



ASSESSMENT OF REGIONAL/NATIONAL FISHERIES MANAGEMENT PLANS AND RELATED ACTIVITIES IN THE SWIO REGION (ACT 1.2.1.1) – VOLUME 1

David Russell
27th February 2022

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E€OFISH INTEGRATED PROGRAMME MANAGEMENT UNIT

Blue Tower | 4th Floor | Rue de L'institut

Ebène 72201 | Mauritius | Tel: +230 402 6100

info@ecofish-programme.org

www.ecofish-programme.org



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**ASSESSMENT OF
REGIONAL/NATIONAL FISHERIES
MANAGEMENT PLANS AND RELATED
ACTIVITIES IN THE SWIO REGION
(ACT 1.2.1.1) – VOLUME 1**

Main Report

by

David Russell

27th February 2022

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These consultants in turn worked as a team with the other SWIO country consultants, in developing their reports, looking at how to address issues going forward, both nationally and regionally, given that each country has their own areas of expertise. This experience led to the realisation that regular regional collaboration could help in promoting better fisheries management across the SWIO region, potentially through greater formalization of instruments such as fisheries management plans, particularly in the small-scale fisheries where financial resources and human capacity are an issue.

The Ecofish Project Management Unit was very helpful in coordinating this project through many internal Zoom meetings and providing relevant guidance along the way. In particular thanks to: Mr. Satish Hanoomanjee, Fisheries Management Specialist; Dr Sunil Sweenarain, Ecofish Team Leader and Technical Advisor; Ms. Kim Lau You Hin, Project Assistant; and Ms. Claudia Laguette, Administrative Assistant handling logistics and lastly, the European Union for making all this possible through their generous funding.

David Russell

Abbreviations and acronyms

| | | | |
|------------------|---|---------------|--|
| ABNJ | Area Beyond National Jurisdiction | IOTC | Indian Ocean Tuna Commission |
| ASMP | Area Specific Management Plan | IPMU | Integrated Programme Management Unit |
| AUC | African Union Commission | IUU | Illegal Unreported and Unregulated fishing |
| CBD | Convention on Biological Diversity | LGAs | Local Government Authorities NFP |
| CBO | Community-Based organisation | MPAs | Marine Protected Areas |
| CCC | Central Coordination Committee | MCA | Marine Conservation Area OHI |
| CFMA | Collaborative Fisheries Management Areas | MCS | Monitoring, Control and Surveillance PFRS |
| CHABAMC A | Changuu-Bawe Marine Conservation Area | MCAs | Marine Conservation Areas PRSP |
| CPUE | Catch per unit effort | MCU | Marine Conservation Unit |
| CSO | Civil Society Organisations | NEPAD | New Partnership for Africa's Development |
| DFD | Department of Fisheries Development | RBM | Rights-based management |
| DFO | District Fisheries Officer | REC | Regional Economic Community |
| DMRO | Duly Mandated Regional Organisations | REPMAR | Maritime Fisheries Regulations in Mozambique |
| EA-SA-IO | Eastern and Southern Africa and Indian Ocean region | RF | Recreational Fisheries |
| EAF | Ecosystem Approach to Fisheries | RFB | Regional Fisheries Bodies |

| | | | |
|-----------------|--|---------------|---|
| EC | European Commission | RFMO | Regional Fisheries Management Organisation |
| EEZ | Exclusive Economic Zone | SDG's | United Nations Sustainable Development Goals |
| EIA | Environmental Impact Assessment | SDRS | Sustainable Development Reference System |
| ESIA | Environmental and Social Impact Assessment | SFC | Shehia Fishermen Committees |
| EWE | Extreme weather events | SIOFA | Southern Indian Ocean Fisheries Agreement |
| FADs | Fishing aggregation devices | SME's | Small and Medium-Size Enterprises |
| FAO | Food and Agricultural Organization | SSF | Small-scale Fisheries |
| FGDs | Focus Group Discussions | SWIO | South-West Indian Ocean |
| FMP | Fisheries Management Plan | SWIOFC | South-West Indian Ocean Fisheries Commission |
| GDP | Gross domestic product | SWOT | Strengths, Weaknesses, Opportunities, and Threats |
| GMP | General Management Plan | TCMP | Tanzania Coastal Management Programme |
| HOA | Horn of Africa | TAC | Total Allowable Catch |
| ICM | Integrated Coastal Management | TAT | Technical Assistance Team |
| ICZM | Integrated Coastal Zone Management | ToR | Terms of Reference |
| IGAD | Intergovernmental Authority on Development | TWG | Thematic Working Group |
| IOC | Indian Ocean Commission | WIO | Western Indian Ocean |
| IOC-PRSP | Indian Ocean Commission-Regional Plan for Fisheries Surveillance | WWF | Worldwide Fund for Nature |
| IORA | Indian Ocean Rim Association | | |

Executive Summary

Introduction and Background

Around 78% of fishing within SWIO countries is small-scale. Some 9% is considered high-value seafood, including tuna and wild shrimp stocks harnessed to a significant extent as industrial fisheries by foreign corporations through collaborative arrangements, and some 13% being recreational/ sports fishing.

These coastal marine fisheries are very important for food security, livelihoods and cultural diversity. For many years, Governments have consistently over the decades considered small-scale fisheries as a social safety net, providing cheap protein nutrition and livelihoods, in particular for the poor. Most of these fisheries are open access, however, without good community-based management standards many of them are compromised due to overfishing and unsustainable fishing practices. This is aggravated by demographic growth, including a growing trend where the inland population is increasingly migrating to coastal areas, resulting in significant pressure on limited fisheries resources, including land-based pollution, and climatic change vulnerabilities.

Lack of knowledge, information, capacity and limited financial resources, are a major hurdle for sustainable and responsible management of small-scale fisheries in the SWIO region. With over 200 fisheries in 9 distinct sectors, involving 16 main types of fishing gears, these fisheries are often widely spread, creating significant manpower and financial strain on government's fisheries management agencies, as well as resulting in difficulties for effective monitoring, control and surveillance.

The seafood value chain for small-scale fisheries is mostly underdeveloped, with fishers not always having access to ice for preservation of caught fish. Once ashore, marketing infrastructure for processing and sale of fish, including cold storage facilities is limited, non-existent in some countries leaving fishers often at the mercy of marketing middlemen. Overall, fishing contributes about 32% of the fisher household income, meaning they must seek elsewhere to obtain the other 2/3rds of their income needs. The gender ratio in the small-scale fisheries sector is around 80% male, leaving females significantly under represented, and more vulnerable due to generally not being linked to formal supporting structures.

Due to reasons as mentioned above, fisheries in SWIO are severely under-performing in terms of employment, food and nutrition security, wealth creation and distribution at local, national and regional levels. The economic potential of capture fisheries in the SWIO is estimated conservatively at US\$ 4 billion with foregone economic rent at about US\$ 400 million per year. Consequently, there is urgent need for means to achieve a positive turnaround.

Scope

This assignment, relates to 8 SWIO partner countries, looking specifically at an assessment of regional/national fisheries management plans and related activities, involving Comoros, La Reunion/France, Madagascar, Mauritius, Seychelles, Mozambique, Tanzania and Kenya. Seven national consultant experts were recruited to interview key stakeholders and write up national reports, and a regional consultant in terms of this specific report, to collate key outcomes applicable to the SWIO region. It also covers several regional economic, fisheries and environmental organisations comprising public and private organisations directly or indirectly involved in sustainable management of coastal marine fisheries and environments.

Problem Statement

It is critical that good management be instituted, though complicated by the bulk of SWIO fisheries being small-scale, and mostly open access. The problem is that these fisheries consequently make up the bulk of the potential economic returns available from fisheries in the EA, SA and IO regions, which, due to poor management and their inefficient usage, get a significant percentage of economic returns squandered.

Low productivity and economic inefficiencies of the sub-sector are attributed to policy and governance failures, as a result of lack of reliable scientific and economic information, basic socio-economic enabling environment, fisheries infrastructures and market logistics. And as mentioned, the challenge of marine ecosystems containing multi fish species in small quantities, rendering the development of industrial/large scale fisheries difficult and making it inappropriate to transpose external fisheries management in the EA-SA-IO.

Fisheries management has been primarily centered around biological factors, with socio-economic dimensions mostly being ignored. Government administrations at this stage in many cases do not have the financial and human capacity resources to properly manage these fisheries, particularly for the multitude of fisheries that meet the socio-economic needs of small-scale fishers. Value chain stakeholders are affected by poor management though they could have been the beneficiaries of good management practice. The argument therefore is that these stakeholders should play a more important role in management decision making and should also take responsibility for encouraging good practices. Enter co-management.

Co-management was defined during preparatory work of the FAO Voluntary Guidelines on Small-scale Fisheries (2015) as “a partnership agreement in which governments and legitimate fishery stakeholders share fisheries management authority and responsibilities”.

The co-management team approach shifts fisheries management from being primarily fish biology focused in the past, to a combination of biology and socio-economics. The whole

fisheries value chain is considered, and management becomes more commercially orientated, while also benefiting the fishery, because if more money is made, there is the opportunity to charge realistic resource rents to help fund effective fisheries management and promote better resource utilization for the long-term improvement of all stakeholders, including SWIO national economies.

Consequently, this intervention explores the challenges and opportunities to promote “co-management”, leveraging national and regional expertise by reducing the fisheries management burden, via joint co-operation through teaming up stakeholders including Government national fisheries agencies; industry (industrial and small-scale); NGOs involved in the sector; regional fisheries management bodies, and donor agencies.

This intervention is considered as a stepping stone for the Ecofish programme to drive targeted actions to enhance sustainable fisheries in the SWIO coastal marine sector, in collaboration with current national and regional programmes. Based on this assignment, the programme may also provide technical assistance to support selected regional initiatives, or partner countries, to develop or refine their management plans.

Fisheries Management Plans

To combat open access fishing, SWIO countries have been introducing Fisheries Management Plans, as a means to control fishing effort in a sustainable manner. Where industrial fishing is involved, particularly those managed regionally, they generally run well, normally based around a small number of commercial species, vessels complying with fisheries management rules, and effective data analysis facilitating good resource assessment going forward. For small-scale fishing however, management of the plans is more complex, where a multiplicity of fish species is involved, with few fisheries management staff on the ground due to limited financial capacity.

Co-management, introduced through incremental steps, is being promoted as the mechanism to overcome these challenges, where all key stakeholder groups involved, take on responsibility, devolving responsibilities down to local government level, and also involving fishing communities in management, thereby resulting in community policing cutting monitoring, control and surveillance costs. In some countries, Beach Management Units comprising a broad representation of stakeholders are facilitating the process. Due to limited expertise at the fisher community level, in some cases NGOs are being encouraged to be involved as administrative and financial facilitators. Regional and donor agencies at this stage need to play a key role through facilitating and financing what is an expensive process. Fisheries management plans are generally regarded as the best tool to overcome the unsustainability of open access fisheries, but issues such as financing, capacity building, MCS, research and data assessment resulting in good implementation decisions, developing socio-economic priorities, and starting to create a win-win situation for fishers, facilitating

modernisation of the SSF sector so that it can contribute to government's GDP, still need resolution.

Approaches and Results

Study outcomes comprise a comprehensive review of existing management plans, including shared fisheries resources and national priority fisheries. It also includes a SWOT analysis of SWIO country management plans based on FAO guiding principles. Through stakeholder engagement it captures lessons learned and best practices for the SWIO countries, which can be enhanced through value-addition of regional collaboration in working with national agencies and industry stakeholders. Additional enhancement can occur by adopting Blue Economy principles of the triple bottom-line of sustainable development, comprising the economic efficiency, social justice and environmental integrity.

Evidence suggests individual SWIO country efforts alone, are not enough to resolve the challenges of addressing the problems of open access in SSF, via co-management run fisheries management plans. Through a combination of regional and national efforts, focusing on a collaborative team approach to maximise resources, capacity, and synergies, it is felt that this will help fast track the process. As this starts showing fruit, countries will be able to fully embrace fisheries management plans. From a fisheries management financing perspective, the goal is to promote development of a self-financing mechanism such as a Fisheries Levy Fund financed by value chain stakeholders.

Way Forward and Road Map

The Road Map to move fisheries away from open access, and improve fisheries management plans across the SWIO Region, requires:

- ▶ Undertaking effective stakeholder dialogue at the grass-roots fisher community/association level, including NGO's that are assisting fishers, talking to national fisheries management administration and scientific research staff, as well as regional fisheries management organisations, and donor agencies, the intention being to leverage ideas, resources and co-operation; and to create momentum for positive moves towards better fisheries management through a team approach of co-management, harnessing different strengths of the involved stakeholders.
- ▶ Stakeholders jointly taking on more ownership and accountability of resource management challenges, will provide opportunities to deal with resource access issues, and move to introduced MCS controls that can be policed, improving the socio-economic status of fish communities and allowing gradual introduction of resource management tools such as resource rents to help fund fisheries management administration.

- ▶ Through a co-management team approach, broadening the traditional focus on bio-ecological sustainability factors, to include socio-economic features prevalent in the region.
- ▶ Leverage regional co-operation, involving collaboration between partner countries to avoid duplication of effort and wastage of resources.
- ▶ Reconnection to political and national policies – so that governments are walking the talk.
- ▶ Potentially move away from business as usual and focus on transformation.
- ▶ Understand fisheries management plans, and how effective they potentially can be in terms of earning money for the country, if effectively implemented.
- ▶ Start moving towards a “wealth management approach” to reach financial sustainability, including a modernisation and financing strategy for the small-scale sector.
- ▶ Becoming more commercially orientated, considering the complete fisheries value chain. Commercial efficiency will result in the opportunity to charge a fair economic rent, including funding fisheries management, promoting better resource utilization, and long-term benefit to stakeholders.
- ▶ Develop an “enabling environment” architecture with necessary data collection and assessment, both biological and socio-economic, in terms of providing management direction, and monitoring project implementation.

The outcomes of this consultancy should feed into informed management strategies and plans.

1. Background

In the South-West Indian Ocean (SWIO) states, around 78% of fishing activities is small-scale, mostly being landed and some consumed locally. 9% is high-value seafood, namely tuna and wild shrimp stocks harnessed mainly by foreign corporations through collaborative arrangements, and 13% is recreational and sports fishing. Coastal marine fisheries in developing countries are very important in terms of food security, livelihoods and cultural diversity. The small-scale fisheries within SWIO, however, are mostly open access, without good community-based management standards, and many are consequently compromised due to overfishing and unsustainable fishing practices. This is also exacerbated by demographic growth, land-based and maritime pollution, and environmental stressors such as climate change and extreme weather events (EWE).

Lack of knowledge and information is a major hurdle for the sustainable and responsible management of small-scale fisheries in the SWIO region, with over 200 fisheries in 9 distinct sectors, involving 16 main types of fishing gears.

