of the fishery on ecosystem structure and function and the associated management advice.

Table 31: Ecosystem structure and function impacts/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Low level of confidence in the assessment and management advice.	Variable levels of confidence in the assessment and management advice for the ecosystem structure and function against agreed objectives.	High level of confidence in the assessment and management advice for ecosystem structure and function against agreed objectives.
Scoring rationale	There is no formal or informal assessment of the impact of the fishery on ecosystem structure and function.	There is some formal or informal assessment of the impact of the fishery on ecosystem structure and function, but very high levels of uncertainty in the assessment and in the associated advice.	There are some ecosystem structure and function impacts or some objectives with acceptable levels of confidence in the assessment and advice, and other ecosystem structure and function impacts and objectives where the confidence level is not acceptable.	There is a complete assessment and management advice system based on: <ul style="list-style-type: none"> • reliable data • clear objectives • robust assessment • clear management advice.

Relevant EAF Toolbox references: EAF steps 2.1 and 2.2.

Management measures appropriate to risks developed and implemented

Expected EAF outcome: Management measures appropriate to addressing the ecosystem structure and function risk level, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 32: Ecosystem structure and function impacts/scoring category M

Scoring	0	1	2	3
Management measures appropriate to risk developed and implemented	No appropriate management measures in place.	Appropriate management measures are under development.	Appropriate management measures have been developed but not fully implemented.	Adequate management measures have been developed and are being implemented.
Scoring rationale	There are no appropriate management measures in place or under development. Any current management measures are considered ineffective or inadequate to begin addressing the identified risks.	There are no appropriate management measures in place, but processes are underway for their development.	There is an integrated set of management measures within a suitably formalized management plan.	There is an integrated set of management measures within a properly formalized management plan which has been fully operational for at least one fishing season.

Relevant EAF Toolbox references: EAF Steps: 3.2 and 3.3.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards meeting agreed objectives and desired outcomes.

Table 33: Ecosystem structure and function impacts/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale	As above.			

Relevant EAF Toolbox references: EAF indicators.

Table 34: Ecological well-being score

Scoring	NA	Category A: Assessment	Category M: Management	Category AO: Achievement	Total
Target species					
Bycatch species					
Non-retained species					
Benthic habitat impacts					
Ecosystem structure and function impacts					
TOTAL					

4.3 Human well-being

Human well-being is one of the key drivers in an EAF and is defined by FAO as: “a condition in which all members of society are able to determine and meet their needs and have a large range of choices to meet their potential” (Garcia *et al.*, 2003). In other words, ecosystem health is fundamental for human health and well-being. In EAF, it is essential to maintain the capacity of aquatic resources to produce food and employment fundamental to human health. There are a lot of elements of human well-being and they are grouped into four categories:

1. Livelihood
2. Food and nutrition security
3. Health and safety
4. Gender and equity.

Each element will be reviewed and scored at three different levels:

1. at national level;
2. at the scale of directly dependent fishing communities;
3. at the scale of indirectly dependent fishing communities.

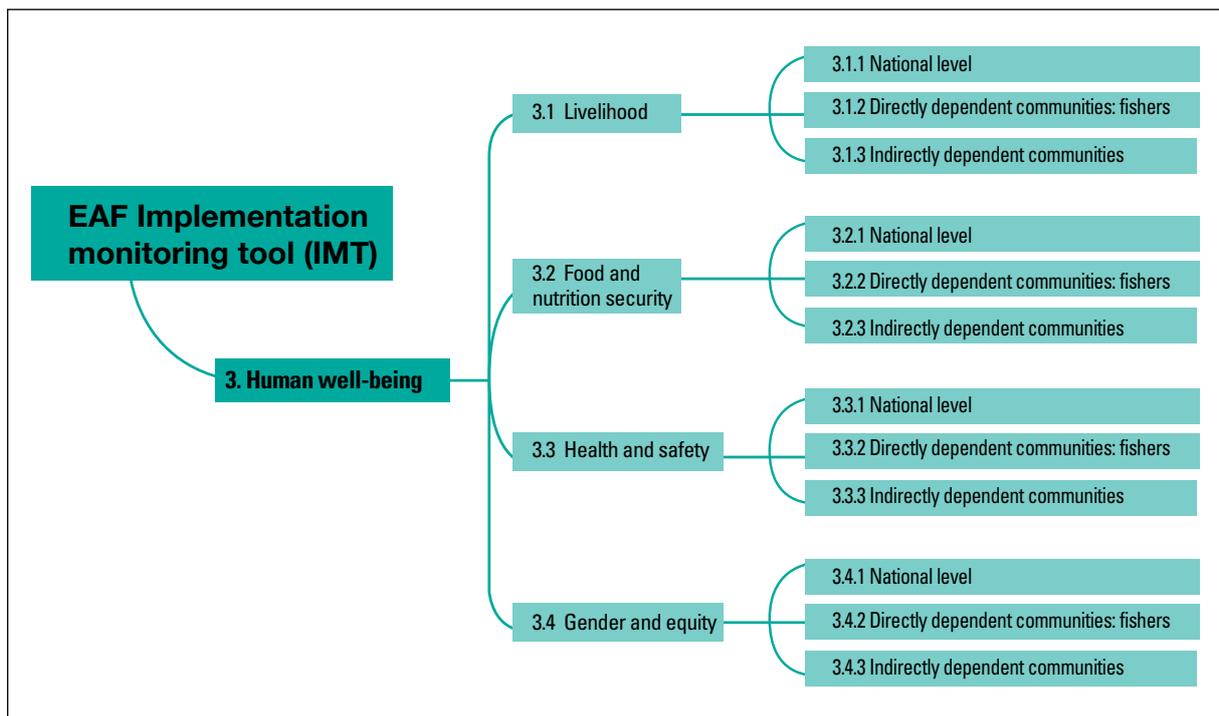


Figure 7: Structure of the human well-being component

4.3.1 Livelihood

Livelihood is defined as a set of activities performed to live, involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire these necessities, working either individually or as a group by using endowments (both human and material) for meeting the requirements of the individual and his/her household on a sustainable basis with dignity (Oxford Dictionary of English, 2010).

Carney (1998) defines sustainable livelihood as follows:

“A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain and enhance its capabilities and assets both now and in the future, while not undermining the natural resource base”.

Assessing livelihood in the human (social and economic) well-being dimension of fisheries management concerns the following possible objectives which are generally met in the EAF framework:

- improving sector employment;
- fighting/reducing poverty (poverty alleviation);
- enhancing quality of life and income;
- improving economic performance;
- maximizing sustainable yield;
- minimizing management costs;
- improving productivity;
- minimizing conflict and social exclusion;
- increasing the resilience of livelihoods.

National level

Desired outcome: Livelihoods are enhanced at country level.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based upon all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities at national level in achieving appropriate livelihoods outcomes and other agreed objectives.

Table 35: Livelihoods at national level/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	There is no identification or assessment available of the relevant risks and opportunities for livelihoods at national level.	Only some of the relevant opportunities or risks for livelihoods at national level have been identified or assessed.	Most of the relevant opportunities or risks for livelihoods at national level have been identified or assessed.	There is a comprehensive identification and assessment of the relevant opportunities or risks for livelihoods at national level.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk for livelihoods at national level, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 36: Livelihoods at national level/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/ conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 37: Livelihoods at national level/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Directly dependent communities

The directly dependent communities are made up of persons directly engaged in the primary activity of fishing (fishers and owners of fishing vessels and equipment, along with the fishing crew).

Desired outcome: Livelihoods of the communities that depend directly on the fishery are enhanced.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities for the directly dependent communities in achieving appropriate livelihoods outcomes and other agreed objectives.

Table 38: Livelihoods of the directly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment is available of the relevant risks and opportunities for the directly dependent communities.	Only some of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	Most of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks to the directly dependent communities.

Fisheries management and other measures developed and implemented appropriate to risk and constraints/conflicts

Expected EAF outcome: Fishery management and other measures (e.g. safety at sea, social infrastructure, etc.) appropriate to addressing the risk for directly dependent communities' livelihoods, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 39: Livelihoods of the directly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 40: Livelihoods of the directly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Indirectly dependent communities

The indirectly dependent communities consist of persons dependent on fishing activities, but not directly in engaged in fishing (e.g. processors, mechanics, net repairers, boat carpenters, etc.).

Desired outcome: Livelihoods of communities that depend indirectly on the fishery are enhanced.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities of indirectly dependent communities in achieving appropriate livelihoods outcomes and other agreed objectives.

Table 41: Livelihoods for the indirectly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	There is no identification or assessment of the relevant risks and opportunities available.	Only some of the relevant opportunities or risks have been identified or assessed.	Most of the relevant opportunities or risks have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risks, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 42: Livelihoods for the indirectly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/ conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 43: Livelihoods for the indirectly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Table 44: Livelihoods score

Scoring	Category A: Assessment	Category M: Management	Category AO: Achievement	Total
National level				
Directly dependent communities				
Indirectly dependent communities				
TOTAL				

4.3.2 Food and nutrition security

Food and nutrition security is achieved when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FSN Forum, 2007).

In this context, assessing food and nutrition security in the human (social and economic) well-being dimension of ecosystem and fisheries management concerns the following objectives: eliminate hunger, food insecurity and malnutrition².

In certain fisheries, food and nutrition security could not be an objective. In this case, food and nutrition security will not be reviewed and scored and it is not applicable.

National level

Desired outcome: Food and nutrition security is enhanced at national level.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities at national level in achieving appropriate food and nutrition security outcomes and other agreed objectives.

Table 45: Food and nutrition security at national level/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment of the relevant risks and opportunities for food and nutrition security at national level is available.	Only some of the relevant opportunities or risks for food and nutrition security at national level have been identified or assessed.	Most of the relevant opportunities or risks for food and nutrition security at national level have been identified or assessed.	There is a comprehensive identification and assessment of the relevant opportunities or risks for food and nutrition security at national level.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk for food and nutrition security at national level, which are consistent with each of the other agreed objectives, have been developed and implemented.

² FAO Strategic objective 1

Table 46: Food and nutrition security at national level/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/ conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 47: Food and nutrition security at national level/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Directly dependent communities

The directly dependent communities are made up of persons directly engaged in the primary activity of fishing (fishers and owners of fishing vessels and equipment, along with the fishing crew).

Desired outcome: Enhance the food and nutrition security of the directly dependent communities.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities for the directly dependent communities in achieving appropriate food and nutrition security outcomes and other agreed objectives.

Table 48: Food and nutrition security of the directly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment is available of the relevant risks and opportunities for the directly dependent communities.	Only some of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	Most of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks to the directly dependent communities.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk of directly dependent communities becoming food insecure, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 49: Food and nutrition security of the directly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 50: Food and nutrition security of the directly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Indirectly dependent communities

The indirectly dependent communities consist of persons dependent on fishing activities, but not directly engaged in fishing (e.g. processors, mechanics, net repairers, boat carpenters, etc.).

Desired outcome: Enhance the food and nutrition security of the indirectly dependent communities.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities for indirectly dependent communities to achieve agreed food and nutrition security objectives.

Table 51: Food and nutrition security for the indirectly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment of the relevant risks and opportunities is available.	Only some of the relevant opportunities or risks have been identified or assessed.	Most of the relevant opportunities or risks have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risks of food insecurity, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 52: Food and nutrition security for the indirectly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/ conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 53: Food and nutrition security for the indirectly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Table 54: Food and nutrition security score

Scoring	Category A: Assessment	Category M: Management	Category AO: Achievement	Total
National level				
Directly dependent communities				
Indirectly dependent communities				
TOTAL				

4.3.3 Health and safety

In this context, assessing health and safety in the human (social and economic) well-being dimension of ecosystem and fisheries management, concerns the following possible objectives which are generally met in the EAF framework:

- improve security and safety at sea;
- improve occupational health and working conditions;
- expand the social protection systems towards universal coverage of social protection.

National level

Desired outcome: Health and safety are enhanced at national level.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities at national level to achieve appropriate health and safety outcomes and other agreed objectives.

Table 55: Health and safety at national level/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification and/or assessment of the relevant risks and opportunities for health and safety at national level is available.	Only some of the relevant opportunities or risks for health and safety at national level have been identified or assessed.	Most of the relevant opportunities or risks for health and safety at national level have been identified or assessed.	There is a comprehensive identification and assessment of the relevant opportunities or risks for health and safety at national level.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk for health and safety at national level, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 56: Health and safety at national level/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 57: Health and safety at national level/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Directly dependent communities

The directly dependent communities are made up of persons directly engaged in the primary activity of fishing (fishers and owners of fishing vessels and equipment, along with the fishing crew).

Desired outcome: Enhance the health and safety of communities that depend directly on the fishery for their livelihood.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities for the directly dependent communities to achieve appropriate health and safety outcomes and other agreed objectives.

Table 58: Health and safety of the directly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment is available of the relevant risks and opportunities for the directly dependent communities.	Only some of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	Most of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks to the directly dependent communities.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures (e.g. safety at sea, social infrastructure, etc.) appropriate to addressing the risks for local directly dependent communities' health and safety, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 59: Health and safety of the directly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/ conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 60: Health and safety of the directly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Indirectly dependent communities

The indirectly dependent communities consist of persons dependent on fishing activities, but not directly engaged in fishing (e.g. processors, mechanics, net repairers, boat carpenters, etc.).

Desired outcome: The health and safety of the indirectly dependent communities enhanced.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities of indirectly dependent communities to achieve appropriate health and safety outcomes and other agreed objectives.

Table 61: Health and safety for the indirectly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment of the relevant risks and opportunities is available.	Only some of the relevant opportunities or risks have been identified or assessed.	Most of the relevant opportunities or risks have been identified or assessed.	A participatory process has been followed to undertake a comprehensive identification and assessment of the relevant opportunities or risks.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risk, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 62: Health and safety for the indirectly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts	No appropriate measures in place for identified risk issues and opportunities.	Appropriate measures under development or in place for only a few risk issues and opportunities.	Appropriate measures in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 63: Health and safety for the indirectly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Table 64: Health and safety score

Scoring	Category A: Assessment	Category M: Management	Category AO: Achievement	Total
National level				
Directly dependent communities				
Indirectly dependent communities				
TOTAL				

4.3.4 Gender mainstreaming and social/economic equity

In this context, assessing gender mainstreaming and social equity in the human (social and economic) well-being dimension of ecosystem and fisheries management, concerns the following possible objectives:

- Achieve equality between women and men in sustainable agricultural production and rural development for the elimination of hunger and poverty (FAO, 2013).
- Women participate equally with men as decision-makers in fisheries institutions and in shaping laws, policies and programmes (FAO, 2013).
- Women and men have equal access to and control over decent employment and income, land and fisheries resources.
- Women and men have equal access to goods and services for fisheries development, and to markets.
- Ensure the equal right of women and men to the enjoyment of all human rights, while acknowledging differences between women and men and taking specific measures aimed at accelerating de facto equality when necessary (FAO, 2012).
- Ensure that women and girls have equal tenure rights and access to land and fisheries independent of their civil and marital status.
- Equitable tenure rights and access to fisheries for all, women and men, youth and vulnerable and traditionally marginalized people, within the national context.