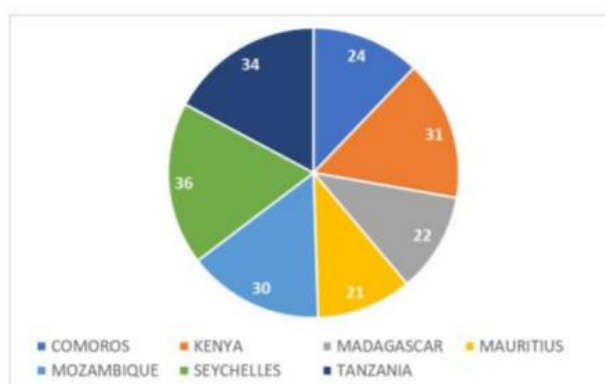


Fig 1- Fishing Types by country in SWIO region

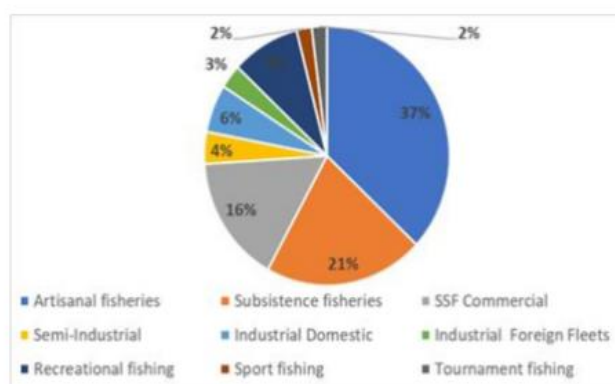


Fig 2 - Main fishing segments in SWIO region

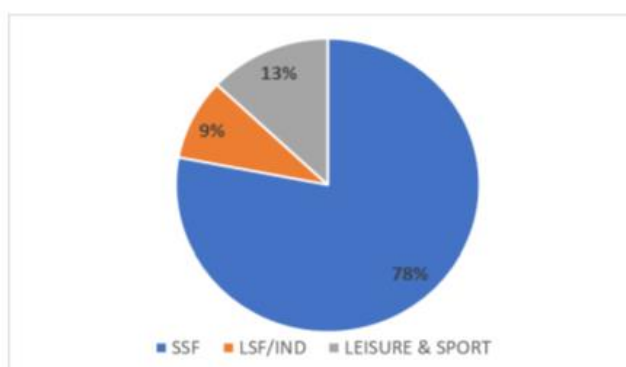


Fig 3 - Main Fishery Segments in SWIO region



Fig. 4 - Main Types of Fishing Gears

Source: WIOFish Database, December 2017.

About 58% of the total landings of small-scale fisheries goes through the first point of sale, whereas the remaining 42% is generally meant for household consumption, with any surplus being sold in the local neighbourhood as a last resort. Overall, fishing contributes about 32% of the fisher household income, meaning they have to seek elsewhere to obtain the other 2/3rd of their income needs. The gender rate in the small-scale fisheries is 81 males to 19 females.

Fisheries in SWIO are severely under-performing in terms of employment, food and nutrition security, wealth creation and distribution at local, national and regional levels. The economic potential of capture fisheries in the SWIO is estimated conservatively at US\$ 4 billion with foregone economic rent of about US\$ 400 million per year. Thus, to achieve a positive turnaround, there would be need for further exploring.

About 55% of the small-scale fisheries are managed through government policies and only 26 % have fishery management plans. Catch control and inputs control as management measures in SWIO fisheries are 44% and 25% respectively. Some forms of community-based or co-management exist in 45% of the fisheries. Most of the fisheries do not have determined effort and catch levels. While fisheries are mostly legal, they are also mostly open access, meaning they are very vulnerable to over-fishing. The level of enforcement of the few regulations in place is also low.

Approximately 50% of the fisheries that have licensing obligations must meet the requirements to obtain and retain the license. At the regional level, access control is approximately 50%, license requirement 35% and in 70% of fisheries, anyone can apply for fishing rights. While some forms of monitoring are carried out for about 70% of the fisheries, they are, however, mostly insufficient. The available research data are also inadequate to establish the sustainability of the fisheries or interventions required to manage the fisheries. Very few of the data collected are used to formulate management plans. On a good note, the level of conflicts among fishers, other fisheries and coastal development is relatively low across the region. In terms of fisheries research, however, there has been little, or no research conducted in over 60% of the fisheries. Few stock assessments have been conducted on target species, and over 50% of all fisheries need management-related research.

Given this background, the Ecofish Marine Fisheries Work Plan 3 represent about 34% of the Ecofish's funding and is implemented by the IOC Secretariat. Result 1 on Enhanced Policy, Institutional/Governance Framework, intends to roll out a series of strategic actions to enhance the operational capacities of the regional economic and fisheries organizations, to unleash the development potentials of sustainable, inclusive, and climate-smart marine fisheries in the region.

Acknowledging the politico-economic and natural diversities of ECOFISH partner countries within the SWIO region, the Marine Fisheries Work Plan is developing a series of macroeconomic mechanisms to enable countries to transform their fisheries sectors using

synergies that are common, but still allowing each country to be differentiated based on their specific needs.

The assignment is built on the achievements and work-in-progress of different regional and national programmes, which include: EU-funded SmartFish and Fish Governance; World Bank SWIOFISH regional and national component; UNEP-FAO EAF-Nansen Project funded by Norway; EU-funded FishGOV2 Project which is implemented by AU-IBAR and AUDA-NEPAD; FDA-funded Blue Economy and Fisheries Project for IORA member states in WIO; and SIDA-funded UNEP/FAO-SWIOFC Integrated and Sustainable Management Coastal Marine Fisheries Resources and Environment Project, to enhance regional synergies.

The Ecofish Programme is converting the existing overlapping mandates and memberships of the Duly Mandated Regional Organisations (DMRO) into synergies through effective collaboration and partnership among the partner countries for the common good of the region.

It is noted that the traditional concept of shared fisheries is broadened to include both common bio-ecological and socio-economic features, that are prevalent in the coastal marine fisheries of the region. This is sought as a realistic way to improve scientific and socio-economic knowledge for the management of small-scale fisheries in the tropical and sub-tropical regions of Sub-Saharan Africa, which have marine ecosystems that contain many fish species in small quantities that render the development of industrial/large scale fisheries difficult. This is a major constraint to transposing the external fisheries management experiences in the EA-SA-IO.

Consequently, collaboration amongst partner countries will systematically avoid duplication of efforts and wastage of scarce resources through a goal-oriented approach. The Ecofish programme intends to work closely with the Southwestern Indian Ocean Fisheries Commission (SWIOFC) Fisheries Advisory Body, as both share common objectives and geography. SWIOFC while having as its main objective to promote sustainable utilization of living resources in the SWIO regions, aims at addressing common problems of fisheries management and development faced by Member States, without prejudice to the sovereign rights of coastal states (Ecofish, June 2021).

2. Objective

The main objective of the “Ecofish Marine Fisheries Work Plan” is to investigate and help unleash the development potentials of sustainable and integrated coastal marine fisheries, through promoting an enabling environment in the sub-sector for growth and shared prosperity following the UN Agenda 2030 and *Transforming Africa 2063 - No Poverty, No Hunger and Nobody is left behind*. Also, to uphold the legacy of the past SmartFish EU funded programme, and IOC-PRSP (Regional Plan for Fisheries Surveillance), to strengthen collaborative partnership with SWIOFC and its affiliates for thriving sustainable fisheries in the region (Ecofish, November 2020).

3. Purpose

The lack of knowledge and information is a major hurdle for the sustainable and responsible management of small-scale fisheries in the SWIO region. About 55% of the small-scale fisheries are managed through government policies and only 26 % have fishery management plans. Catch control and inputs control as management measures in the fisheries are 44% and 25% respectively. Some forms of community-based or co-management exist in 45% of the fisheries. The majority of the fisheries do not have determined Efforts and Catch levels. The fisheries are mostly legal and open access. The level of enforcement of the few regulations in place is also low.

The purpose of the Ecofish Marine Fisheries Work Plan, namely Strategic Action 1.2. is to develop, refine or update national fisheries policy/ies and legal frameworks and the governance systems for enhancing sustainable management of shared marine fisheries resources/ecosystems as well as national priority fisheries in the EA-SA-IO region.

This Ecofish assignment, Activity 1.2.1.1, relates to an assessment of Regional/National Management Plans and related activities such as:

- providing an inventory of existing national and regional coastal fishery management plans of partner countries in the SWIO region
- assesses capacity needs, gaps and constraints for effective operationalization of these management plans, at national and local levels
- identifies potential national priority fisheries that could be managed more synergistically through sharing scientific and socio-economic knowledge, lessons learnt and good practices; and building joint capacity based on complementarity and subsidiarity among partner countries, to avoid duplication of effort and wastage of scarce resources (Ecofish, June 2021).

4. Scope of Work

The scope of work, as defined in the TOR, requires an understanding of the big picture of the ECOFISH Programme and how this assignment converges with other upcoming interventions. The ECOFISH Programme consists of three synergistic results:

Result 1 – Enhanced Policy, Institutional/Governance Frameworks (which this consultancy fits within) Result 2 – Strengthened Compliance and Enforcement, i.e., Monitoring, Control and Surveillance (MCS) capacities.

Result 3 – Inviting Proposals to support selective projects for sustainable and inclusive inland and marine small-scale fisheries in local communities.

The Marine Fisheries component is promoted and managed by the EUD Mauritius, in collaboration with the mandated regional economic, fisheries and environmental organisation (IOC) for the benefit of ACP countries in the EA-SA-IO region.

This work plan consists firstly of assisting countries in the EA-SA-IO region to improve their policies and frameworks for better management and use of marine fisheries resources, to become a strong economic lever - this being achieved through eight strategic actions:

- 1 Enhancing regional cooperation in marine fisheries.
- 2 Updating fishery policies and management plans.
- 3 Actualizing small-scale fisheries registration and licensing frameworks.
- 4 Building capacity of regional fisheries bodies.
- 5 Facilitating collaboration for natural resources management.
- 6 Improving data collection and management.
- 7 Establishing a network for climate adaptation.
- 8 Support small-scale fisheries - biodiversity conservation activities.

The programme may provide technical assistance to support selected regional initiatives or partner countries to develop or refine their management plans.

The assignment is synchronised with another intervention which is undertaken by Result 2 – Assessment of capacity needs and gaps for strengthening Monitoring, Control and Surveillance activities in the SWIO partner countries. These assignments are coordinated by the IPMU to avoid potential overlaps i.e., to build synergies between them.

The assignment is being carried out in the SWIO region involving 8 partner countries namely: Comoros, La Reunion/France, Madagascar, Mauritius, Seychelles, Mozambique,

Tanzania and Kenya. For ease of implementation, the EA SA & IO region has sub-divided into 2 sub-regions, the South Western Indian Ocean (SWIO) and the Horn of Africa (HOA). The intervention for the SWIO sub-region is led by the IOC Secretariat and the HOA sub region by IGAD with the support from the ECOFISH IPMU. It is to be noted that this assignment is concerned with the SWIO region cluster 1 only. The HOA Cluster 2 consists of four (4) coastal states: Djibouti, Eritrea, Somalia and Sudan. Although Kenya is also a Member State of IGAD, it has been included in the SWIO Cluster based on its geographical location. These two studies will be consolidated at a later stage to provide a holistic picture of the status of fisheries management in the EA-SA-IO region.

There are three regional fisheries organisations in the EA-SA-IO region, SWIOFC, IOTC and SIOFA, with distinct mandates and jurisdiction to play a direct or indirect role in the conservation management of marine fisheries resources and environments. IOTC and SIOFA are Regional Fisheries Management Bodies whose resolutions are binding on their Member States whereas SWIOFC acts as an advisory and facilitation agency.

The institutional linkages between organisations such as Duly Mandated Regional Organisations (DMRO), Regional Fisheries Bodies (RFB) and Regional Fisheries Management Organisations (RFMO), need to be further strengthened as the emergence of the Ecosystem Approach to Fisheries (EAF) for sustainable management of fisheries resources and habitats expects fisheries agencies to collaborate seamlessly with their environmental counterparts, such as the UNEP-Nairobi Convention in the WIO region and PERSGA22 in the Red Sea.

In 2021, based on the WIOFish database (www.wiofish.org), a total of 216 fisheries, 61 management plans (of which 24 are approved, and 36 are being implemented) were identified in the SWIO region. See Annexure 3 for details. Of these, approximately 78% are small-scale fisheries; 9% are industrial fisheries; and 13% are recreational and sports fisheries. The question is how effectively are management plans being implemented and what gaps and challenges need to be assessed so that in the future they can be addressed?

As background, WIOFish is intended to supplement regional initiatives of SWIOFC, and other organisations operating in the western Indian Ocean, by providing an information service to fishery resource managers, donors, and researchers, including those with specific environmental concerns. One of its key objectives is also to foster development of small-scale fisheries co-management systems through establishment of an electronically and physically linked network of collaborators focusing on an interactive web-based system that allows for comprehensive public access and reporting (WIOFish Database, December 2017).

SWIO FISHERIES AND MANAGEMENT PLANS

| Country | Number of fisheries | Those with Management Plans | Approved Plan | Implemented Plan |
|---|---------------------|-----------------------------|---------------|------------------|
| Comoros | 25 | 6 | 6 | 6 |
| Kenya | 36 | 6 | 3 | 4 |
| Madagascar | 22 | 12 | 5 | 10 |
| Mauritius | 24 | 3 | 2 | 2 |
| Mozambique | 32 | 9 | 7 | 8 |
| Seychelles | 43 | 20 | 0 | 3 |
| Tanzania | 34 | 5 | 1 | 3 |
| TOTAL | 216 | 61 | 24 | 36 |
| Source: WIOFish Database 23 August 2021 | | | | |

5. Tasks

- i) Develop an inventory of the existing regional, transboundary and national **management plans** and their implementation status.
- ii) For each of the existing management plans undertake a quick **assessment** to identify their adequacy against key principles from FAO standards/guidelines.
- iii) Identify the socio-economic fish species which are still **open access**, but which can most easily be subject to structured management plans or co-management.
- iv) To leverage regional cooperation and collaboration to build capacities and mobilize resources for the development, implementation and monitoring of fisheries management plans, map **national priority and transboundary fisheries** resources that can be managed more effectively through bilateral or regional cooperation.
- v) To investigate the adequacy or shortcomings of national fisheries **policy and legal frameworks** against the FAO standards and guidelines for sustainable management of fisheries, and **assess capacity needs and gaps, resulting in an analysis of constraints and barriers to propose a feasibility theory change and a road map to improve the effectiveness of management plans.**
- vi) Formulate a short-medium term **Regional Capacity Development Strategy and Action Plan** to overcome identified capacity gaps and constraints/barriers for thriving sustainable management plans for the shared marine fisheries resources and national priority fisheries in the SWIO region.
- vii) Identify **keynotes for policy dialogues** and advocacies, awareness-raising and sensitisation, and communications (Ecofish, June 2021).

6. Methodology

Good fisheries management is critical in any fishery. What is clear is that the bulk of SWIO fisheries are small-scale, and most of these are open access. This is a major problem, as these fisheries consequently make up the bulk of the potential economic returns available from fisheries in the EA, SA and IO region, but due to their inefficient usage, a significant percentage of these economic returns are currently being squandered due to poor management.

It is worthy to note that open access encourages fishers to keep fishing, even when the stocks are declining, as otherwise somebody else will catch what they had the opportunity to catch. Once into this downward spiral, as has been said, hungry people can't hear good instructions, and as has also been demonstrated, good monitoring control and surveillance cannot resolve such a situation, while the fishery remains open access.

Fisheries management is not about interfering with the natural or bio-ecological processes of fish stocks in their habitats but controlling human behaviours through appropriate harvest rules and conservation measures so that the resources are not exploited faster than their carrying capacity. Particularly for the multitude of fisheries important to small-scale fishers through which their socio-economic needs are met, Government administrations at this stage in many cases do not have the financial and human capacity resources to properly manage these fisheries.

Co-management was defined during preparatory work of the FAO Voluntary Guidelines on Small-scale Fisheries (2015) as "a partnership agreement in which governments and legitimate fishery stakeholders share fisheries management authority and responsibilities". Value chain stakeholders' beneficiaries of good management practice are also affected by poor management. The argument therefore is that these stakeholders should play an important role in management decision making, as well as be responsible for the encouragement and implementation of good management practices.

Further along the value chain, closer to markets, stakeholders generally earn more money, and they also finance much of the fishery's key infrastructure. Thus, co-management and public/private partnerships should not be limited to communities or fishers' associations and government but should systematically integrate other influential value chain partners such as buyers, processors, and exporters. Some of the key determinants of fish activities also originate from the market and value chains. It can therefore be argued that **value-chain analysis is an integral part of management planning and baseline information, improving the efficiency and impact of management, if implemented properly.**

This co-management team approach shifts fisheries management from (in the past) being primarily fish biology focused, to a combination of biology and socio-economy. The whole fisheries value chain is considered, and management becomes much more commercially

orientated. This is also to the biological benefit of the fishery because if more money is made, there is the opportunity to charge a realistic resource rent to help fund effective fisheries management, promoting better resource utilization for the long-term betterment of all stakeholders including SWIO national economies.

The low productivity and economic inefficiency of the sub-sector are attributed to policy and governance failures because of a lack of reliable scientific and economic information, basic socio-economic enabling environment, fisheries infrastructures, and market logistics. There is also the challenge of marine ecosystems that contain a large number of fish species in small quantities rendering the development of industrial/large scale fisheries difficult. This is a major constraint to transposing external fisheries management experiences in the EA-SA-IO.

So many of the fisheries are still open access, and there is generally not enough financial funding and management capacity to promote good fisheries management. Introducing co-management through incremental steps is a good way of maximizing resources, incorporating socio-economic priorities that start to make it a win-win situation for the fishers, including in some cases the potential for the fish communities to self-police the biological expectation of the resource.

Consequently, this intervention explores the challenges and opportunities to promote “co-management”, leveraging national and regional expertise by reducing the fisheries management burden through joint co-operation. This through teaming up stakeholders such as: Government national fisheries agencies; industry (both industrial and small-scale); NGOs involved in the sector; regional fisheries management bodies, and donor agencies.

Thus, this could be the start of the process of moving the fisheries away from open access, towards a framework of workable management controls involving joint accountability and ownership of the Government fisheries administration, fisher association/community and other involved stakeholders, including potentially those who can leverage capacity and resources such as regional fisheries management organisations, and donor agencies.

The approach is goal_orientated:

- ▶ Involving collaboration between partner countries to avoid duplication of effort and wastage of scarce resources.
- ▶ Broadening the traditional concept of shared fisheries which focuses mainly on bio-ecological sustainability factors, to also include socio-economic features that are prevalent in the region, through a co-management team approach, moving fisheries away from open access.
- ▶ Becoming more commercially orientated, considering the whole fisheries value chain. The aim is commercial efficiency resulting in the opportunity to charge a fair economic rent including funding fisheries management, promoting better resource utilization for the long-term betterment of all stakeholders including SWIO national economies.

- Looking at a proposed close cooperative partnership between the Southwestern Indian Ocean Fisheries Commission (SWIOFC) and their Scientific Committee which has as its main objective to promote sustainable utilization of living resources, and the Ecofish Programme, focusing on the opportunity of setting up a Socio-Economic Working Group within the SWIOFC system, to push a holistic approach to fisheries management.

“Implementation” involved working on this assignment with Ecofish national focal points and recruited national consultant expert/s for the SWIO countries, who in turn interviewed key stakeholders in their countries. This helped provide essential fisheries management perspective on the key fisheries for each of the SWIO nations, as well as develop joint ownership in the future strategy recommendations as a consequence of this consultancy.

The national experts, each prepared a short national report on Fisheries Management Plans and other priority fisheries, this included specifying species covered, covering successes and including challenges to the implementation of the management plans, capacity gaps and propose ways to tackle the gaps. In addition, they investigated: national fisheries policy and legal frameworks; management services; research; operations; compliance; extension services; and capacity building.

By undertaking good stakeholder dialogue at the grass-roots fisher community/association level, including NGO’s that are assisting fishers, as well as talking to national fisheries management administration and scientific research staff, and regional fisheries management organisations, the intention is that this will help leverage ideas, resources, and co-operation. And also create momentum for positive moves towards better fisheries management through a team approach of co-management, harnessing the different strengths of the involved stakeholders.

With the stakeholders jointly taking on more ownership and accountability of the resource management challenges, step-by-step this will provide the opportunities to deal with resource access issues, and move to introduced controls that can be policed, improving the socio-economic status of the fish communities, and allowing over time introduction of resource management tools such as resource rents that can help fund essential elements of fisheries management administration.

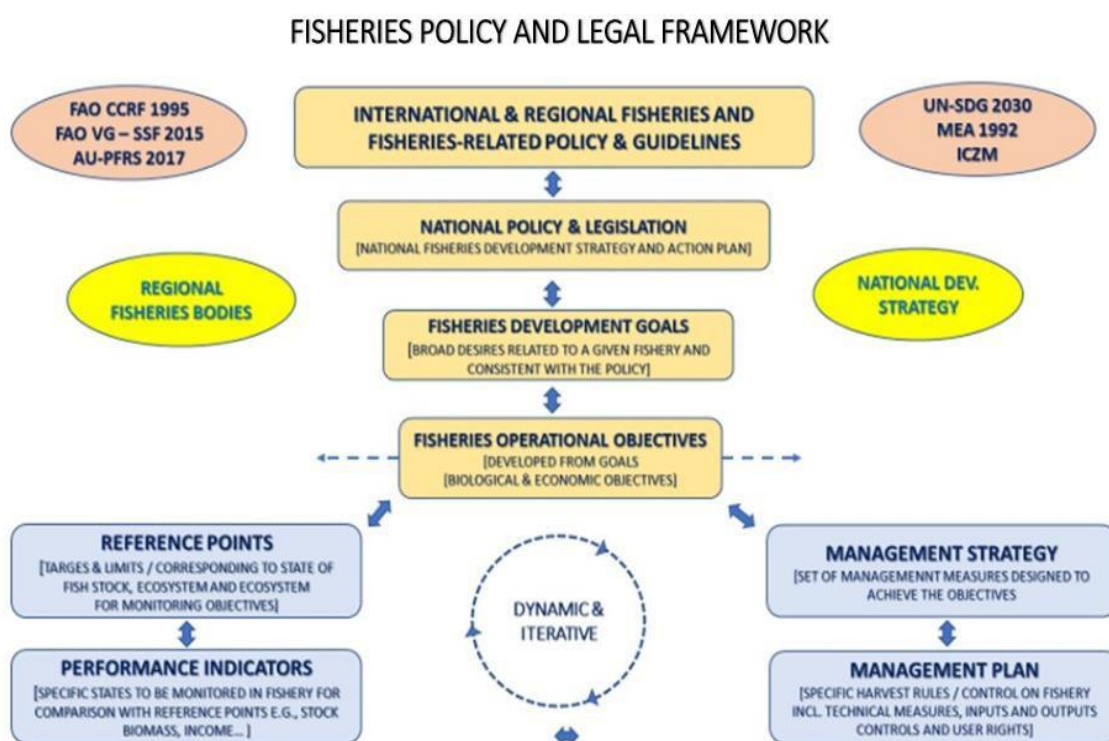
This intervention is considered as the stepping stone for the Ecofish programme to drive targeted actions to enhance sustainable fisheries in the SWIO coastal marine sector, in collaboration with current national and regional programmes.

Study outcomes comprise a comprehensive review of existing management plans regarding shared fisheries resources and national priority fisheries. It also includes a SWOT of these management plans based on FAO guiding principles. Through stakeholder engagement it captures lessons learned and best practices for the SWIO countries. These can be enhanced through the value-added of regional collaboration, working with national agencies and

industry stakeholders. Additional enhancement can occur by adopting the Blue Economy paradigm of the triple bottom-line of sustainable development comprising economic efficiency, social justice and environmental integrity. The study comes up with specific recommendations and the way forward to address the identified capacity needs and gaps, as well as constraints and barriers, for advancing cost-effective management of major coastal marine fisheries in the region. The outcomes of this consultancy need to feed into informed management strategies and plans (Ecofish, June 2021).

7. Fisheries Management, Fisheries Policy, and Legal Frameworks

Fisheries management is anchored in the policy and institutional frameworks of individual countries, consisting of three components: Policy; Legislation; and Enforcement and Compliance through Monitoring, Control and Surveillance (MCS). A policy is a course of actions, whereas legislation sets out the law comprising procedures and standards that must be complied with.



Source: Ecofish, June 2021

Due to increasing human population and ever-improving fishing technologies, renewable natural resources such as fish stocks get depleted in the absence of effective governance, as soon as demand outstrips the biological capacity of sustaining the particular fish stock. Restrictions to open access is an essential condition for effective governance. Rights, and institutions involved with these rights, should create incentives to encourage limiting fishing effort to what is consistent with the long-term optimal sustainable productivity of the resource. Even where these rights exist, however, their effective enforcement is necessary.

MCS is a key feature of effective fisheries management, but it is particularly challenging in the governance of small-scale fisheries, where large numbers of fishers are involved, using a large number and variety of boats, which, in time, lead to overcapacity. Governments and fishing authorities must find ways to limit fishing permits and keep catch levels sustainable, both from a biological and a socio-economic perspective. Successful MCS requires innovative arrangements involving fishers at the local level in the design and implementation of the process.

The distribution of aquatic resources also often extends into more than one jurisdictional area, and meaningful governance requires exercising control over the entire range of target fisheries resources – with implications from local decentralized to international fisheries management, and from shared stocks to straddling stocks.

Fisheries management is generally considered as creating and enforcing rules and regulations required to prevent overfishing and unsustainable fishing practices, a process that must constantly adapt to socio-ecological systems in pursuance of sustainable development. The FAO's Technical Guidelines, *FAO Code of Conduct for Responsible Fisheries 1995*, defines the main functions of fisheries management, as “*the integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with enforcement as necessary, ... to ensure continued productivity of resources and accomplishment of other fisheries objectives*”. In other words, fisheries management relates to all aquatic living resources caught by commercial fishing, including targeted marine species, non-targeted, accidentally caught, protected and endangered species such as seabirds, sharks, dolphins and tortoises. It is achieved through science, observation and consultative processes informing management strategies and plans, aimed at keeping fish stocks and the marine ecosystem in good health and productive for present and future. **Thus, fisheries management is not about interfering with bio-ecological processes of fish in their habitats, but about controlling human behaviour through proper harvest rules and conservation measures, to avoid resource exploitation over carrying capacity.**

Fisheries Management Plans utilize best practice from major international agreements and conventions, including:

United Nations Convention on the Law of the Sea (UNCLOS), 1982: on the rights and responsibilities of nations in their use of the world's oceans, within their 200 nautical miles EEZ. Where these zones overlap, countries must negotiate with other claimants. The convention sets standards for management of fisheries, incl. straddling and highly migratory species (Swan, Judith, 2012).

FAO Compliance Agreement, 1993: the 1st stage of the FAO's Code of Conduct for Responsible Fisheries, placing a general obligation on flag States to ensure no vessels engage in activities that undermine international conservation and management measures. Applies to all fishing vessels over 24 metres in length, involved in commercial exploitation of living marine resources. (FAO, 1993).

United Nations Fish Stocks Agreement (1995): Ecosystem approach to management of stocks and associated dependent species, include MCS provisions and procedures for boarding and inspection on the high seas.

2009 FAO Agreement on Port State Measures: Requiring notification of the intention of a foreign fishing vessel to enter a port: authorization can be refused upon suspicion that a vessel was engaged in IUU fishing (Swan, Judith, 2012).

While not legally binding, the 1995 FAO Code of Conduct for Responsible Fisheries and associated plans of action, including the Ecosystem Approach to Fisheries and Aquaculture, 2009, and the Voluntary Guidelines for Sustainable Small-Scale Fisheries, of 2015 are based on UNCLOS 1982 provisions. Principles from these instruments (Annexure 6) are a useful basis for assessing the adequacy of Fisheries Management Plans, and for prioritizing effective development of key fisheries currently open access, for future fisheries management.

7.1 AUC-NEPAD Policy Framework and Reform Strategy, and User Rights-based Fisheries

Key areas for policy in Africa can be summarized as below, from the 2014 AUC-NEPAD Policy Framework and Reform Strategy (PFRS) for Fisheries and Aquaculture in Africa and supporting guidelines for implementation, published in 2015:

| Policy Areas | Objectives | Summary of Strategic Actions |
|---|---|--|
| Conservation and Sustainable Resource Use | <p>To establish national and subnational governance and institutional arrangements that ensure the societal contribution generated by Africa's sectors have the greatest impacts at the most appropriate levels</p> | <ul style="list-style-type: none"> • Create an enabling environment for sustainable management and for generating resource potential • Design and apply appropriate users' rights-based systems • Conduct fisheries within enforceable regulatory frameworks • Strengthen scientific and socio-economic basis for fisheries management and aquaculture development. |
| Small-scale Fisheries Development | <p>To improve and strengthen the contribution of small-scale fisheries to poverty alleviation, food and nutrition security and socio-economic benefits of fishing communities</p> | <ul style="list-style-type: none"> • Enhance effective bilateral and regional cooperation in the management of shared resources. • Promote, support and coordinate sustainable pro-poor development. • Improve fisheries governance through participatory management. • Build on traditional fisheries management systems, promotion of selective and location-specific fishing gear. |
| Responsible & Equitable Fish Trade and Marketing | <p>To harness significantly the benefits of Africa's fisheries and aquaculture endowments through accelerated trade and marketing</p> | <ul style="list-style-type: none"> • Improve and align trade systems between Member States in the same REC • Improve quality and safety of products to better access regional and international markets • Enhance capacity of fisheries and aquaculture traders • Put in place efficient fish trade information systems • Improve capacity of countries to implement traceability mechanisms. |

| | | |
|---|---|--|
| Strengthened Regional and Sub-regional Cooperation | To strengthen South-South (Bilateral and regional) cooperation, and develop coordinated mechanisms among RECs and RFBs to ensure coherent fisheries policies, aquaculture development, their adoption and adaptation | <ul style="list-style-type: none"> • Increase strategic cooperation in capture fisheries and aquaculture development needs • Create synergies and complementarities in programmes at regional level • Establish and reinforce roles of RECs and RFBs in regional economic Integration. |
| Awareness Enhancing and Human Capacity Development | To increase awareness of potential and importance of sector; enhance capacity of people and institutions in the African fishery sector to ensure sustainable development of capture fisheries and aquaculture, based on current and emerging trends, challenges and needs | <ul style="list-style-type: none"> • Enhance awareness and capacity development to improve fisheries and aquaculture governance. • Capacity development in fisheries management planning, fisheries management, regional cooperation • Strengthening scientific and economic basis for competitive, equitable and sustainable sectors, strengthening knowledge base systems. |
| High Seas Fisheries | Increase and consolidate the African Voice in the governance and management of high seas fisheries. | <ul style="list-style-type: none"> • Encourage African countries to become cooperating parties of appropriate RFMOs. • Encourage African countries to ratify and implement UN Convention on the Law of the Sea and FAO Port States Measures Agreement. • Consult among member states and harmonize positions on key issues before meetings of RFMOs. • Participate in Area Beyond National Jurisdiction (ABNJ) programme to promote efficient and sustainable management of fisheries and biodiversity conservation • Participate in newly established Global Partnership for Oceans • Build regional relationships and political, financial and scientific support for high seas fisheries. |

Source: AUC-NEPAD

Expected policy outcomes for fisheries development in Africa are 6-fold:

- a. Sector strategy built around the generation and sustainability of societal benefits in many countries.
- b. User rights-based fisheries tools are introduced across Africa.
- c. Adoption of participatory fisheries management mechanisms/approaches across Africa.
- d. Viable fisheries and aquaculture Small and Medium-Size Enterprises (SMEs) for many countries.
- e. FMPs accounting for and integrating ecological interactions and socio-economic concerns across Africa.
- f. Effective and sustainable regional monitoring, control and surveillance (MCS) systems in all regions.