National level

Desired outcome: Gender mainstreaming and social/economic equity at national level.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities at national level to achieve appropriate gender and equity outcomes and other agreed objectives.

Table 65: Gender and equity at national level/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment of the relevant risks and opportunities for gender and equity at national level is available.	Only some of the relevant opportunities or risks for gender and equity at national level have been identified or assessed.	Most of the relevant opportunities or risks for gender and equity at national level have been identified or assessed.	There is a comprehensive identification and assessment of the relevant opportunities or risks for gender and equity at national level.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risks for gender and equity at national level, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 66: Gender and equity at national level/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts	No appropriate measures are in place for identified risk issues and opportunities.	Appropriate measures are under development or in place for only a few risk issues and opportunities.	Appropriate measures are in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 67: Gender and equity at national level/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Directly dependent communities

The directly dependent communities are made up of persons directly engaged in the primary activity of fishing (fishers and owners of fishing vessels and equipment, along with the fishing crew).

Desired outcome: Enhance the gender mainstreaming and social/economic equity of the directly dependent communities.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities for the directly dependent communities to achieve appropriate gender and equity outcomes and other agreed objectives.

Table 68: Gender and equity of the directly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment of the relevant risks and opportunities for the directly dependent communities is available.	Only some of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	Most of the relevant opportunities or risks to the directly dependent communities have been identified or assessed.	A participatory process has been followed to undertake a comprehensive identification and assessment of the relevant opportunities or risks to the directly dependent communities.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures (e.g. safety at sea, social infrastructure, etc.) appropriate to addressing the risks for local dependent communities' gender and equity, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 69: Gender and equity of the directly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/ conflicts	No appropriate measures are in place for identified risk issues and opportunities.	Appropriate measures are under development or in place for only a few risk issues and opportunities.	Appropriate measures are in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 70: Gender and equity of the directly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Indirectly dependent communities

The indirectly dependent communities consist of persons dependent on fishing activities, but not directly in engaged in fishing (e.g. processors, mechanics, net repairers, boat carpenters, etc.).

Desired outcome: Enhance the gender and equity of the indirectly dependent communities.

Appropriate assessment completed against agreed objectives

Expected EAF outcome: Based on all the available information and relative to the context of the fishery (size, scale and scope) there is sufficient confidence in the identification and assessment of the risks and opportunities for indirectly dependent communities to achieve appropriate gender and equity outcomes and other agreed objectives.

Table 71: Gender and equity for the indirectly dependent communities/scoring category A

Scoring	0	1	2	3
Appropriate assessment completed against agreed objectives	No assessment.	Few elements have been assessed.	Most elements have been assessed.	Comprehensive assessment completed.
Scoring rationale	No identification or assessment of the relevant risks and opportunities is available.	Only some of the relevant opportunities or risks have been identified or assessed.	Most of the relevant opportunities or risks have been identified or assessed.	There has been a participatory process used to undertake a comprehensive identification and assessment of the relevant opportunities or risks.

Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts

Expected EAF outcome: Fishery management and other measures appropriate to addressing the risks, which are also consistent with each of the other agreed objectives, have been developed and implemented.

Table 72: Gender and equity for the indirectly dependent communities/scoring category M

Scoring	0	1	2	3
Fisheries management and other measures developed and implemented appropriate to risks and constraints/conflicts	No appropriate measures are in place for identified risk issues and opportunities.	Appropriate measures are under development or in place for only a few risk issues and opportunities.	Appropriate measures are in place for most risk issues and opportunities.	Appropriate measures for risk issues and opportunities have been developed and are being implemented.
Scoring rationale	There are no appropriate measures in place or under development. Current measures are considered ineffective or inadequate to begin addressing the identified risks and opportunities.	There are no or few appropriate measures in place, but processes are underway for the development of a more comprehensive set of measures.		The measures within the suitably formalized management plan adequately consider the risk issues and opportunities without impacting the achievement of the other agreed objectives.

Achieving agreed objectives

Expected EAF outcome: The management system progresses towards delivering agreed objectives and desired outcomes.

Table 73: Gender and equity for the indirectly dependent communities/scoring category AO

Scoring	0	1	2	3
Achieving agreed objectives	No progress towards achieving objectives.	Progress towards achieving some objectives.	Progress towards achieving most objectives.	All agreed objectives are currently being achieved.
Scoring rationale				

Table 74: Gender and equity score

Scoring	Category A: Assessment	Category M: Management	Category AO: Achievement	Total
National level				
Directly dependent communities				
Indirectly dependent communities				
TOTAL				

Table 75: Human well-being score

Scoring	Category A: Assessment	Category M: Management	Category AO: Achievement	Total
Livelihood	National level			
	Directly dependent communities			
	Indirectly dependent communities			
Food and nutrition security	National level			
	Directly dependent communities			
	Indirectly dependent communities			
Health and safety	National level			
	Directly dependent communities			
	Indirectly dependent communities			
Gender and equity	National level			
	Directly dependent communities			
	Indirectly dependent communities			
TOTAL				

5. OUTPUTS

An Excel spreadsheet is included in the tool, to calculate the assessment results for the fishery under consideration, and for all the components. It also allows the user to graphically view the scores for each component (Annexure 2).

After scoring all the elements, the scores are inserted in the Excel sheet. The calculation is done automatically and a dashboard allows the user to view the results, making use of graphs for each component and each assessment category. As an example, the required entries for a sample fishery and the calculations are shown in Figures 8 to 10 for the “Ability to achieve”, “Ecological well-being” and “Human well-being” components, respectively.

Fishery name:	Small pelagic fishery	Colour legend: Scoring	0	Scoring level %	
Area:	Country X		1		>80%
Gear type:	Purse seine		2		60–79%
Date of scoring:	January 2020		3		<60%

Ability to achieve				Fishery score	Max score
Governance	Policies and objectives			2	3
	Legislation			2	3
	Enabling regulation			2	3
	Consultation during the management plan elaboration process			3	3
	Consultation during the management plan implementation process			2	3
	Management plan development			3	3
	Management plan implementation			1	3
	Compliance			2	3
	Monitoring and review			1	3
	Repporting and communication			1	3
Governance total score				19	30
Governance score %				63%	

		Assessment	Management	Total	Max score
External drivers	Environmental	2	2	4	6
	Socio-economic	2	1	3	6
External driver total score		4	3	7	12
External driver score %		67%	50%	58%	

Ability to achieve score				26	42
Ability to achieve score %				62%	

Figure 8: Entries of the scores and calculations in the Excel spreadsheet for the Ability to achieve component

In this example, the total score for “Governance” is 19 out of 30 (or 63 percent), the “External drivers” score is 7 out of 12 (58 percent), and the “Ability to achieve” component score is 26 out of 42 (62 percent).

The same principle is applied to all the components.

Ecological well-being							Max score if NA
	Assessment	Management	Achievement	Total	Max score		
Retained species	Target species	1	2	1	4	9	9
	Bycatch	1	2	1	4	9	3
Non-retained	Discards	1	0	0	1	9	3
	ETP species	2	2	1	5	9	3
Ecosystem	Benthic habitat	1	2	1	4	9	3
	Ecosystem structure	1	2	1	4	9	9
Ecological well-being total score		7	10	5	22	54	30
Ecological well-being score %		39%	56%	28%	41%		

Figure 9: Entries of the scores and calculations in the Excel spreadsheet for the Ecological well-being component

The Ecological well-being component score is 22 out of 54 (41 percent).