A European Commission (EC) study in 2009 defined rights-based management (RBM) in the EC as any system of allocating fishing rights to fishermen, fishing vessels, enterprises, cooperatives or fishing communities, including licensing; catch quotas; vessel catch limits; and territorial user rights in fisheries (Swan, Judith, 2012).

Designing and applying appropriate user rights-based systems comprise:

- moving from **open access- to user rights-based fisheries** to increase societal benefits, while ensuring ecological sustainability of the resource. Member States will define and design user rights-based fisheries management that take into account geographical scope, nature of the fisheries, and minimizing negative impacts to vulnerable groups and ecosystems.
- ensuring that sustainable fishing operations are maintained, e.g., through implementing TAC based systems, and that fishing effort does not undermine the status of the fish stocks in question.
- Designing and implementing Territorial User Rights in Fisheries for small-scale fisheries and providing necessary regulatory frameworks and institutional support (AUC-NEPAD, 2014).

The ECOFISH Programme agenda intends to help unleash the development potentials of marine small-scale fisheries to attain socio-economic aspirations of the UN SDG 2030 and Transforming Africa 2063, to achieve a marine small-scale sustainable and inclusive rehabilitation strategy and actionable plan (*Sweenarain, Soobaschand, 30th September 2020*).

7.2 Socio-economic contribution of coastal marine fisheries in SWIO economies

The contribution of coastal marine fisheries, including small-scale, is invaluable in the local and national economies of all SWIO countries:

Comoros: Fisheries is a main contributor to the socio-economics and cultural life, impacting the livelihood of all coastal and non-coastal communities. Fishing contributes largely to the economy and is a source of subsistence for the majority of coastal towns and villages in terms of food (fish is eaten daily); job creation (many fishermen and fisheries communities directly or indirectly obtain work from the sea) and secondary earning (boat builders, fish sellers and ice makers, make a living from the fishing sector).

Kenya's coastal catch is currently 27,000 tonnes. Marine fisheries offer a main source of income to fishers – with increased livelihoods, nutrition and food security; employment opportunities; increased Gross Domestic Product from exported fisheries.

Madagascar: Depending on the location, some coastal areas depend 100% on fisheries, while in others around 80% or down to 5% in the central parts. Fisheries offer food security and nutrition, poverty reduction, job creation, and increased revenue, being a means of subsistence for 1 million people, direct employment for 85,000 in small-scale fishing, fisheries and aquaculture contributing 7% to GDP, (of which 35% from small-scale fisheries) and total fisheries and aquaculture production in 2017 at 163,500 tonnes, 59% of which was from small-scale fishing.

Mauritius: Total fisheries production in Mauritius for 2019 was 31,663 tons, with total export of fish products amounting to Rs 13 billion, about 19% of Mauritius national exports. The industry provides employment to about 29,000 people. The artisanal fishery has around 2,000 registered fishers, with around 850 tonnes of fresh fish landed in 2019.

Mozambique: Fisheries offers food security, jobs and a survival base for millions of fishermen, merchant processors, transporters - especially those with low incomes. On average the fisheries sector contributes 2% to the GDP and fisheries supports over 50% of the local population. A consequence of this, however, is leniency in enforcing heavy regulatory measures against communities with high unemployment.

Tanzania: Fisheries is a major socio-economic contributor to food fish supply, employment, and income generation for fishing communities, providing over 30% of animal protein needs. With high unemployment, the fishing industry has become a safety net for the majority of coastal people.

Seychelles: Although industrial fisheries are a major pillar of the economy, artisanal fisheries remain of great importance for food security, employment and cultural identity. Revenue and capacity building generated by the industrial fisheries sub-sector have

supported significant national investment in the development and management of artisanal fisheries, and the two sub-sectors have complemented each other well. Fish consumption is about 64.3 Kg par caput/year. Fisheries contribute some 8 to 20% to GDP. Some 1,500 fishers' lands about 4,000 to 5,000 tonnes of fish annually.

7.3 Management in Small-scale Fisheries

Initially with small-scale fisheries development, the quasi-open access or common property rights regime was a deliberate policy measure by governments to maintain a safety net against extreme poverty and promote food security for local populations. Since then, developing countries' management systems in small-scale fisheries have evolved steadily from open access to common property rights and further, resisting limits to access by management measures, such as input controls and restrictions. Today, small-scale fisheries are generally characterized by:

- ▶ 90% of marine fisheries resources harnessed by small-scale fisheries. The rate of pre- and post-harvest losses is around 40 to 70%, while that of IUU fishing varies between 30 % and 300%, due to the predominance of poorly regulated open access fisheries and informal economies.
- ▶ Small-scale fishers lack the incentive and capacity to engage in collective action to drive sustainable and inclusive fisheries; and currently only industrial fisheries can afford comprehensive research, monitoring and enforcement schemes.
- ▶ From government agencies' perspective, small-scale fisheries are difficult to manage, mainly because of large numbers of people involved and their large spatial distribution in often isolated areas, besides limited financial and human resources of the fisheries administrations.
- ▶ Despite the diverse socio-ecological landscape amongst EA-SA-IO countries, they have common management problems in the marine small-scale fisheries that can be tackled at the regional level.
- ▶ A regional framework for the definition or characterization of small-scale fisheries does not exist yet; which is a major obstacle for effective cooperation in sustainable and inclusive management of shared fisheries resources.
- ▶ The potential of modernization of small-scale fisheries into domestic semi-industrial fisheries also remains unexplored (*see below extent of current interactions*).
- ▶ It is now time to empower the small-scale fisheries, fishers and fish workers as a strategic sector across its multiple value chains.
- ▶ Innovative management options for small-scale fisheries such as rights-based or ecosystem-base management that involve secured access to fisheries resources, should be explored.

With the growing demography and penetration of the market economy in rural areas, current management systems are inadequate to ensure maximum biological and economic yields of weakly regulated common property-rights subsistence and artisanal fishing. Therefore, expected social benefits from these relaxed policies are not being realized in the low-income, vulnerable and fragile coastal countries of the EA-SA-IO region.

Due to increasing human population greater pressure on fish resources such as intense localized fishing and poor fisheries management are observed. Weak links in the value chain also results in fish spoilage and missed out opportunities to develop good markets for fish products; they are mainly contributing to improvement of the socio-economic environment in local communities. Thus, an urgent need to reform existing management systems in small-scale fisheries in the SWIO region is a prerequisite, to meet desired social and economic objectives.

Generally, governments in the SWIO 'region' consider small-scale fishing as important, though many of these are not yet officially structured into fisheries management plans:

The entire **Comorian** fisheries sector is based on small-scale fishing, and therefore of utmost importance, and so too in the **Seychelles**, as essential for food security and socio-economic development.

Most management plans in **Kenya** cater for the small-scale sector, but with the Fisheries Review and new Act, Government's focus has shifted to commercialization of fisheries and fishing rights.

SSF is taken into consideration in **Madagascar's** fisheries management plans, and the Ministry of Fisheries has a department specifically for SSF. Management transfer of marine resources to fisher associations and a clear division exists, between management of small-scale fisheries and industrial fisheries – e.g., small-scale fishers are not members of the steering committee in charge of managing industrial fisheries; however, there is a representative of industrial fisheries in the steering committee of the Fisheries Management Plan.

Mozambique's government is building markets and other infrastructures, but efforts fail due to a top-down approach with implementation, rather than listening to the communities on how to make the investment. Success requires respect for local dynamics, culture and social organization of each particular zone.

Similarly, the **Tanzanian** government places small-scale fisheries as a high priority, recognising the sector as the main source of cheap animal protein to the rapidly growing human population. Existing programmes and projects are aimed at developing small-scale fisheries and great effort has been made with fisheries management plans, including assisting fishers to get organized through Beach Management Units (BMUs). Also, involvement and consultation between central, local and village governments in policy formulation, setting of rules and regulations, and developing fisheries management plans, are the norm – e.g., no fishing license is issued without approval from the local BMU.

Below is a summary of **current interactions between industrial and small-scale fisheries** in SWIO countries:

| |
|---|
| <p>Comoros</p> <ul style="list-style-type: none"> • <u>Limited</u> interaction, because industrial fisheries are foreign fleets operating in the EEZ of Comoros, and currently no agreement between European Union and Comoros fisheries sector. |
| <p>Kenya</p> <ul style="list-style-type: none"> • Some <u>conflicts</u> over crustacea fishing gear from industrial fishing vessels damaging the seabed for small-scale fisheries resource users. |
| <p>Madagascar</p> <ul style="list-style-type: none"> • Both impact on <u>resource sustainability</u> and often target the same fishing areas and species (e.g., shallow-water shrimp), though completely differently managed. • Industrial fisheries funding and benefits local small-scale fisheries sector. • <u>Conflict</u> due to the overlap of fishing zones. • <u>Collaboration</u> to share some by-catch and discard catch from industrial fishers. • Require mutual respect for <u>fishing zones</u>, working conditions (authorized fishing gear, sanitary measures, security measures, fishing quota, etc.). |
| <p>Mauritius</p> <ul style="list-style-type: none"> • Fishing grounds and market, where the small-scale fishery is limited to FAD fishery, which is within 10 nautical miles from the mainland, while the industrial fisheries take place in the high seas beyond the mentioned area. |
| <p>Mozambique</p> <ul style="list-style-type: none"> • Some important fish stocks are <u>shared</u> (e.g., shallow water shrimp, demersal and large pelagic fish). • <u>Conflicts and competition</u> for space and fisheries resources** • Different <u>fishing zones reserved</u> for small-scale and industrial fisheries.* |
| <p>Tanzania</p> <ul style="list-style-type: none"> • Small-scale fisheries generate over 98% of fish production. *** • <u>Some conflict</u> between trawlers and small-scale shrimp fishers, being handled through joint involvement in development of shrimp fishery management plan. • Some high value fish products e.g., octopus, shrimp, lobster, etc. harvested by small-scale fishers and sold to industrial plants for processing and exportation, thus creating a symbiotic relationship. |
| <p>Seychelles</p> <ul style="list-style-type: none"> • Interactions remain moderate, due to different fishing zones. |

- * *Conflicts and competition arise from artisanal fishermen not limited on where they can go, so they infringe on industrial fleet space; and are also accused of abandoning gears in the sea, causing vessel breakdowns.*

Management of fishing communities is also not standardized: sea fishing regulations, fishing rights and fishing licensing regulations are consciously implemented by industrial fishing sector, who accuse the small-scale fishers of using illegal nets and damaging the resource.

- ** *Different fishing zones reserved for small-scale and industrial fisheries: Currently, this is beyond 3 nautical miles for small-scale, with the industrial tuna fishery beyond 12 nautical miles. Subsistence fishing can occur out to ½ nautical mile using simple gillnets, maximum of 2 traps and maximum of 3 hooks on hand lines, with a maximum capture 5 kg/day. Private sector complains of low fishing yields, difficulties in accessing markets, high production costs and high fishing license fees.*

- *** *Industrial fishing in Tanzania's Exclusive Economic Zone: currently only industrial or semi-industrial-scale fishery consisting of small fleet of about 10 shrimp trawlers of which product trans-shipped to international markets.*

7.4 Understanding root causes of ineffective fisheries management in the SWIO region

SWIO country stakeholders identify as **root causes of ineffective management**, cross-cutting factors of finances, weak Institutional and legal frameworks, and lack of skills and technology.

- **Insufficient environmental & stock conservation:**

- Open access, lack of marine spatial planning, and no declaration of catches.
- Continued high level of fishing effort with negative environmental impact on stocks.
- Political decisions and policies go against sustainable and responsible fishing practices.
- Lack of mechanisms to enhance responsible exploitation of fish stocks.
- Lack of understanding of the consequences of overfishing on food security and livelihoods.
- Poverty and weak resilience of the coastal communities to climate change effects.
- Lack of information about species to be managed.
- Lack of statistical data on catches, e.g., small scale fisheries catch.
- Only periodic information available for condition of each type of fishery.
- Monitoring mostly conducted by Ministry partners in charge of fisheries.
- Unavailability of appropriate fishing gear resulting in increasing pressure on fisheries resources.

- Lack of education and awareness regarding consequences of environmental degradation.
- Increasing numbers of people attracted to fisheries due to poverty and profit motive, leading to over-capacity, overfishing and environmental degradation - thus impairing fishery sustainability.

- **Financial factors:**

- Under-resourced Local Government Authority (LGA) for governing SSF institutional alignment.
- High cost and low budget from government for fisheries management, leading to lack of means for fisheries managers (finance, materials, human resources and higher qualified technicians).
- Inadequate resources (infrastructure, money and people) for monitoring and surveillance.
- Limited financial budget for capacity, including research, and adequate monitoring system.
- Lack of profitability and financial sustainability of the sector.
- Poverty affects governments' ability to ensure sustainable management of fisheries resources.
- Poverty also affects choices of coastal communities, making the fisheries sector an alternative livelihood for youth, men and women affected by high unemployment.
- High cost of transport to numerous dispersed and large fishing grounds, where roads poor: difficult for managers to reach all areas, resulting in weakened management.
- Lack of marketing support.
- Lack of adequate funds for implementation due to unrealistic budgetary allocation.

- **Management, political and administrative failures**

- Lack of Fishery Management Plans.
- Lengthy approval process for management plans.
- Unclear framework of implementation, including feasibility and resources needed.
- Fisheries Management Plans, though an indispensable resource management tool, yet to be internalized by technocrats.
- Weak ability to implement planned management measures, monitoring and evaluation.

- Ambitious objectives of management plans cannot be achieved within planned timeframe.
- Ineffective management transfer to local community / lack of community authority.
- Goals of fisheries clear, but strategy to achieve them unclear and inconsistent.
- All stakeholders not consulted.
- Lack of government participation and government continuity.
- Lack of ongoing consultation and collaboration.
- Weak implementation of EAF and co-management approaches, fisheries policy and legal framework.
- Limited financial and human resources to implement plans.
- Political interference in not addressing the use of illegal gears (e.g., beach seines, spears guns and illegal meshed-sized nets).
- Politics – National Government, and Counties, and Semi-autonomous Government.
- Corruption.
- Lack of effective indicator systems (including data assessment of fishing effort, catch and landings).
- Lack of stock data.
- Inadequate data and information flow system – including lack of marketing, economic and social information on fishery sectors to guide policy and decision-making.
- Local Government Authorities treating licensing as revenue collection tool, rather than resource management tool.
- Weak institutional linkages among resource management institutions, public and private [e.g., Beach Management Units (BMUs)].
- Low level of compliance with fisheries law and established management measures.
- Insufficient licensing and illegal fishing gear, low surveillance and lack of monitoring.
- Financial constraints make enforcement weak, with weak enforcement capacity, and lack of transparency.
- Lack of clarity in the regulations in force.
- Insufficient implementation of rules and regulations.
- No monitoring and evaluation; weak surveillance of fishing activities, especially small-scale.
- Lack of autonomy of administration (dependence on donors).

- **Lack of involvement, skills and expertise, technology**

- Fisheries managers' lack expertise.
- Insufficient capacity building and transfer of technology between countries in bilateral and/or regional cooperation.
- Insufficient capacity and skills of BMU managers.
- Insufficient scientific research to inform management plans.
- Insufficient fisheries staff amidst a weak co-management regime: in Tanzania estimated current 700 fisheries extension officers, as opposed to required 16,000 officers.
- Training gaps in resource management formulation, administration, monitoring.
- Limited stakeholder involvement in formulating and executing management plans.
- Lack of capacity (human resources and financial) of government and increasing fisher numbers.
- Lack of knowledge of fishermen, and lack of buy-in by fishers.
- Migration of young workforce from inland to the coast.
- Limited education and awareness, and stakeholder apathy.

- **Misunderstandings and lack of cooperation:**

- Lack of social responsibility.
- Fear of social reprisal (muhalu) of those reporting illegal fishing practices in the community.
- Co-management is a new term and not well understood, e.g., no-take zones and closed periods were established without proper explanation, and this frustrated fishermen.
- Lack of understanding and cooperation between National Centre for Control and Surveillance of Fisheries (CNCSP) and co-management administrator.
- Non-consideration of the CNCSP during setting up of co-management.
- Conflicts of competence between fishing communities and the CNCSP.
- Inter-sectorial conflict (e.g., on mangroves).
- Lack of communication between stakeholders, leading to ineffective management.
- Fisheries technocrats consider fishers to be ignorant of science behind fishing, whereas fishers consider the technocrats be ignorant of practical reality on the ground.

8. Fisheries Management Plans in the SWIO Sub-Region

The Management Plan is an important tool which should be designed and implemented after thorough scientific research, consideration of socio-economic dimensions, and with multi-stakeholder consultations and validation – a process that is lagging (Ecofish, June 2021) in SWIO states.

Ecofish employed consultant experts from each of the SWIO countries to co-ordinate in-country stakeholder research and analysis, resulting in individual country reports (see Annexure 7). Included in these are fisheries management plans and their status, brief summaries of which are detailed below. This is complemented in Annexure 3 by a WIOFish database inventory of existing transboundary and national management plans and their implementation status.

8.1 Inventory of Plans, Status, and SWOT analysis to assess capacity needs and gaps

For the identification and assessment of capacity gaps and needs, and in order to consider strategies to overcome constraints and barriers for SWIO countries, the FAO Standards/Guidelines for Sustainable Management of Fisheries was used to compare partner countries' **Existing Plans, Implementation Status**, and SWOT Analysis. A country-by-country summary follows, as a result of Ecofish country national experts research, complemented in Annexure 3 by a WIOFish database inventory of existing transboundary and national management plans, and their implementation status.

COMOROS

The Moheli Marine Park (MMP) was created in 2001, under the Ministry of Environment – promoting biodiversity conservation and achieving ecological sustainable development through enhancement of economic activities. It includes 10 villages and a coastline of 100 kilometres, following a co-management approach with destructive fishing methods forbidden. However, to date no agreement has been signed between the MMP managers and fisher association.

In 2015 the World Bank funded SWIOFish 1 project, implemented over 6 years, utilising the co-management approach, established fisheries management plans involving 6 villages and signed between the fisheries managers, local mayor, and representatives of the fisher

associations. Six (6) Fisheries Management Plans were developed, approved and implemented in 2016 and 2017, as shown below:

| No. | Fisheries Management Plan and year developed | Plan approved & implemented | Year implemented |
|-----|---|-----------------------------|------------------|
| 1 | Small nets, cast net, anchovies & sardinellas, 2013 | Yes | 2017 |
| 2 | Small nets, beach seine, fish, 2013 | Yes | 2017 |
| 3 | Diving, speargun, fish, 2016 | Yes | 2016 |
| 4 | Hook & line, trolling, fish, 2013 | Yes | 2017 |
| 5 | Small nets, drift nets, fish, 2013 | Yes | 2017 |
| 6 | Hook & line, vertical lines, fish, 2013 | Yes | 2017 |

KENYA

A range of ten Fisheries Management Plans have been approved in Kenya in the past 12 years, though with limited implementation, as shown below:

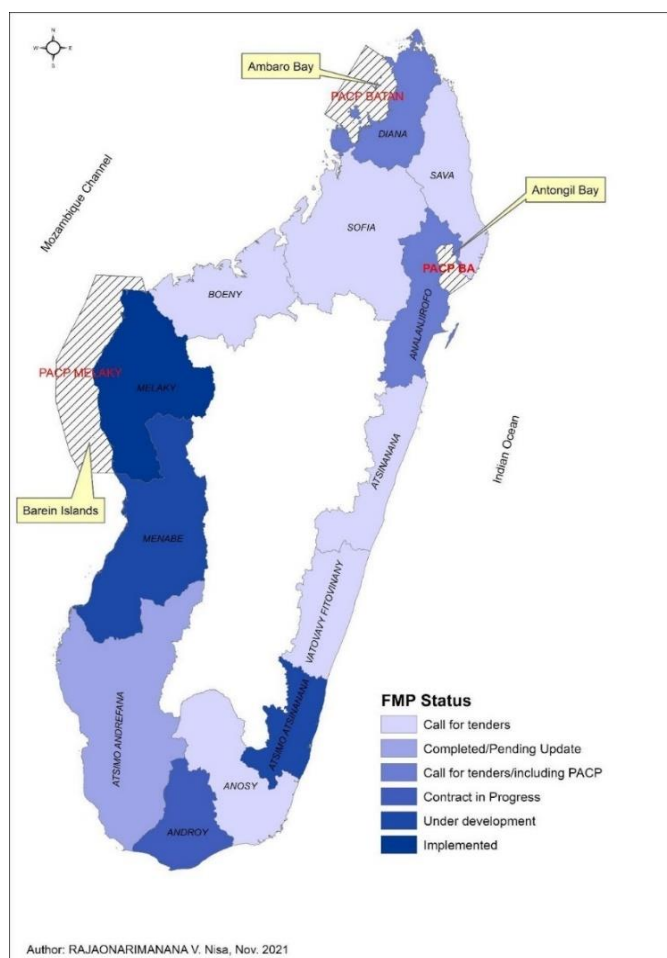
| No. | Fisheries Management Plan | Plan approved, year | Target/area fishery | Status |
|-----|---|-----------------------|-------------------------------|--|
| 1 | Malindi –Ungwana Bays Shallow Water Prawn Trawl Fishery Management Plan | Yes, gazetted in 2010 | Industrial, area based | Due for revision. The only FMP officially implemented so far |
| 2 | Small and Medium Pelagic Fishery Management Plan | Yes, 2014 | Small scale and transboundary | No gear-based regulation to support the fishery |
| 3 | Small Purse Seine Net Fishery (<i>Ringnet</i>) Management Plan | No | Small scale - gear based | Yet to be gazetted |
| 4 | Shallow Water Lobster Fishery Management Plan | No | Small scale fishery | Yet to be gazetted |
| 5 | Marine Aquarium Fishery Management Plan | No | Small scale fishery | Yet to be gazetted |

| | | | | |
|-----------|---|-----------|---------------------------|-------------------------------------|
| 6 | Malindi-Ungwana Bay Co-management Area Plan | Yes, 2014 | Area based, small scale | Lack defined zones and measures |
| 7 | Shimoni –Vanga Fishery Joint Co-Management Plan | No | Area based, transboundary | Implementation ongoing |
| 8 | Pate Island Joint Co-Management Plan | No | Area based, small scale | No take zones and seasonal closures |
| 9 | Kuruwitu Beach Management Unit Co-management plan | Yes. 2021 | Area based, small scale | No take zones, gear restrictions |
| 10 | Tuna Management and Development strategy | Yes, 2012 | Artisanal, Industrial | Due for revision |

MADAGASCAR

Three Concerted Fisheries Management Plans (CFMPs) – Plans d'Aménagement Concerté des Pêcheries, have been developed, formally adopted and are being implemented in Madagascar. The CFMPs are expected to consolidate efforts for the sustainable management of fishery resources by involving in particular small-scale fishermen. The CFMPs are valid for a period of five years and come into effect by regulation.

| No. | Fisheries Management Plan and year developed | Plan development | Implementation status |
|------------|--|---|------------------------------|
| 1 | CFMP Antogil Bay or PACP BA Covering Region Analanjirofo with a sea water surface of 2,980 km ² and 360 km of coastline | Validated 2014 officialized 2015 amended 2017 | under implementation |
| 2 | CFMP Ambaro, Tsimipaika Bay, Ampasindava Bay and Nosy Be Archipelago or PACP BATAN Covering 24 municipalities of Districts of Ambanja, Ambilobe, Nosy Be and Diego II | Validated 2017 officialized 2017 | under implementation |
| 3 | CFMP Melaky Region or PAP Region Melaky Covering Melaky with the Barein Islands and 3 Districts estimated at 4,317 km ² | validated 2016 officialized 2016 | under implementation |



The Madagascar Government is aiming at covering all 13 coastal regions under management plans.

They will address management of all flagship species covering high commercial value species; species that contribute to local, regional and wider socio-economic development.

The strategy is to prioritise the development of the exploitation of products that bring in foreign income, namely shrimps, lobster, sea cucumber and crabs.

The rational is that collection of data and resource management fund raising is easier through geographic intervention rather than by species.

Map showing Fisheries Management Plan development status.

MAURITIUS

Fisheries Management Plan for shallow water demersal species of the Saya de Malha and Nazareth Banks, and also the St. Brandon and Chagos Banks, 2012. The Banks fisheries are found 250 to 1200 nautical miles north of Mauritius and are the traditional supplier of fresh and frozen fish to the local market. Fisheries comprise:

1. Hook and line semi-industrial chilled fish fishery.
2. Hook and line vessels involving small dories fishing to a large mother ship – industrial fishery.

MOZAMBIQUE

Four Management Plans include:

| No. | Fisheries Management Plan | Plan Implementation | Detail |
|-----|--|--|---|
| 1 | Shallow Water Shrimps Fisheries Management Plan, (comprises 3 Provinces, Sofala, Zambezia and Nampula). | Approved and implemented for 2021-2025 | 1st attempt to establish management plan for deep sea crustaceans including prawn, lobster, crab, crayfish |
| 2 | Deep Sea Crustaceans Fisheries Management Plan | | 1st attempt to establish management plan for deep sea crustaceans including prawn, lobster, crab, crayfish |
| 3 | Demersal Line Caught Fish Fisheries Management Plan Covering mostly highly valuable commercial fish. | | Semi-industrial sub-sector using small vessels with ice onboard, trips lasting up to 12 days Industrial sub-sector fishing from large vessels with autonomous freezing |
| 4 | Draft Fisheries Management Plan for Artisanal Fisheries in several coastal districts, e.g.: Pebane; Moma; Machangulo-Matutuine; Inhassoro; Memba | | Established across country at local community level, where community expected to actively co-manage fisheries resources in their area. |

SEYCHELLES

| No. | Fisheries Management Plan | Plan development & implementation status |
|-----|--|--|
| 1 | Mahe Plateau Trap and Line Fishery Management Plan | To be implemented in January 2022 |
| 2 | Fish Aggregation Device (FAD) Management Plan | Being implemented. And is working well |
| 3 | Sea Cucumber Management Plan | Working well |
| 4 | To be developed in the very near future | Net Fisheries; Trap Fisheries; Spanner Crabs; Octopus; and the Outer-islands Trap and Line Fisheries Management Plan |

TANZANIA

Three models of FMPs are being applied in Tanzania:

- i) Area Specific Management Plans
- ii) Fishery-Based Management Plans
- iii) General Management Plans for Marine Protected Areas (MPAs) and Marine Conservation Areas (MCAs).

i) **Area Specific Management Plans (ASMPs)** have firstly developed out of Collaborative Fisheries Management Areas (CFMAs), which are important in facilitating the common practice whereby fishers from different villages or fishing communities' fish in the same fishing grounds, say a reef, making it important for respective fishers to collaborate in developing management plans for their fishery. Such arrangements have clear benefits, including the ability to reduce potential inter-village conflicts, and more importantly promote collaborative management planning, enhancing legitimacy of rules and regulations for improved compliance. In this respect, the Tanzania government, in collaboration with NGOs, especially WWF, played a pivotal role in constituency building towards initially CFMAs. Key players including Local Government Authorities (LGAs) as well as fishers in communities, internalised comparative socio-economic benefits of getting involved in managing CFMAs. Consequently, Area Specific Management Plans were developed, and are being implemented. Examples of the ASMP model include the following:

- 1) Bweni and Kanga (BK) Fisheries Management Area in Mafia District.
- 2) Dongo, Kilindoni, Chunguruma, and Ndagoni (DOKICHUNDA) Fisheries Management Area in Mafia District.
- 3) Jojo, Jimbo, Banja and Kironwe (JOJIBAKI) Fisheries Management Area in Mafia District.
- 4) Nyamatungutungu, Marendegu, Njianne, Somanga, Pombwe and Jaja Fisheries (NYAMANJISOPOJA) Management Area in Kilwa District;
- 5) Songomnara, Masoko and Kisiwani (SOMAKI) Fisheries Management Area in Kilwa District; and
- 6) Tingi, Miteja, Mtandago, Mtukwao, Magengeni, and Singino (TIM4SI) Fisheries Management Area in Kilwa District.

The ASMPs were developed by Beach Management Units of respective areas fishing on the same fishing grounds. According to general guidelines, each BMU is supposed to elect 5 members to represent in a joint Central Coordination Committee (CCC) for development and implementation of the ASMP. The role of the government and NGOs, in this context, is mainly that of jointly empowering fishers and BMU leadership on how to develop and effectively implement the ASMP in their respective areas.

In addition to the ASMP model presented above, the country has attempted a second model which embraced the Ecosystem Approach to Fisheries management, through the Integrated Coastal Management (ICM) regime. The process begins with formation of a District ICM working group, which comprises technical staff from respective LGAs. In many cases it includes officer covering fisheries, forestry, social work, land management, and economic planning officers at district level. Also, the working group draw members from NGOs, as well as fisher-based organizations, and from fishers' communities.