Human well-being							Max score if NA
	Assessment	Management	Achievement	Total	Max score		
Livelihood	National level	1	2	1	4	9	9
	Directly dependent communities	2	2	2	6	9	9
	Indirectly dependent communities	2	2	2	6	9	9
Food and nutrition security	National level	1	1	1	3	9	0
	Directly dependent communities	1	1	1	3	9	0
	Indirectly dependent communities	2	1	1	4	9	0
Health and safety	National level	2	2	2	6	9	9
	Directly dependent communities	1	1	1	3	9	99
	Indirectly dependent communities	1	1	1	3	9	9
Gender and equality	National level	2	2	2	6	9	9
	Directly dependent communities	2	2	2	6	9	9
	Indirectly dependent communities	2	2	2	6	9	9
Human well-being total score		19	19	18	56	108	81
Human well-being score %		53%	53%	50%	52%		

Figure 10: Entries of the scores and calculations in the Excel spreadsheet for the Human well-being component

The Human well-being component score is 56 out of 108 (52 percent).

The graphical representations of the scores are compiled in the dashboard spreadsheet.

Fishery name: Small pelagic fishery	Scoring level	Ecological well-being	41%	Scoring level %
Area: Country X		Human well-being	52%	
Gear type: Purse seine		Ability to achieve	62%	
Date of scoring: January 2020		Fishery score	51%	
				>80%
				60–79%
				<60%

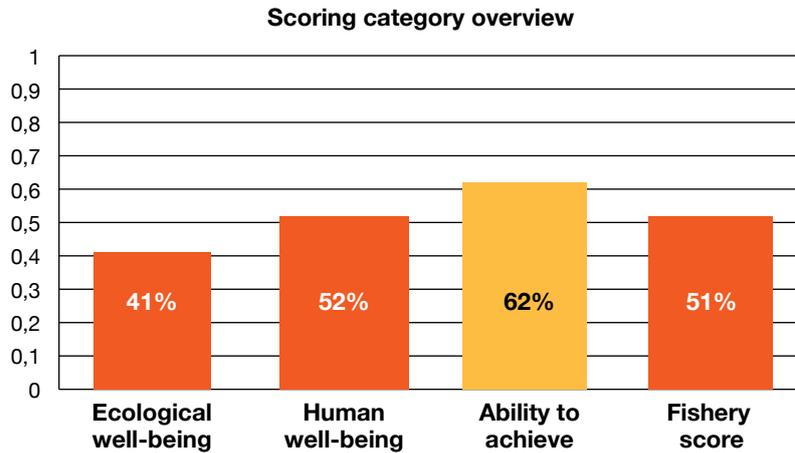


Figure 11: EAF IMT Dashboard: Synthesis and components scores

In the dashboard, a spider web graphical representation of the results is also produced. This allows users to visualize the scores of the various elements of each component. In the graph, the higher the score, the closer it is to the periphery of the web; while the low scores are towards the centre of the web. For the example above, the graphs are shown in Figures 12, 14 and 15 for Governance, Ecological well-being and Human well-being scores, respectively.

The Ability to achieve component is represented in two graphs – the web graph for the Governance score and the bar graph for the External drivers score. Two graphs are used because the methodology for scoring the two is different.