The working groups are responsible for coordination of development of Area Specific Management Planning. They review historical data and information as well as conducting semi-structured interviews in fishing communities. The focus is placed on involving key stakeholders in the issues identification process, management planning, and in practical implementation of the ASMPs. This model was introduced by government in collaboration with Tanzania Coastal Management Programme (TCMP). The ASMPs that have been developed are:

- 1) Bagamoyo District Area Specific Management Plan.
 - 2) Mkulunga District Area Specific Management Plan.
 - 3) Pangani District Area Specific Management Plan.
- ii) **Fishery-based Management Plans** exist where Government has prioritized high value fisheries which are at high risk of being overexploited. So far FMPs have been developed and being implemented for the following fisheries:
- 1) Artisanal Small and Medium Pelagic Fisheries Management Plan.
 - 2) Octopus Fishery Management Plan.
 - 3) Prawn Fishery Management Plan, and
 - 4) Tanzania Tuna Management Strategy.
- iii) **General Management Plans** especially for Marine Parks Areas, where the establishment of Marine Park Areas (MPAs) on Mainland Tanzania, and Marine Conservation Areas (MCAs) in Zanzibar, have proved to be one of the effective fisheries resource management measures in the country by limiting open access fishing. So far, the country has 3 MPAs on the Mainland, and 6 MCAs on Zanzibar, as follows:
- 1) General Management Plan for Mafia Island Marine Park (MIMP).
 - 2) General Management Plan for Tanga Coelacanth Marine Park (TCMP).
 - 3) General Management Plan for Mnazi-Bay and Ruvuma Estuary Marine Park (MBREMP).
 - 4) General Management Plan for Dar es Salaam Marine Reserves System (DMRS).

- 5) General Management Plan for Menai Bay Conservation Area (MBCA).
- 6) General Management Plan for Tumbatu Marine Conservation Area (TUMCA).
- 7) General Management Plan for Pemba Channel Conservation Area (PECCA.;
- 8) General Management Plan for Changuu – Bawe Marine Conservation Area (CHABAMCA), and
- 9) General Management Plan for Mnemba Island Marine Conservation Area (MIMCA).

Note that there is a Tanzania Tuna Management Strategy, but this is not a fishery management plan.

8.2 SWOT Analysis of Fisheries Management Plans across the SWIO Region

| Strengths | Weaknesses |
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| <ul style="list-style-type: none"> Where co-management has been effectively implemented, it improves legitimacy of fishing rules and regulations, and fishers more easily comply to what they have participated in enacting, thus reducing IUU fishing and also enforcement costs. Communities are being empowered: there's political will, community management areas, recognition and official regulation of community fishing councils. Co-management agreement between public and private sector; civil society; NGOs; and fishing council community. In some cases, 15% of cost supplied to support community fisheries councils. Co-management agreement system established responsibility of all players in exploitation of fisheries | <ul style="list-style-type: none"> A lot of funding and time is required to prepare and establish a functional fisheries management plan. Inadequate financial, human and material resource to support development and implementation of FMPs, where effective budgets are not allocated, and personnel not properly trained – needs time and resources. Plans are not costed to attract financial support from potential funders. Financial funding mechanisms to ensure sustainability essential, which needs to be sustainable and autonomous, financing the co-management plan budget (support to local communities to implement management responsibilities critical, but often absent). Lack of cost-benefit analysis of the implementation of the management actions. |

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| <p>resources – where agreement is signed with the fisheries administration, occurs with the knowledge of local government to ensure decentralisation of fisheries management.</p> <ul style="list-style-type: none"> Increases capacity and awareness for local communities by interacting with managers and practitioners, through local engagement of fisheries administration authority. Allows local ecological knowledge to be utilized. Builds constituencies, implying shared duties of all parties involved, creating a sense of ownership of responsibility and rights among fisher communities, and social solidarity. Involvement of all stakeholders, including fishers through associations, and in the process promotes transparency and accountability, where objectives are identified in a participatory way, resulting in clear implementation and responsibilities. Creates platforms and venues for discussion, debate and planning, and can help resolve conflicts and enable diverse decision making. Reduces cost for management of fisheries resources through communities (BMUs), and other fisher-based associations, and reduces conflicts between neighbouring BMUs. Increases local revenue, where there are common economic interests and decisions. | <ul style="list-style-type: none"> Some key stakeholders are not represented, which needs identification and resolution. Equally, in some countries the requirement for full consultation for FMP approval is too time consuming and stalls the process. Research and data collection, including stock assessment poor. Limited knowledge in developing harvesting strategy, reference points and indicators/ Scientific research prior to formulation of the management plan lacking or poor. Limited expertise to effectively implement co-management and conservation methods. Monitoring and evaluation is poor. Performance indicators need to be reviewed. Fisheries communities are not well organised. Weak management institutions at local level. Inadequate number of fisheries extension officers. Practicalities of implementation of fisheries co-management insufficiently considered in fisheries policy and national law. Rules implementation is very difficult partly due to island culture. Lack of clarity of economic weight of each stakeholder in decision making, powers of involved stakeholders (including the type of co-management model) and any non-compatible objectives, complicate decision-making. |
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| <ul style="list-style-type: none"> • Provides systems, increasing efficiency of management of resources. • Supportive Fisheries Policy, Legal framework, and development of NPoA for implementation of SSF Guidelines. • Government determination to develop SSF. • Presence of fisheries training and research institutions. | <ul style="list-style-type: none"> • Lack of communication in reporting and regular workshops on the co-managed resources, potentially impede endeavours. • Lack of management accountability by the local community. • Often not enough representation of small-scale fishers in decision-making process, and consequently their voices and concerns risk being neglected. • Previous issues were addressed politically rather than scientifically, resulting in Government today, under a different regime, having no control of artisanal fishing, despite corrective efforts being made. • Lack of knowledge, skills and awareness among resource users and extension workers regarding FMPs. • Lack of tenure rights in SSF. |
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| Opportunities | Threats |
|---|---|
| <ul style="list-style-type: none"> • Through Regional Development Cooperation agencies, share experiences and lessons. • Through Government Agencies, promote awareness for improvement. • Through Environmental Agencies, promote environmental consideration through ecological risk assessment. • Through Fishing Stakeholders, to promote opportunities, capacity training; and avoid overfishing. • Growing number of CSOs and NGOs working in fisheries resource governance and management. • Management institutions are buying into the FMP's idea. | <ul style="list-style-type: none"> • Failure to have meaningful collaborative management plans in place is a formidable challenge facing co-management. • Rural communities doubt benefits of co-management. • Rural population live under the poverty line, without alternatives for subsistence, often leading to destructive fishing practises. • Differing management preference and priorities create conflict, as it can be difficult to get community consensus. • Where benefits are not clear, there is the risk of unpredictable fisher behaviour. |

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| <ul style="list-style-type: none"> • Implementation of co-management presents huge opportunity for addressing overfishing and destructive fishing practises, as well as tackling the issue of open access, and modernising the SSF sector. • Design and implement an artisanal fishing licensing strategy, and fish gear marking system. • Development of strategy for licensing artisanal fishers that incorporates an electronic system for registering fishers and establishing fixed licensing period. • Need effective maritime vessel inspection system. • Intensify surveillance in critical fishing areas. • Promotes voluntary compliance - though also important to support market identification and focus on uplifting value chain as well as. • Modernisation of artisanal fisheries, with improved vessels and fishing techniques for fishing in open sea, collection of bycatches. • Fishing stakeholders along the value chain can create infrastructure for marketing, value addition and advocacy. • Improved security of landing sites of small vessels and gear; potable water, access roads, schools, health centres. • Opportunity to be more gender sensitive, and draw women into Fisheries Management Plan structures, so their rights are recognised, and they have more opportunities to contribute. High consideration of all stakeholders required. • Creation of understanding by communities, with time, about | <ul style="list-style-type: none"> • Some fishers who are anti-management may create hostility with their peers who are supporting the plans, threatening sustainability of fisheries resources managed by local communities. • Implementation of management plans must be participatory to promote ownership of decisions by resource users, otherwise misunderstandings and conflict can easily develop. • If participants do not clearly understand their responsibilities, they will not be committed to deliver on those responsibilities. • The temptation is for fisheries managers to want to maintain control through a top-down approach, but stakeholders require more empowerment, to achieve greater engagement. • Without constant monitoring and support from authorities and other partners, there is the strong likelihood that management will degenerate. • Fisher associations are often not well organised and have no financial budget means. • BMU's are potentially being politicised. • There is always the concern of not raising enough cash funding, and this must be effectively addresses to promote long-term sustainability. • Because Fisheries Management Plans are difficult to implement, there is the threat that they will not operate effectively, meaning the need for a lot of education and awareness – it is the way for the future. |
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| <p>importance of co-management to assist fisheries managers, as once there is understanding there is generally community willingness.</p> <ul style="list-style-type: none"> • Establishment of Beach Management Units (BMUs) in several fishing communities coupled with gradual awareness raising amongst key practitioners, offer opportunity for co-management to work. • BMU's have become "entry points" for any development with regards the sea, so there are opportunities for collaboration with other sectors to strengthen the work of BMU's. • Opportunity for training in co-management for fisheries managers, fishermen and fisher communities. • Win-win collaboration (if prioritised by each country). • Potential for increased earnings from species such as octopus, setting up of opening and closure no-take periods during breeding season. • Awareness-raising and sensitisation on new concepts and tools but takes time. • Promote control and surveillance of fisheries zones, regulating fishing practices and harvest means. • Improve financial and fishing rights security of fisherman and fisheries communities. • Improved environmental protection. • Exchange information on the degradation status of the coral reef zone and means to combat this through fishing stakeholders. • Extend co-management to other areas. • Through regional development cooperation, assist in capacity building, | <ul style="list-style-type: none"> • Some fishing grounds are in remote areas difficult to access • Rapid population growth in coastal areas • High demand for fish associated with high price tag fuelling overexploitation of resource. • Escalating illegal fishing in the midst of weak enforcement capacity. |
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| <p>assist Government to create an enabling environment and assist management of transboundary fisheries without conflict, due to regional collaboration.</p> <ul style="list-style-type: none"> • Government is regulatory – provides services e.g., pollution regulation, support services at landing site • Environmental agencies can assist capacity building and conservation sensitisation. • Improve catch, and artisanal fishing effort statistics, data collection. • Public participation helps general understanding of status of stocks and dangers of using wrong gear. • In new management plans, there is recognition by government of the weight of artisanal fishing on the resource, and proposed measures to be undertaken to control and manage it through oversight of all players. • Implementation of management plans through co-management provide a real opportunity, as people more willing to comply with a little effort on the part of the administration, unlike greater challenges e.g., application of broad measures linked to the Fisheries Code. • Create a common and shared dashboard for the monitoring and evaluation of each FMP. • Communication is critical and mobile phone technology is improving communication among resource users and managers. | |
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8.3 Capacity Constraints and Barriers to Effective Implementation of Management Plans and Suggested Solutions

SWIO countries have identified the following challenges and barriers with regards to capacity to implement fisheries management plans, as well as ideas on how to solve some of these problems:

| | Capacity Constraints and Barriers | Suggested solutions |
|---------|--|---|
| Comoros | <ul style="list-style-type: none"> • Revenue management for fisherman and fish sellers. • Limited capacity of communities to fully control co-management activities. • Limited capacity for good management. • Absence of improvement assessment indicators. • Sustainable financing. | <ul style="list-style-type: none"> • Find a sustainable finance mechanism. • Training and capacity building for fishermen, communities, fisheries managers, including fisheries MCS inspectors (CNSCP). • Promote understanding by fisheries communities. • Capacity development in conservation methods and fishing techniques • Awareness raising and better understanding of co-management approach. |
| Kenya | <ul style="list-style-type: none"> • Long MP approval process: Constitutional requirement for grass-roots level participation. • Limited management capacity of fishers. • Difficulty getting consensus among local communities in implementing a plan. • Lack of stakeholder engagement and synergy between stakeholders. • Lack of gears, vessels for effective logistical support. | <ul style="list-style-type: none"> • Financing funds required for establishing functional fisheries co-management plans. • Increase baseline information to support fisheries management plans. • Increase livelihood options for fisher community involvement in management to enhance incomes. • Increase enforcement capacity to implement MPs. • Continuity plans for donor funded management plans. • Combine community needs with MP objectives. • Improve capacity and skills of fishers and managers to implement MPs. |

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| Mauritius | <ul style="list-style-type: none"> • Changes/transfer of staff make implementation and monitoring of the management plans difficult. | <ul style="list-style-type: none"> • There should be qualified technicians for research and development, for appropriate implementation. • There should be a roadmap, plan of action and frequent consultation to assess progress, and identify gaps and to come up with appropriate solutions. |
| Seychelles | <ul style="list-style-type: none"> • Limited human resource capacity at national level (fisheries managers). • Limited financial capacity (assets, enforcement). • Disorganised stakeholders, lacking awareness and reluctance to engage. • Great reliance on donor funding and lack of national financing mechanisms. | <ul style="list-style-type: none"> • Empowerment of stakeholders. • Sustainable financial mechanism. • Capacity enhancement. • Political commitments. |

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| Madagascar | <ul style="list-style-type: none"> • Lack of sufficient finances to implement plans. • Ineffective or lack of implementation strategy for management plans. • Lack of ownership of plans by coastal communities (no co-management approach). • Lack of small-scale involvement. • Fishermen not seeing real benefit of management plan implementation. • Fisher communities not fully aware of measures taken in development of the plan. • Securing space and law enforcement capacity. • Implementation not harmonized, stakeholders having own approaches to implementation. • Capacity building required for some key stakeholders for implementation. • Implementation plan doesn't include governance of the management plan. • Intervention of politicians or authorities during infringements. • Insufficient staff for control and surveillance • Lack of precision in regulatory texts. | <ul style="list-style-type: none"> • Improve implementation of the EAF and co-management approach within relevant fisheries policy/law framework. • Improve regional co-operation for funding of these management plans. • Develop capacity of local stakeholders to self-finance and implement these plans (VSLA, income generating activities). • Capacity building required, includes allocating sufficient budget to Ministry of Fisheries; maintaining regular on-site control and support to fish workers; developing negotiation skills of executive staff to gain fishing agreement in industrial fisheries. • Involve fishing communities during development of management plan and maintain frequent awareness of the plan during implementation. • Need implementation plan for ongoing activities of all stakeholders. • Community monitoring. • More precision in the terms used in regulatory texts. |
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| Tanzania | <ul style="list-style-type: none"> • Inadequate finances and funding mechanisms to meet cost of fisheries resource management • Conflicts among resource users, mainly from lack of tenure rights and proportional representation in MP development. • Key practitioners lack training on resource management • Exclusion of some key stakeholders during development and implementation of MPs. • Local government officials not fully involved in development of FMPs but expected to ensure implementation. • Lack of stakeholder awareness on sustainable resource management. • Political interest and interference in implementation of resource MPs. • Low institutional capacity of BMU and other local co-management institutions. • Lack of skills, knowledge and technical know-how in MP development and implementation. • Lack of institutional capacity for resource management through fisheries co-management, while experienced government-employed change agents retired or ageing. | |
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| Mozambique | <ul style="list-style-type: none"> • finance and effective participation in implementation of FMP (often, funding only available for development of the FMP, but lacking for implementation, monitoring and evaluation, research and alternative measures to reduce fishing effort). • Engaging fisherfolk a challenge, due to literacy, lack of awareness, poverty, etc. • Lacking continued studies to evaluate the state and dynamics of the resources in decision-making, including climate change issue, monitoring and evaluation - leading to bias. • Political interference. • Lack of commitment. • Lack of training. • Lacking capacity to implement. • Low monitoring and statistical data; low surveillance. • External factors' negative impacts on efficient implementation of fisheries Management Plans (e.g., extreme weather events - cyclones destroying vessels and fishing infrastructure). • Weak control, monitoring and surveillance due to lack of human and financial resources - poor fisherman behaviour as they are not accountable. • Illiteracy amongst resource users. | <ul style="list-style-type: none"> • Build institutional capacity along various fisheries sub chains, including linkages between Central, Local Government Authorities (LGAs), and Village governments including Beach Management Units (BMUs). • Efforts must continue to involve fisheries actors at all stages of management planning and implementation. • Education and training, especially on co-management to be provided to policy makers, fisheries managers, stakeholders. |
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| | <ul style="list-style-type: none"> • Local management bodies (CCPs) demanding compensation for support. • Government fisheries licensing with support from CCP is entitled to 15% cashback to support fisheries management but this mechanism not working. • Poor access to information for all interested parties, and existing plans not easy to understand. | |
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8.4 Co-Management Leveraging Synergy Potential through Regional Development Cooperation, Governments, and Fishery Stakeholders, for National Priority Fisheries by SWIO Partner Countries, as a means to Overcoming Past Policy and Governance Failures

8.4.1 Co-management Potential

It is beyond the resources of Central Governments' Fisheries Administrations to effectively manage the wide variety of small-scale fisheries generally caught in relatively low volumes over wide geographic and often isolated, areas. This makes a team approach the logical solution.

SWIO countries widely acknowledge and appreciate the potential for co-management leveraging synergy through regional development cooperation, where governments and other fishery stakeholders in SWIO partner Countries still protect their national priority fisheries but can collaboratively overcome ineffective past policy and governance failures.

Existing FAO Small-scale Fisheries (SSF) Guidelines provide for an arrangement of shared responsibility and authority between government and resource users – a partnership arrangement generally recognized as fisheries co-management. Under this arrangement, the responsibility and authority for management of a fishery is shared by a community of

local resource users (fishers) and government, with support and assistance as needed from stakeholders including boat owners, fish traders, fish processors, boat builders, businesspeople, etc.; as well as external agents including: non-governmental organizations (NGOs) and academic and research institutions (Berkes et. al. 2001).

Co-management, particularly for small-scale fisheries, has already been implemented across the SWIO region to varying degrees of success: Team co-ordination, data collection and assessment, MCS, and financial input are made available to operational stakeholders to help maintain their management efforts and promote sustainability. Evaluation of co-management effectiveness in many SWIO small-scale fisheries, both of fisheries management plans and priority fish species, still needs to be included in formal management plan structures and must be done to promote effective management going forward.

Fisheries co-management is based on several theories and analytical frameworks, including common property, institutional economics, collective action theory and social-ecological systems. Fisheries co-management is the central principle of an ecosystem approach to fisheries and sustainability (FAO, February 2020 draft). Fisheries co-management is based on a minimum of two levels of governance – fisher community and government, where Government provides both the legislative and legal rights and authority for co-management, and the conditions for co-management to operate at the fisher community level. The fisher community level operationalizes the rights and authorities by establishing organizational and institutional arrangements of fisheries co-management.

The FAO in 2020 established the 2-year project “Fisheries co-management capacity development program” (GCP/GLO/046/ROK) funded by Korea Maritime Institute of the Republic of Korea, and the 5-year project “Fisheries Co-Management Capacity Development for Blue Communities: Sustainable Fisheries and Diverse Livelihoods” (GCP/GLO/080/ROK) funded by the Ministry of Oceans and Fisheries of the Republic of Korea. The overall goal is to give all stakeholders, especially policymakers, a better understanding of appropriate types of fisheries co-management systems at national or local levels, and to implement well-designed fisheries co-management programmes on the ground. These aim to assist all fisheries stakeholders and policymakers in designing and implementing effective fisheries co-management systems for sustainable fisheries governance. A guidebook for evaluating the effectiveness of existing fisheries co-management systems is currently underway.

8.4.2 Joint capacity building

SWIO country stakeholders surveyed, also had the following ideas on who should be part of **a collaborative team to build better co-management capacity**:

| According to: | the suggested team should comprise: |
|--------------------|---|
| Comoros: | <ul style="list-style-type: none"> ▪ SWIO countries in collaborative exchange ▪ the CNSCP on MCS ▪ Marine parks, community associations (fishermen) and fisher associations. |
| Kenya: | <ul style="list-style-type: none"> ▪ the Training College under the Kenya Management Authority, working on pollution control with: <ul style="list-style-type: none"> ○ Kenya Ports Authority; State Dept for Shipping; Ministry of Environment ▪ Regional bodies in Indian Ocean, NGOs – WWF supporting legislative development ▪ National and County Government offices of interest: <ul style="list-style-type: none"> ○ NGOs working in target communities, including on research ○ Local resource users and other stakeholders of interest ○ In TBCA, relevant government representatives. ○ National fisheries management and research agencies e.g., KMFRI ○ non-state actors including CBOs, private investors, FBOs and international development partners. |
| Madagascar: | <ul style="list-style-type: none"> ▪ all stakeholders, participating synergistically in management, including: <ul style="list-style-type: none"> ○ Administration involved in SSF (fisheries administration, research, universities, environment administration, etc.) ○ fisheries associations, local fisheries NGOs, civil society ○ technical and financial partners ○ traditional and local authorities. |
| Mauritius: | <ul style="list-style-type: none"> ▪ stakeholders including the fishers' community, government, private sector and the Economic Development Board, so as to add value to production and have a better market value. |
| Mozambique: | <ul style="list-style-type: none"> ▪ stakeholder engagement plan to be tailored to the target community / fishery: <ul style="list-style-type: none"> ○ fisheries experts, including fisheries regional and international bodies that can support this process ○ government, NGOs, fishing communities; donor community |

- at national level a team among the institutions of the sector.

Tanzania:

- Central government
- Local Government Authorities (LGAs)
- Village governments, fishers' organization such as BMUs
- NGOs, CBOs, and development partners
- IOC can be part of building capacity jointly to participants at regional level.

Seychelles:

- all relevant stakeholders
- political leaders should show greater political commitment to take unpopular decisions to ensure sustainability of resources.

8.4.3 Sharing Lessons Learnt and Good Practices

Bilateral co-operation amongst SWIO countries, enables them to share on-the-ground lessons they learnt and good practices they have identified, such as:

| SWIO PARTNER | Lessons learnt and good practices identified on co-management |
|-----------------|---|
| | COMOROS |
| | <ul style="list-style-type: none"> • <u>Sensitization</u> of fisheries communities on the importance of a fisheries management plan (through existing co-management). • Co-management plans take <u>time</u> to be assessed with the development of new tools but results from current project (SWIOFISH1) are positive. • Establishment of no-take zones and closed fishing periods for specific species helps to <u>educate</u> fishermen on the benefits of this new management tool. • Co-management goes well with <u>Marine Park management</u>. • Responsible management is promoted by concrete <u>collaboration</u> between fisheries communities and government fisheries management administration. • Co-management promotes common thinking on <u>sustainability</u> and improves <u>knowledge</u> on the importance of fisheries management. |

KENYA

- Co-management in East Africa helps put in place controlled access to small-scale fisheries, where fishers vetted through Beach Management Unit (BMU).
- Allowing access rights to gradually move towards quota allocations, as a 'transition to create wealth' for both industrial and semi-industrial fisheries in the Indian Ocean.
- Models such as Individual Quotas and application of proper Management Plans.
- Management through BMUs.
- Participatory and multi-disciplinary approaches in management.
- Community co-management/ bottom-up approach – empowering BMUs.
- Fish size- and gear restrictions, especially small-mesh sized gillnets.
- Fisheries closures and gear restrictions are most effective when implemented concurrently.
- Community Conserved Areas (CCAs), aka Locally Managed Marine Areas (LMMAs).
- Participation and diversity of stakeholders creates ownership and its more sustainable.
- Stakeholder participation, community cohesion and long-term programs of change monitoring data
- Annual Fishers Forum where fishers network and learn about fisheries and coral reef conservation.
- Communities taking responsibility for fisheries management.
- Increased capacity and awareness for local communities from interacting with managers and practitioners.
- Development of regulations and mechanisms to enhance enforcement and compliance for ecosystem management.

MADAGASCAR

- Compliance of communities with management measures and by-laws that are jointly agreed on at the co-management level - men, women, youth participating.
- Co-management community provides strong and effective leadership.
- Technical and financial support from a donor (e.g., World Bank).
- Solidarity and motivation among the co-management association towards better management of resources and better socio-economic conditions for families of fishers.
- Depending on the scale of fisheries, co-management is a great fit for small scale fisheries, e.g., local managed marine protected areas (LMMA) a recent and quite successful model.
- Bilateral agreements on industrial fisheries also successful as long as they consider stock recruitment of resources: stock assessment studies should be implemented first, and involvement of all stakeholders should ensure sustainable fisheries.
- Effective models have been area based; input based (effort control); output-based management (quota regulation) and allocation of fishing rights.
- Octopus management in Southwest Madagascar needs a win-win collaboration with Private Sector willing to invest in sustainable resource management.
- Madagascar is improving on past failures of a top-down approach with co-management of natural resources.
- All stakeholders, including government, should be actively engaged in the co-management system – government should put in place necessary related mechanisms and processes, not negating the contribution the fishers can make. Those in the supply chain must also be considered.
- Fishers should particularly be included in each aspect of the management, such as monitoring and surveillance; their fishing rights and secured tenure should be considered.
- Legal formalization of decision-making and power should be recognized by the Ministry.
- Provide opportunities for mid-term and end-of-implementation evaluation and restructuring.
- Co-management of coastal shrimp fisheries through Concerted Development Zone (ZAC) was effective, with all stakeholders involved in data sharing (researchers, fishermen) and decision making (fishermen, administrative authorities, etc.).

| | |
|------------------|---|
| MAURITIUS | <ul style="list-style-type: none"> • Marine protected areas (MPAs) are considered to be effective conservation (protecting marine biodiversity) and fisheries management tools, that generate various ecological and socio-economic benefits. Findings in Madagascar suggest that international initiatives and funding have played a key role in the early days of MPA emergence. Key stakeholders who played a role in actually selecting and subsequently managing Malagasy MPAs include NGOs, local communities, and the government. Currently co-management between governmental and non-governmental actors shows mixed results regarding conservation effectiveness. Surveyed experts advocate better coordination of efforts among various stakeholders, particularly local communities and government entities, with significant local community responsibility. For example, in the successfully locally managed marine areas (LMMAs), there has been integration of the official marine conservation regulations and laws, and the traditional customary law known as “Dina”. LMMAs in Madagascar are advanced, likely due to the MIHARI Platform (Madagascar’s locally managed marine areas network), that allows LMMAs to learn from each other, with different stakeholder exchange in a forum that is perceived to be neutral and effective. This concept has the potential to be applied across SWIO country collaboration (Ratsimbazafy, H. et. al., 2019). |
| | <ul style="list-style-type: none"> • In order to reduce fishing pressure in the lagoon, the Government has progressively formulated, reviewed and executed several strategies regarding proclamation and management of marine protected areas, promoting Fish Aggregating Devices – FAD fishery, closed seasons for net and octopus’ fisheries, ban on sea cucumber extraction among others. Also, the ban on sand mining, prohibition on coral removal and trade, ban on jet ski activities in Mauritian waters, have been essential regulations and policies towards effective coral reef management. |

MOZAMBIQUE

- Co-management is the most successful management model for both industrial and small-scale fisheries: involvement of fishers and all relevant stakeholders is key for the efficiency of fisheries management.
- Cross-sectoral approach, including EAF, also important, because many factors external to the fishing activity can affect management of fisheries resources, including reducing pressure on the fish stocks by providing alternative livelihoods.
- Recent management models were unable to fulfil proposed goals, due to poor monitoring and evaluation process during the course of implementing the plans.
- Key lesson is – not possible to develop a successful plan without fulfilment of surveillance and oversight component.
- Previous plan failed because:
 - weight of artisanal sector on the resource was not taken into consideration
 - control measures were only applied to the industrial sector, which is responsible for just 1/3 of total captures.
- Measures must be applied to all sub-sectors, as that they all use the same resource.
- Models which transfer management to fishers could be tested particularly for commercial fisheries, whereas co-management model may work with small-scale fisheries' support in the value chain.
- Voluntary octopus' closures as a management measure worked in North Mozambique and is currently being tested in Inhambane Province with very good results.
- Strengthen the participatory co-management model where operators and communities have clear duties, obligations and benefits in the exploitation of fisheries resources.
- Measures for sustainable fisheries resources must be defined.
- Ecological approach to fisheries must be taken into consideration.
- Community-managed access with no-take reserves implemented by Rare in Indonesia and Philippines have proven effective.
- Investment in community social cohesion through social marketing and training is effective.
- Important to have acceptance by communities to join Fisheries Community Councils.
- Important to draft laws and regulations that hold the fisheries sector accountable.

SEYCHELLES

- Successful management models include a participatory approach - decision taken with inclusion of stakeholders (e.g., Seychelles sea cucumber fishery).
- Top-down approach found not to be the most effective fisheries management strategy.
- Opinions of all relevant stakeholders are important.

TANZANIA

- Fisheries co-management model used in Rufiji-Mafia-Kilwa (RUMAKI) Seascope programme has proved to be most successful, where fishers have strong say in the management of mostly reef fishery resource:
 - success ascribed to strategic selection of an ideal location for early action
 - near-shore marine and coastal habitats of Rufiji, Mafia and Kilwa Districts (central Tanzanian coast) are amongst most species-rich, abundant and economically important marine resources on the Eastern African coast, e.g., Mafia Island alone supplies estimated 60+ % of fish sold at Dar es Salaam's main Ferry Fish Market.
- Combining resourcefulness and commitment of the NGO (WWF) made it possible for fishers from different neighbouring villages together, to develop area specific management plans that were respected.
- in addition, WWF introduced Village Community Banks to meet micro-credit accessibility challenge, with overwhelming results i.e., octopus' closures being adopted in other parts of the country and even beyond.
- Tanzania's multiplicity of fish species, fishing gears and methods, fishing boats, numerous fishing grounds and landing sites among many other factors make management of the resource complex and hard for government to manage alone.
- Recognition that engaging resource users in collaborative resource management is best option to complement government efforts, therefore, most lessons in resource management are associated with user participation – specifically:
 - strong Beach Management Units (BMU) are crucial in engaging resource users in co-management
 - important to ensure fishers are regularly updated on research findings, policy and regulatory guidelines – consultation with fishing communities the best way to build constituencies
 - co-management arrangement requires clarity on roles and responsibilities and to be understood at community level; and for a monitoring plan to be prepared so as to assess implementation of various agreed-upon activities
 - cost of fisheries management is high, but other sectors in the Blue Economy, e.g., tourism investors, can be mobilized to contribute towards implementation of management plans in general, and enforcement in particular
 - promoting institutional partnerships between public and private Institutions, including NGOs, is an effective tool for management planning and implementation

- research of new, emerging techniques in fishing important to understand their effects
- provision of micro-credit schemes tends to accelerate socio-economic development of people in fishing communities
- use of Community-Based Trainers (CBT) is a sustainable and cost-effective means to mitigate fisheries extension officers staff shortages
- Area Specific Management Plan (ASMP) model has great potential for promoting user participation under co-management regime.