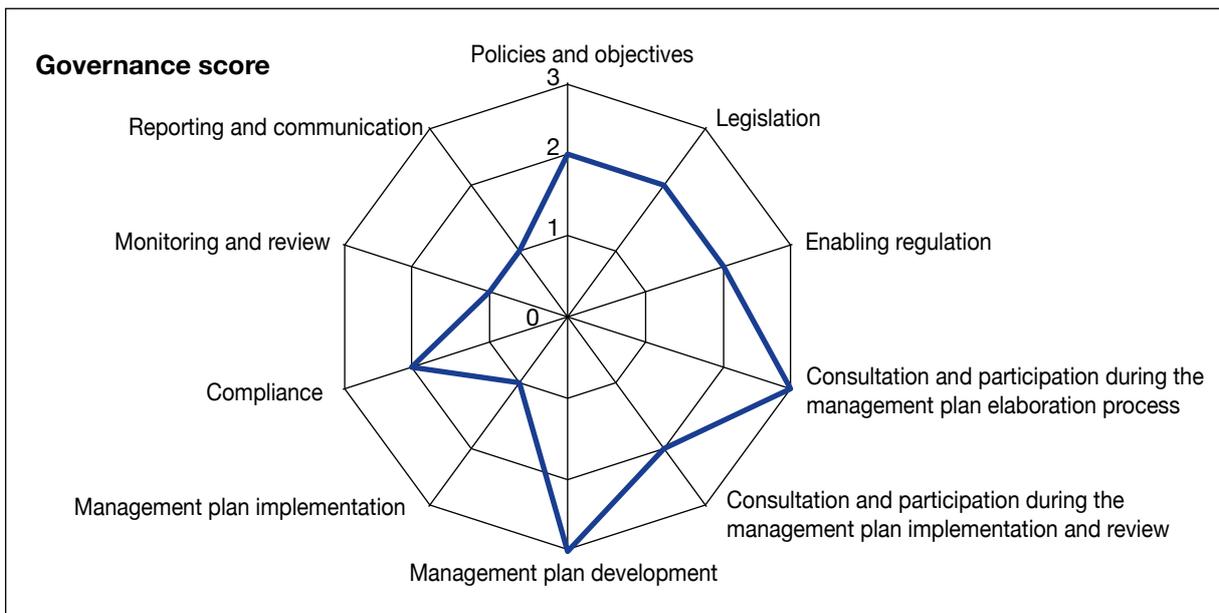


Figure 12: EAF IMT Dashboard: Governance scores

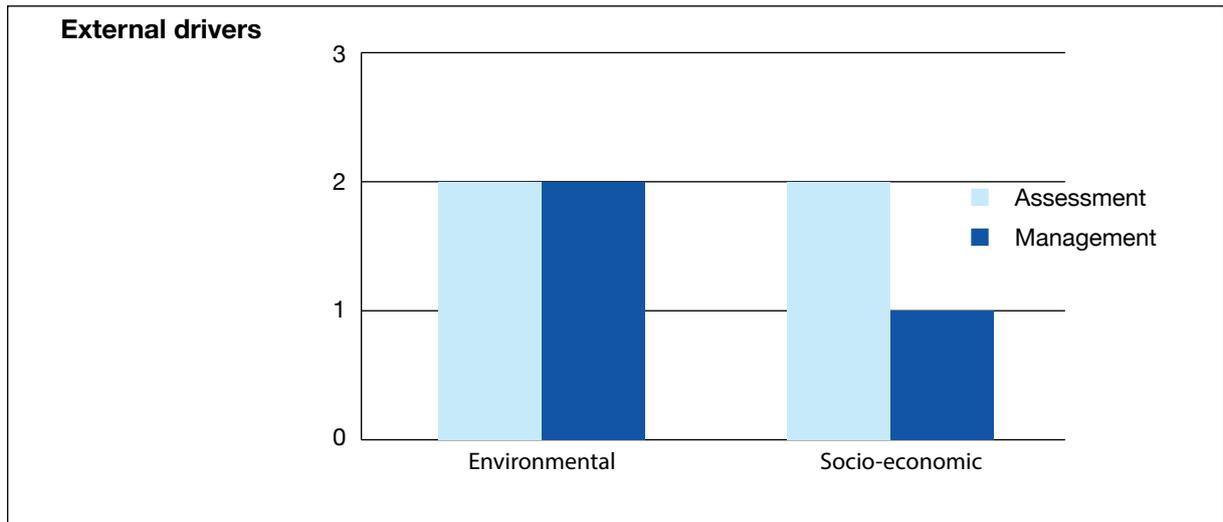


Figure 13: EAF IMT Dashboard: External drivers scores

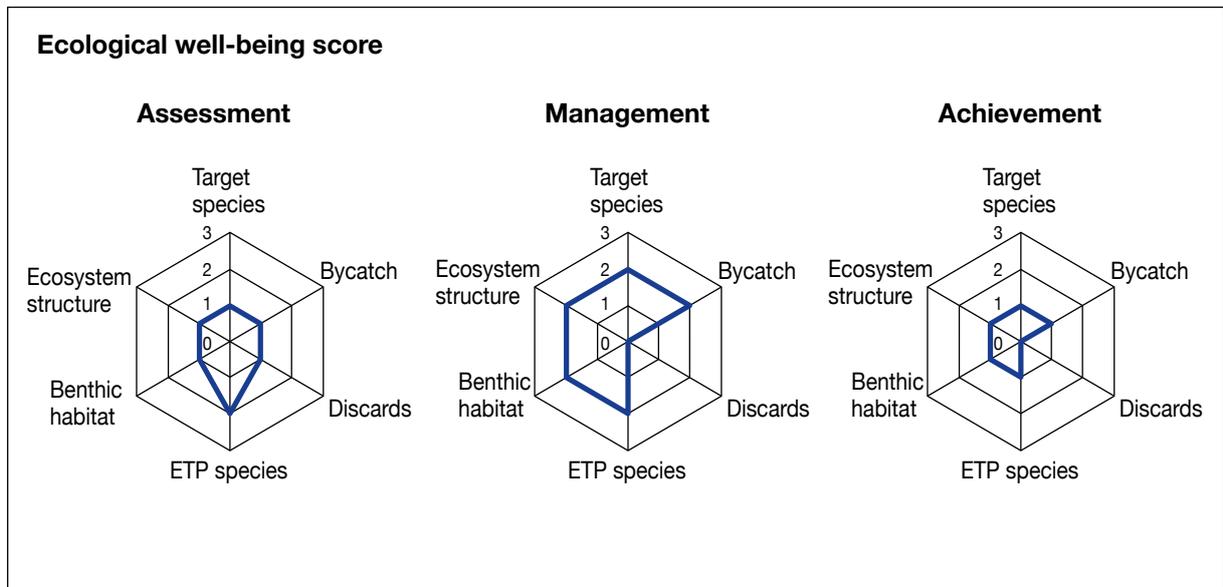


Figure 14: EAF IMT Dashboard: Ecological well-being score

The graphic above represents the score of the different elements by scoring categories (assessment, management and achieving objectives).

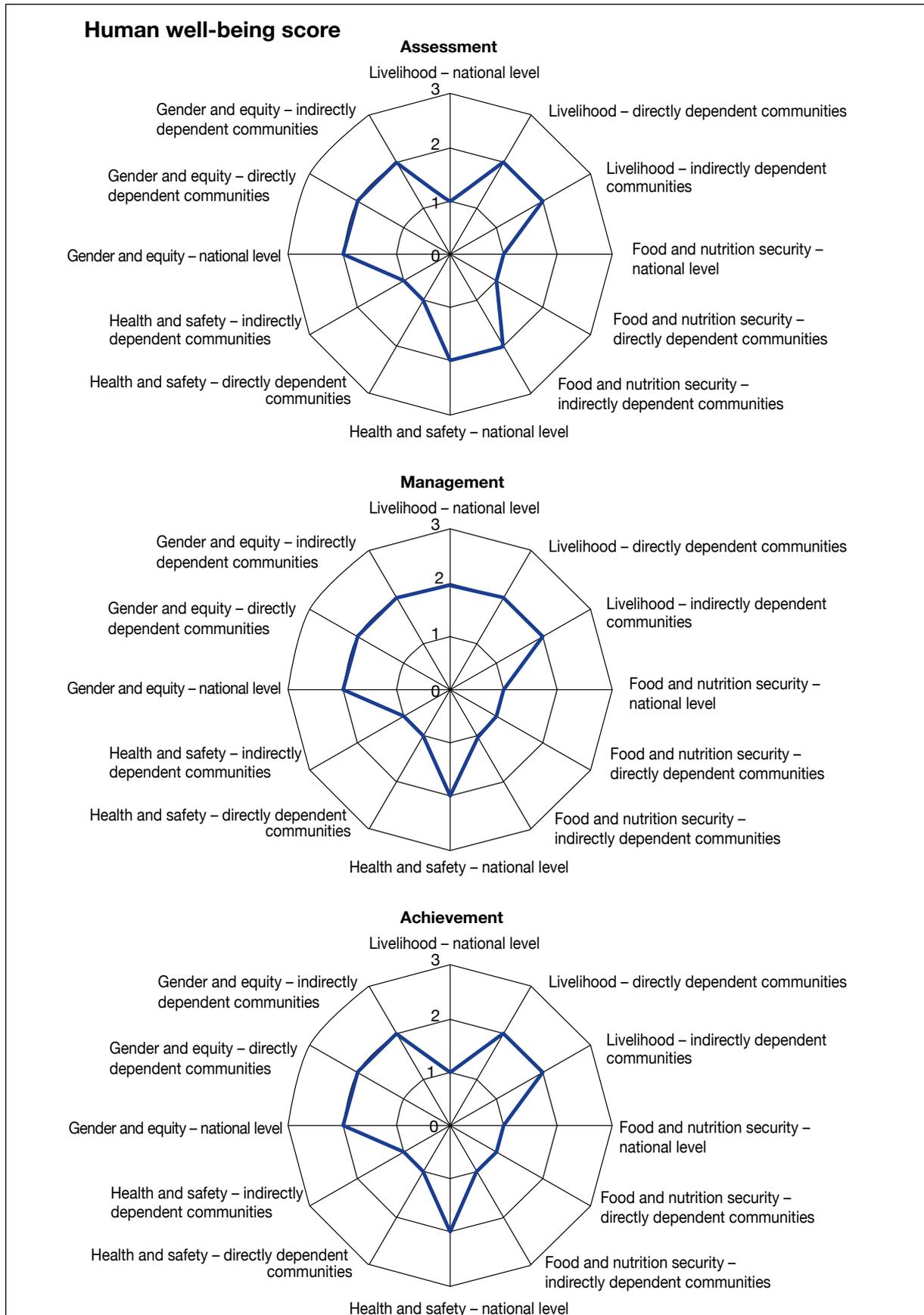


Figure 15: EAF IMT Dashboard: Human well-being score

6. REFERENCES

- Alcamo, J., Ash, N.J., Butler, C.D., Callicott, J.B., Capistrano, D., Carpenter, S.R., Castilla, J.C., et al.** 2003. *Ecosystems and human well-being: a framework for assessment. Millennium Ecosystem Assessment*. Washington, Covelo and London, Island Press. 266 pp. (also available at http://pdf.wri.org/ecosystems_human_wellbeing.pdf).
- Australian Government Publishing Service.** 1991. *Ecologically Sustainable Development Working Groups Final Report – Fisheries*. Canberra, Australian Government Publishing Service. 202 pp.
- Bianchi, G. & Skjoldal, H.R., eds.** 2008. *The ecosystem approach to fisheries*. FAO-CABI, Rome. 384 pp.
- Carney, D.** 1998. *Sustainable rural livelihoods: What contribution can we make?* London, Department for International Development.
- Chambers, R. & Conway, G.** 1992. *Sustainable rural livelihoods: practical concepts for the 21st Century*. IDS Discussion Paper No. 296. Brighton, UK, Institute of Development Studies.
- Charles, A.T.** 2001. *Sustainable fishery systems. Fish and aquatic resources series 5*. Malden, Massachusetts, Blackwell Science. 370 pp.
- Chesson, J., Clayton, H. & Whitworth, B.** 1999. Evaluation of fisheries management systems with respect to sustainable development. *ICES Journal of Marine Science*, 56: 980–984.
- Choudhury, K. & Jansen, L.J.M.** 1999. *Terminology for integrated resources planning and management*. Rome, FAO and Nairobi, United Nations Environment Programme. 69 pp.
- CIFOR (Centre for International Forestry Research).** 1999. *The CIFOR criteria and indicators generic template*. Jakarta, Indonesia, CIFOR. 53 pp.
- Cochrane, K.L. & Garcia, S.M., eds.** 2009. *A fishery managers' handbook. Second edition*. Rome, FAO and Wiley-Blackwell.
- De Young, C., Charles, A. & Hjort, A.** 2008. *Human dimensions of the ecosystem approach to fisheries. An overview of context, concepts, tools and methods*. FAO Fisheries Technical Paper No. 489. 152 pp. (also available at <http://www.fao.org/3/a-i0163e.pdf>).
- Duffus, J.H.** 2001. Risk assessment terminology. *Chemistry International*, 23(2). (also available at www.iupac.org/publications/ci/2001/march/risk_assessment.html).
- FAO.** 1993. *Guidelines for land-use planning*. FAO Development Series No. 1. Rome. (also available at <http://www.fao.org/3/t0715e/t0715e00.htm>).
- FAO.** 1995. Guidelines for responsible management of fisheries. In *Report of the “Expert Consultation on Guidelines for Responsible Fisheries Management”*, Wellington, New Zealand, 23–27 January 1995. FAO Fisheries Report No. 519. Rome.
- FAO.** 1997. *Fisheries management*. FAO Technical Guidelines for Responsible Fisheries No. 4. 82 pp. (also available at <http://www.fao.org/3/w4230e/w4230e00.htm>).
- FAO.** 1998. *Guidelines for the routine collection of capture fishery data*. FAO Fisheries Technical Paper No. 382. Rome. 113 pp.
- FAO.** 2002. *Report of the “Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem”*, Reykjavik, Iceland, 1–4 October 2001. FAO Fisheries Report No. 658. Rome. 128 pp. (also available at <http://www.fao.org/3/y2198t/y2198t01.htm>).
- FAO.** 2003. *The ecosystem approach to fisheries*. FAO Technical Guidelines for Responsible Fisheries No. 4, Suppl. 2. Rome. 112 pp. (also available at <http://www.fao.org/3/a-y4470e.pdf>).

- FAO.** 2009. *Report of the “Workshop on Toolbox for Applying the Ecosystem Approach to Fisheries”*, Rome, 26–29 February 2008. FAO Fisheries Report No. 884. Rome 52pp. (also available at <http://www.fao.org/3/i0946e/i0946e00.htm>).
- FAO.** 2011–2020. EAF-Net. EAF Toolbox. FI Institutional Websites. [online]. Rome. Updated 27 May 2011. [Cited 12 October 2020]. <http://www.fao.org/fishery/>
- FAO.** 2012. *Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security*. Rome. 47 pp. (also available at <http://www.fao.org/3/i2801e/i2801e.pdf>).
- FAO.** 2013. *FAO policy on gender equality. Attaining food security goals in agriculture and rural development*. Rome. 32 pp. (also available at <http://www.fao.org/3/a-i3205e.pdf>).
- FAO.** 2014. *FAO Fisheries Glossary*. Fisheries and Aquaculture Department, FAO. Terminology (A9.1FI)/CPAM. Rome.
- FAO.** 2020a. FAO term portal. [online]. Rome. [Cited 12 October 2020]. <http://www.fao.org/faoterm/en/?defaultCollId=21>
- FAO.** 2020b. FAO fisheries glossary. [online]. Rome. [Cited 12 October 2020]. <http://www.fao.org/faoterm/collection/fisheries/en/>
- Fletcher, W.J., Chesson, J., Fisher, M., Sainsbury, K.J., Hundloe, T., Smith, A.D.M. & Whitworth, B.** 2002. *National ESD reporting framework for Australian fisheries: The “How To” guide for wild capture fisheries*. FRDC Project 2000/145. Canberra, Australia.
- Fletcher, W.J.** 2008. Implementing an ecosystem approach to fisheries management: lessons learned from applying a practical EAFM framework in Australia and the Pacific. In G. Bianchi & H.R. Skjoldal, eds. *The ecosystem approach to fisheries*, p. 112–124. Rome, FAO-CABI.
- Fletcher, W.J. & Bianchi, G.** 2014. The FAO-EAF Toolbox: making the ecosystem approach accessible to all fisheries. *Ocean and Coastal Management*, 90: 20–26.
- FSN Forum.** 2007. *Global Forum on Food Security and Nutrition*. [online]. Rome. [Cited 12 October 2020]. <http://www.fao.org/fsnforum/resources>
- Garcia, S.M.** 1996. *The precautionary approach to fisheries and its implications for fishery research, technology and management: An updated review*. FAO Fisheries Technical Paper No. 350.2. Rome. 76pp. (also available at <http://www.fao.org/3/W1238E01.htm#ch1>).
- Garcia, S.M.** 1997. Indicators for sustainable development in fisheries. In FAO. 1997. *Land quality indicators and their use in sustainable agriculture and rural development*, p. 131–162. Rome, FAO.
- Garcia, S.M., Zerbi, A., Aliaume, C., Do Chi, T. & Lasserre, G.** 2003. *The ecosystem approach to fisheries. Issues, terminology, principles, institutional foundations, implementation and outlook*. FAO Fisheries Technical Paper No. 443. Rome, FAO. 71 pp.
- Garcia, S.M.** 2009. Glossary. In K.L. Cochrane, & S.M. Garcia, eds. *A fishery managers’ handbook. Second edition*, p. 473–505. Rome, FAO and Wiley-Blackwell.
- ISO (International Organisation of Standards).** 2009. *Risk management. Principles and guidelines*. Geneva, Switzerland, International Organisation of Standards. 24 pp.
- Link, J.S.** 2010. *Ecosystem-based fisheries management. Confronting tradeoffs*. Cambridge, Cambridge University Press.
- McGlade, J.M.** 1999. Ecosystem analysis and the governance of natural resources. In J.M. McGlade, ed. *Advanced ecological theory: principles and applications*, p. 308–336. Blackwell Scientific Publications.
- Merriam-webster. Dictionary.** [online]. Springfield, USA. [Cited 13 October 2020]. <https://www.merriam-webster.com/>

- OECD (Organisation for Economic Co-operation and Development).** 1996. Synthesis report for the study on economic aspects of management of marine living resources by Ad Hoc Exp. Group on Fisheries, AGR/FI/EG (96) 1. Paris, OECD.
- Oxford University Press.** 2010. *Oxford Dictionary of English. Third edition.* Oxford, UK, Oxford University Press.
- Prescott-Allen, R.** 2001. *The wellbeing of nations: a country-by-country index of quality of life and the environment.* Washington, DC, Island Press. 342 pp. (also available at <https://portals.iucn.org/library/node/7942>).
- Scialabba, N.** 1998. *Integrated coastal area management and agriculture, forestry and fisheries.* FAO Guidelines. Environment and Natural Resources Service. Rome, FAO. 256 p. (also available at http://www.fao.org/3/w8440e/W8440E01.htm#P0_0).
- Sutinen, J.G., ed.** 2000. *A framework for monitoring and assessing socio-economics and governance of large marine ecosystems.* NOAA Technical Memorandum NMFS-NE-158. 32 pp.
- WCED (World Commission on Environment and Development).** 1987. *Our common future.* World Commission on Environment and Development. 400 pp. (also available at <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>).

7. GLOSSARY

Assessment: A process that connects knowledge and action regarding a problem. It is a review and analysis of information for the purpose of informing the decision-making process. It may not require new research and involves assembling, organizing, summarizing, interpreting and reconciling existing knowledge and communicating it to the policymaker or other actors concerned with the problem (Cochrane and Garcia, 2009).

Bycatch: Species taken in a fishery that is targeting other species or on a different size range of the same species. That part of the bycatch with no economic value is discarded and returned to the sea, usually dead or dying (FAO, 1998; Australian Government Publishing Service, 1991).

Benthic habitat: The ecological region at the lowest level of a body of water such as an ocean, including the sediment surface and some sub-surface layers. Organisms living in this zone are called benthos and include micro-organisms (e.g. bacteria and fungi) as well as larger invertebrates, such as crustaceans and polychaetes. Organisms here generally live in close relationship with the substrate and many are permanently attached to the bottom.

Broad fishery objective: Statement of what harvesting a particular resource attempts to achieve in terms of the fish resources and in terms of ecological, economic and social objectives.

Discard: To release or return fish to the sea, dead or alive, whether or not such fish are brought fully on board a fishing vessel (FAO, 1998, p. 113).

Ecosystem: A spatio-temporal system of the biosphere, including its living components (plants, animals, micro-organisms) and the non-living components of their environment, with their relationships, as determined by past and present environmental forcing functions and interactions amongst biota (Cochrane and Garcia, 2009, p. 505).

Ecosystem approach to fisheries (EAF): An extension of conventional fisheries management recognizing more explicitly the interdependence between human well-being and ecosystem health and the need to maintain ecosystems' productivity for present and future generations, e.g. conserving critical habitats, reducing pollution and degradations, minimizing waste and protecting endangered species. The purpose of an ecosystem approach to fisheries is to plan, develop and manage fisheries in a manner that addresses the multiplicity of societal needs and desires, without jeopardizing the options for future generations to benefit from a full range of goods and services provided by marine ecosystems. An ecosystem approach to fisheries strives to balance diverse societal objectives, by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO, 2003).

Ecosystem function: An intrinsic ecosystem characteristic related to the set of conditions and processes whereby an ecosystem maintains its integrity (such as primary productivity, food chain and biogeochemical cycles). Ecosystem functions include such processes as decomposition, production, nutrient cycling and fluxes of nutrients and energy (Alcamo *et al.*, 2003).

Ecosystem productivity: The rate at which material is produced by an ecosystem over a specified period. In a strict sense, this term refers to the amount of energy fixed by plants in the system, but the term often refers to the ability of an ecosystem to produce goods and services to meet human needs.

Ecosystem well-being: A condition in which the ecosystem maintains its diversity and quality – and thus its capacity to support people and the rest of life – and its potential to adapt to change and provide a wide range of choices and opportunities for the future (Prescott-Allen, 2001).

Equity: In a broad sense, the just distribution of resources, rights, duties, opportunities, and obligations in society at large, i.e. social justice. In an applied sense at micro level, as for example, in the sharing of fisheries resources, an allocation rule based on the concepts of parity, proportionality and priority (FAO, 2014).

ETP species (endangered, threatened or protected species): Species recognized by national legislation and/or binding international agreements to which the jurisdictions controlling the fishery under assessment are party.

Fisheries management cycle (FMC): All the activities that a fisheries administration is expected to carry out periodically as part of its mandate to manage the fisheries. The FMC is promoted as being at the core of fisheries management and refers to the number of activities that should take place at pre-established, regular times to ensure implementation of the management plan.

Fishery: The sum of all fishing activities on a given resource, for example, a hake or shrimp fishery. It may also refer to the activities of a single type or style of fishing on a particular resource, for example, a beach seine fishery or trawl fishery. The term is used in both senses in this document and, where necessary, the particular application is specified (FAO, 2020a). In other terms, “A unit determined by an authority or other entity that is engaged in raising and/or harvesting fish. Typically, the unit is defined in terms of some or all of the following: people involved, species or type of fish, area of water or seabed, method of fishing, class of boats and purpose of the activities” (Fletcher *et al.*, 2002).

Fishery management: The integrated process of information gathering, analysis, planning, decision-making, allocation of resources and formulation and enforcement of fishery regulations by which the fishery management authority controls the present and future behaviour of interested parties in the fisheries to ensure the continued productivity of the living resource (FAO, 1995).

Fishery management plan: An explicit arrangement (formal or informal contract) between the interested parties and the fisheries management authority which makes explicit the objectives and means of management, the nature of the management authority, its powers and responsibilities, its working and consultation procedures, as well as the rights and responsibilities of the interested parties in the fishery (FAO, 1995).

Governance: The activity or process of governing; a condition of ordered rule; those people charged with the duty of governing; or the manner/method/system by which a particular society is governed (McGlade, 1999).

Indicator: A variable that can be monitored in a system, e.g. a fishery to give a measure of the state of the system at any given time. Each indicator should be linked to one or more reference points and used to track the state of the fishery in relation to those reference points. A variable, a pointer, an index of a complex phenomenon. Its fluctuations reveal the variations in components of the ecosystem, the resource or the sector. The position and trend of the indicator in relation to the criteria indicate the present state and dynamics of the system. Ideally, composite indicators are needed, the position and trajectory of which, within a system of reference of related criteria, would allow simple holistic assessment of sustainability. One can distinguish indicators of state of the system, pressure (or stress, driving forces) on the system, and response (reflecting action taken to mitigate, reduce, eliminate or compensate for the stress) (Garcia, 1997).

Indigenous fishing: Fishing undertaken by peoples native to a land or region, for example, Aboriginals and Torres Strait Islanders (Australian Government Publishing Service, 1991).

Livelihood: A means of securing the necessities of life. A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base (Chambers and Conway, 1992; FAO, 2020b).

Management measure: Specific controls applied in the fishery to contribute to achieving set objectives, including some or all of the technical measures (gear regulations, closed areas and time closures), input controls, output controls and user rights (FAO, 2003).

Management objective: A formally established, more or less quantitative target that is actively sought and provides a direction for management action (FAO, 1997).

Maximum Economic Yield (MEY): When relating total revenues from fishing to total cost of fishing in a surplus production model, the value of the largest positive difference between total revenues and total costs of fishing (including the cost of labour and capital) with all inputs valued at their opportunity costs (FAO, 2014).

Maximum Sustainable Yield (MSY): The highest theoretical equilibrium yield that can be continuously taken (on average) from a stock under existing (average) environmental conditions without significantly affecting the reproduction process (FAO, 2003).

Monitoring: The collection of information for the purpose of assessment of the progress and success of a land-use plan. Monitoring is used for the purpose of assessing performance of a management plan or compliance scheme and revising them or to gather experience for future plans (FAO, 1993; FAO, 1998) .

Monitoring, control and surveillance (MCS): Activities undertaken by the fishery enforcement agency to ensure compliance with fishery regulations (FAO, 2014).

Objective: Expresses the object of an action or what is intended to be achieved. Any objective will include explicit statements against which progress can be measured, and identify which things are truly important and the way they inter-relate; quantified objectives are referred to as targets. Natural resource that does not have a barrier to its use (Scialabba, 1998).

Performance measure: A function that relates the value of an indicator to its reference point, and that guides the evaluation of fisheries management performance in relation to stated operational objective.

Policy: A fisheries policy is the definite course or method of action, selected from among alternatives, by a government or its mandated fisheries authority, in light of given conditions including legal and constitutional constraints, to guide and determine present and future development and management actions towards satisfaction of agreed objectives (Merriam-Webster, 2020). Measures by which a national and/or a provincial government attempts to influence or control the behaviour of individuals, companies and communities in the fisheries sector to achieve certain objectives. The measures can be of varied kinds including fiscal measures, (e.g. taxes, subsidies, public investments, etc.); trade measures (e.g. import and export duties; quotas); social measures (health and education services); regulations (i.e. on food quality; means and types of fish harvesting; individual transferable quotas [ITQs]); and others (FAO, 2014).

Risk: The current international standard definition of risk is “the effect of uncertainty on objectives”. Risk is usually expressed in terms of risk sources, their potential events, their potential consequences and relative likelihoods with risk controls being established to maintain or reduce risks (ISO, 2009).

Risk assessment: The overall process for risk identification, risk analysis and the qualitative or quantitative evaluation of risks (ISO, 2009).

Risk monitoring: The process of following up the decisions and actions within risk management to ascertain that risk containment or reduction with respect to a particular hazard is assured (Duffus, 2001).

Reference and performance levels: A particular state (value) of a fishery indicator corresponding to a situation considered as desirable (target reference point: TRP), undesirable (threshold reference point: ThRP) or dangerous/unacceptable (limit reference point: LRP) (Cochrane and Garcia, 2009).

Socio-economic: Pertaining to the combination or interaction of social and economic factors and involves topics such as distributional issues, labour market structure, social and opportunity costs, community dynamics, and decision-making processes (Sutinen, 2000).

Socio-economic benefit: Benefits to humans gained through utilization of resources, including both economic and social benefits (Sutinen, 2000).

Stakeholder: A group of individuals (including governmental and non-governmental institutions, traditional communities, universities, research institutions, development agencies and banks, donors, etc.) with an interest or claim (whether stated or implied) which has the potential of being impacted by or having an impact on a given project and its objectives. Stakeholder groups that have a direct or indirect “stake” can be at the household, community, local, regional, national, or international level (FAO, 1997; Choudhury and Jansen, 1999).

Stock assessment: The process of collecting and analysing biological and statistical information to determine the changes in the abundance of fishery stocks in response to fishing, and, to the extent possible, to predict future trends of stock abundance. Stock assessments are based on resource surveys; knowledge of the habitat requirements, life history, and behaviour of the species; the use of environmental indices to determine impacts on stocks; and catch statistics. Stock assessments are used as a basis to assess and specify the present and probable future condition of a fishery (FAO, 2014).

Target species: Those species that are primarily sought by the fishers in a particular fishery. The subject of directed fishing effort in a fishery. There may be several primary as well as secondary target species (Garcia, 2009).

Tenure: Socially-defined agreements held by individuals or groups (either recognized by law or customary norms) on the rights of access and the rules for use of either a land area or associated resources, such as individual trees, plant species, water, or animals (CIFOR, 1999).

Threshold reference point (TRP): Threshold reference point: Indicates that the state of a fishery and/or a resource is approaching a target reference point (TRP) or a limit reference point (LRP), and that a certain type of action (usually agreed beforehand) needs to be taken. Fairly similar to a LRP in their utility, the TRP’s specific purpose is to provide an early warning, reducing further the risk that the LRP or TRP are inadvertently passed due to uncertainty in the available information or inherent inertia of the management and industry systems. Adding precaution to the management set-up, they might be necessary only for resources or situations involving particularly high risk (Garcia, 1996).

Traditional ecological knowledge: The local knowledge held by a group of indigenous people and passed from generation to generation, on the nature and functioning of the ecosystem.

User participation: Where resource users play an active role in the process of management (OECD, 1996).

ANNEXURE 1: EAF IMPLEMENTATION MONITORING TOOL SCORING RATIONALE

Name of the fishery:

Area:

Date of scoring:

List of participants:

Ability to achieve component

Governance		Score Y1	Score justification	Source materials
Governance	Policies and objectives			
	Legislation			
	Enabling regulation			
	Consultation and participation during the management plan elaboration and review			
	Consultation and participation during the management plan implementation and review			
	Management plan development			
	Management plan implementation			
	Compliance			
	Monitoring and review			
	Reporting and communication			

External drivers		Score Y1	Score justification	Source materials
External drivers	Environmental	Assessment		
		Management		
	Socio-economic	Assessment		
		Management		

Ecological well-being component

Ecological well-being			Score Y1	Score justification	Source materials
Retained species	Target species	Assessment			
		Management			
		Achievement			
	Retained bycatch	Assessment			
		Management			
		Achievement			
Non retained species	Discarded (non-ETP) species	Assessment			
		Management			
		Achievement			
	ETP species	Assessment			
		Management			
		Achievement			
Ecosystem	Benthic habitat	Assessment			
		Management			
		Achievement			
	Ecosystem structure	Assessment			
		Management			
		Achievement			

Human well-being component

Human well-being			Score Y1	Score justification	Source materials
Livelihood	National level	Assessment			
		Management			
		Achievement			
	Directly dependent communities	Assessment			
		Management			
		Achievement			
	Indirectly dependent communities	Assessment			
		Management			
		Achievement			
Food and nutrition security	National level	Assessment			
		Management			
		Achievement			
	Directly dependent communities	Assessment			
		Management			
		Achievement			
	Indirectly dependent communities	Assessment			
		Management			
		Achievement			
Health and safety	National level	Assessment			
		Management			
		Achievement			
	Directly dependent communities	Assessment			
		Management			
		Achievement			
	Indirectly dependent communities	Assessment			
		Management			
		Achievement			
Gender and equity	National level	Assessment			
		Management			
		Achievement			
	Directly dependent communities	Assessment			
		Management			
		Achievement			
	Indirectly dependent communities	Assessment			
		Management			
		Achievement			

ANNEXURE 2: EXCEL SPREADSHEET TEMPLATE

Fishery name:	Small pelagic fishery	Colour legend: Scoring	0	Scoring level %
Area:	Country X		1	
Gear type:	Purse seine		2	
Date of scoring:	January 2020		3	

Ability to achieve				Fishery score	Max score
Governance	Policies and objectives				3
	Legislation				3
	Enabling regulation				3
	Consultation during the management plan elaboration process				3
	Consultation during the management plan implementation process				3
	Management plan development				3
	Management plan implementation				3
	Compliance				3
	Monitoring and review				3
	Reporting and communication				3
Governance total score				0	30
Governance score %				0	
		Assessment	Management	Total	Max score
External drivers	Environmental				6
	Socio-economic				6
External driver total score					12
External driver score %					
Ability to achieve score				0	42
Ability to achieve score %					

Ecological well-being							Max score if NA
		Assessment	Management	Achievement	Total	Max score	
Retained species	Target species						9
	Bycatch						3
Non retained	Discards						3
	ETP species						3
Ecosystem	Benthic habitat						3
	Ecosystem structure						9
Ecological well-being total score							30
Ecological well-being score %							

Human well-being							Max score if NA	
		Assessment	Management	Achievement	Total	Max score		
Livelihood	National level					9	9	
	Directly dependent communities					9	9	
	Indirectly dependent communities					9	9	
Food and nutrition security	National level					9	0	
	Directly dependent communities					9	0	
	Indirectly dependent communities					9	0	
Health and safety	National level					9	9	
	Directly dependent communities					9	99	
	Indirectly dependent communities					9	9	
Gender and equity	National level					9	9	
	Directly dependent communities					9	9	
	Indirectly dependent communities					9	9	
Human well-being total score							108	81
Human well-being score %								

The implementation of an ecosystem approach to fisheries (EAF) contributes to sustainable fisheries in various ways. The EAF-Nansen Programme has assisted several countries to understand, adopt and use an ecosystem approach in the management of their marine and coastal fisheries. The EAF Implementation Monitoring Tool (EAF IMT) is a tool for decision support and planning in the fisheries management process. It can be used by countries in strategic and operational planning processes for their fisheries, assisting them to determine where they are making acceptable progress and where there continue to be gaps and difficulties to address.