ZANZIBAR MARINE CONSERVATION AREAS

The general management plan behind marine conservation areas (MCAs), when designed well and effectively implemented, can restore fisheries and ecosystems both within and beyond MCA boundaries, as well as alleviate poverty among coastal communities. The World Bank SWIOFish Project has been operating in the SWIO region to enhance fisheries management. Zanzibar off the Tanzania coast, through the help of SWIOFish, is in the process of establishing and implementing a number of MCAs, utilising good practices.

As an example, the Changuu-Bawe Marine Conservation Area (CHABAMCA) General Management Plan (GMP), is amongst a number established for the period 2021 to 2031 (Richmond, M., 1 January 2022), and should be read in detail to understand all the components. These plans contain guiding principles, management objectives and actions aimed at achieving the purposes for which the MCA is established under the Fisheries Act No. 7 of 2010 Marine Conservation Unit Regulations. Furthermore, as stated in the MCU Regulations Part III 8. C. "In collaboration with the Managers, the coordinator shall prepare long-term management plans for controlled areas including management measures, annual implementation plans and their budgets."

As background perspective, the current status of MCAs of Zanzibar is one where virtually nothing is actually taking place with respect to marine resource management or ecological conservation, with resultant low resource user confidence in management authorities. The no-take and other zones, together with community participation initiatives in managing selected areas and other actions that are proposed in this GMP, can be seen as piloting interventions that need to be tested and assessed, adapted and modified or abandoned, as the case may be, as part of the 'roadmap' approach toward reaching the desired objectives within ten years.

The GMP has five thematic components: ecological management; tourism development and management; fisheries resource management; mariculture development; community support. Included in the fifth component is a Monitoring, Control and Surveillance (MCS) Strategy, designed to ensure and support the implementation of the above programmes.

As well as pro-active enforcement, this MCS strategy considers measures to improve voluntary compliance through education and outreach and by generating incentives through management that benefits the general community. Through its implementation, it will contribute to the three pillars of sustainable marine conservation: environmental, economic and social.

The CHABAMCA is an important fishing ground for the 2,000 fishers who use it regularly. The most important fishery resource in CHABAMCA is for finfish, both pelagic and demersal, other resources including sharks, rays, skates. The fishery for the small pelagic species (collectively known as dagaa) is a major activity in the CHABAMCA, with 2 ring nets and 50 purse-seines reported. Key stakeholders involved include small-scale fishers, porters from the boat to selling or processing areas, traders, processors (boiling, drying and packaging), wood suppliers, and food vendors. Other actors include restaurant owners, suppliers of inputs such as salt and packaging bags.

The Fisheries Resource Management Programme Monitoring Framework below, has been designed to provide guidance for assessment of the potential impacts resulting from implementation, so that timely changes to the management approach are made, when the situation demands.

| Objective | Potential Impacts (positive and negative) | Verifiable Indicator | Sources and means of verification |
|---|--|--|---|
| Objective 1: Enforcement and surveillance of fishing activities strengthened | State and non-state actors collaborate to facilitate effective enforcement of fisheries legal provisions | No. and nature of management and enforcement collaborations | CHABAMCA management and enforcement records |
| | Reduced illegal natural resource use in the CHABAMCA | No. of illegal natural resource use incidents in the CHABAMCA | CHABAMCA enforcement records |
| | Sustainable utilisation of fisheries resources | Adherence to zoning scheme and recommended fishing methods | Fisheries utilisation records and CHABAMCA enforcement record |
| | Increased unemployment, reduced short-term catches, political interference. | No. of fishers actively fishing and village population data | CHABAMCA enforcement records and village data |
| Objective 2: Improved research on fishery management | Marine research well-coordinated and findings disseminated to stakeholders to support decision making | No. of research dissemination meetings held Use of research in identifying and implementing mitigation measures | CHABAMCA management and research reports |
| | Increased community awareness of and importance of the CHABAMCA and willingness to adhere to regulations | No. of local community members arrested for illegal activities in the CHABAMCA Use of incidence of illegal fishing as a proxy for importance of | CHABAMCA enforcement Records |

| | | | |
|---|---|--|--------------------------|
| | | CHABAMCA | |
| Objective 3:Stakeholder participation in fishery management enhanced | Working relations between stakeholders strengthened and coordinated to generate synergy and strengthen unity of purpose | Number of functional collaborative agreements between CHABAMCA stakeholders | CHABAMCArecords |
| | Increased value and importance of the CHABAMCA to surrounding communities | Income from diverse activities linked to conservation of CHABAMCA | CHABAMCArecords |
| Objective 4:Alternative livelihoods developed for fishers | Communities have alternative sources of livelihood reducing pressure on fisheries | No. of non-fishing IGAs initiated and successful No. of fishers (potential or former) as participants in IGAs | CHABAMCArecords |
| Objective 5:Impacts on emerging issues in fisheries assessed | Negative environmental impacts of marine activities are understood and mitigated | No. of ESIA's and audits Mitigation actions included in appropriate plans and implemented | ESIA's and Audit reports |

Detailed in the plan, is an implementation schedule covering the activities, responsibilities, timeframe and milestones necessary for the delivery of each management action.

With regards monitoring, control and surveillance, up till now, non-compliance with the law has been extensive and effective MCS in Zanzibar's MCA network is weak. The regulatory conditions under which fishery resources can be exploited are generally considered appropriate to manage the fishery, yet several factors are limiting implementation:

- Increased fishing pressure over the last decade under an open access system has made it difficult to control fishing effort and significantly hinders MCS. The existing 'top-down' management regime from the Department of Fisheries Development (DFD) also lacks the required financial and human capacity to plan and implement effective MCS measures.
- There is not enough strategic monitoring of resource use and non-compliance to be able to make informed management decisions. The results is a limited surveillance presence in MCAs and a general lack of awareness and/or respect for the law.
- Co-management in Zanzibar, represented by the Shehia Fishermen Committees (SFC), has great potential to assist but the system is currently unable to function effectively given that SFC members essentially serve on a volunteer basis and similarly to DFD, lack essential training and resources to carry out surveillance and enforcement.
- A clear set of guidelines is required that are understood and can be continually referred to by MCA users and stakeholder groups. All responsibilities ought to be clearly defined and each involved should have the necessary capacity to carry out these responsibilities.

- As well as pro-active enforcement, the MCS strategy considers measures to improve voluntary compliance through education and outreach and incentives to fishers. Where available, best practice guidelines and case studies in enforcement and surveillance of MPAs have been utilised to suggest the most practical and impactful interventions. The application of alternative modern technologies for both surveillance and monitoring have also been included.
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Table providing MCS Strategy objectives and associated actions.

| |
|--|
| Objective 1. Define and formalise the MCS responsibilities of relevant entities. |
| Action 1.1. Re-define the MCS focus and responsibility for each entity. |
| Action 1.2. Make informal/formal partnership agreements with other government agencies, NGOs or private entities to facilitate outsourcing and coordinated MCS of the MCA. |
| Action 1.3. Produce and regularly update an MCS Guidance Document for MCA. |
| Objective 2. Strengthen human resource capacity. |
| Action 2.1. Improve staff skills in MCS. |
| Action 2.2. Set up MCS SFC sub-committee. |
| Objective 3. Improve communication within the MCA. |
| Action 3.1. Establish a Marine VHF radio network. |
| Action 3.2. Set up a surveillance co-ordination centre and define lines of communication. |
| Objective 4. Strengthen the enforcement of MCA user activities via a decentralised and risk-based surveillance programme. |
| Action 4.1. Increase fisheries surveillance responsibility and resources to SFCs. |
| Action 4.2. MCA surveillance team take on a more reactive role in surveillance complemented by targeted patrols of known violation hot spots. |
| Action 4.3. DFOs to focus on land based MCS, specifically verification of fishing licenses camping permits. |
| Action 4.4. Increased land-based surveillance coverage using rangers on foot, or lookouts at strategic posts. |
| Action 4.5. Increase the number of joint patrols as part of a co-ordinated joint patrol plan. |
| Action 4.6. Utilise the tourist boat sector as a surveillance platform. |
| Action 4.7. Increase surveillance and enforcement of tourist and tourist operator activities. |
| Action 4.8. Apply best practise patrolling principles. |
| Action 4.9. implement the detailed surveillance plan. |
| Action 4.10. Deploy key staff to implement the surveillance programme. |

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| Action 4.11. Review compliance on a regular basis to ensure risk-based planning. |
| Action 4.12. Consider implementing alternative technologies for surveillance. |
| Objective 5. Promote voluntary compliance and prioritise a “soft” approach to enforcement where possible. |
| Action 5.1. Incorporate “soft” enforcement into training. |
| Action 5.2. Develop and launch a Zanzibar wide regulations awareness campaign. |
| Action 5.3. Provide incentives to fishers that will improve respect for MCA management. |
| Objective 6. Phase out the most damaging fishing gears. |
| Action 6.1. Set up task forces to control the most destructive fisheries in the MCA. |
| Objective 7. Equipment to support implementation of MCS is provided and maintained. |
| Action 7.1. Procure equipment needs for MCS in the MCA. |
| Action 7.2. Maintain equipment. |
| Objective 8. Infrastructure to support implementation of MCS is developed and maintained. |
| Action 8.1. Install and maintain demarcation for identified priority areas. |
| Action 8.2. Review the state of MCA building and upgrade if necessary, according to needs and best practise. |
| Action 8.3. Review the need for SFC offices/resources centres. |
| Action 8.4. Review the state of fisheries landing sites and upgrade priority sites. |
| Action 8.5. Install basic infrastructure for surveillance posts at key locations. |
| Objective 9. Develop more enforceable prosecution and sanction systems. |
| Action 9.1. Develop more meaningful sanctions related to MCA user activities. |
| Action 9.2. Establish a simple reporting tool and practical database that allows for case monitoring and recording repeat offenders. |
| Action 9.3. Define a clear process for the implementation of by-laws for management at the local level. |
| Action 9.4. Carry out training for judges, prosecutors, local police, and other enforcement/legal authorities. |
| Objective 10. Modernise current fisheries catch and effort monitoring systems to phase out the current open access regime. |
| Action 10.1. Pilot modernised licensing and registration systems in the migrant fishery. |
| Action 10.2. Pilot electric catch data collection systems. |

8.4.4 Sharing Scientific and Socio-Economic Knowledge along Value Chains

A study undertaken in a remote region in Madagascar's west coast known as Velondriake (Barnes-Mauthe, M., et.al. 2013), showed that the small-scale fisheries sector employed 87% of the adult population, generating an average of 82% of all household income, and provided the sole protein source in 99% of all household meals with protein. In 2010 an estimated 5524 metric tonnes of fish and invertebrates was extracted annually by SSF in the region, primarily from coral reef ecosystems, of which 83% was sold commercially, generating fishing revenues of nearly US\$6 million. Including subsistence catch, annual landings had an estimated value of US\$6.9 million. However, high export prices for sea cucumber have been incentivizing over exploitation, and most small-scale fisheries are currently experiencing high levels of unsustainable fishing and increased incidental catch rates from nearby shrimp trawlers (Le Manach et.al., 2012). Madagascar is also ranked amongst other tropical countries with the lowest adaptive capacity and very high vulnerability to climate change and other external shocks (Harris, 2011). The Velondriake study concluded that the establishment of locally managed marine areas aimed at increasing the benefits provided by SSF, highlight the need for long-term management strategies that aim to enhance their ecological and economic sustainability. While policy is often driven by a sector's contribution to GDP or export earnings, the study emphasized that there is a need to catalyze national and regional policy makers to promote proper management of the SSF sector, and better research is required to effectively quantify the sector (Barnes-Mauthe, M., et.al. 2013), so it can be developed more effectively.

Scientific Working Groups

Through effective data gathering and analysis, scientific reports on the performance of each fishery should be produced, including recommendations, supported by continuous scientific research, so as to enable implementation of management plans and effectively updating fisheries strategies and policies.

Improving the Socio-economic Status of Fish Communities

SWIO countries widely bemoan the generally poor socio-economic status of fishing communities, and stakeholders gave the following **ideas on how to improve** it:

| | |
|-----------------|--|
| Comoros: | <ul style="list-style-type: none"> • Through social responsibility: education, training, technical and financial support • improve their capacity; then regulate the fisheries sector • training on different fishing practices • implement effective fisheries management laws • control and reinforce the security of fisherman • adopt a registration and licensing system. |
| Kenya | <ul style="list-style-type: none"> • A levy to invest back into fisheries - through training and procurement • training and capacity building on diversifying livelihoods e.g., mariculture • support business start-ups, including grants and low interest loans for fishing gear and vessels • linking with markets, improve the marketing of the fish • enacting laws that promote and safeguard fisher community livelihoods • support for the protection of the mangrove ecosystem e.g., carbon credits • better management of fisheries • direct processing of fish • more targeted research to identify issues affecting the community • recognition by SWIO governments of fisheries' contribution to ecosystems • government commitment to improved management • empowerment for local fishers to access more fishing grounds (better vessels and gear) • awareness creation for fishers on management of income • improved fisheries data collection for decision making • invest in fish farming to expand fish production • provide capacity building for fisher communities in production technologies. |

| | |
|-------------------|--|
| Madagascar | <ul style="list-style-type: none"> • Ensure a better return on fishing (fairer fish price between fisher, collector, and consumer) • support fishers along the SSF value chain with capacity building and local development • provide equipment and materials for fish conservation, commercialization, etc. • improve the EAF and co-management approach • less exportation of halieutic resources and more fish for the national population • combat IUU fishing • reduce post-harvest losses: physical loss, quality loss, loss from market forces • increase target species biomass and reduce use of destructive fishing gears and juveniles • capacity building (product processing and conservation) • improvement of the value chain to avoid losses • alternative activities for fishermen during periods of closed fishing. |
| Mauritius | <ul style="list-style-type: none"> • Provide incentives, empower them, provide training, upgrade fishing techniques and fish preservation for better market. |
| Mozambique | <ul style="list-style-type: none"> • Value addition to fisheries products and direct access to better markets • alternative sources of income from agriculture, mangrove aquaculture, poultry • more investments and training in the coastal areas, especially labour-intensive activities • financial grants to strengthen the value chain, and local capacity building • value retention initiatives to promote income from fish staying in the community • strategy for social and attitude change must be designed and implemented. |
| Tanzania | <ul style="list-style-type: none"> • Creation of microcredit schemes, based on Grameen Bank model (e.g. Village Community Banks (VICOBA)) • part of the resource rent can be used as seed money for establishing the schemes • provision of effective extension service through Community-Based Trainers/change agents • assistance in establishing marketing-based cooperatives. |

| | |
|------------|---|
| Seychelles | <ul style="list-style-type: none"> • Improved infrastructure • sustainable financing mechanisms (soft loans) • capacity building, including business management for fishers. |
|------------|---|

9. Open Access Socio-economic Fish Species easily subject to Management Plans/ Co-management

There are **key fish species that are still open access**, but with potential to be managed through structured management plans or co-management. Key stakeholder views were:

- **Comoros** species should be those with the best socio-economic potential such as small pelagic fish, octopus, lobster, sea cucumber, barracuda, parrot fish, trevally, grouper, triggerfish, tunas.
- **Kenya's** open access species include pelagic sharks, billfishes, small tunas & bonitos, small pelagics (small mackerels, scads, sardines and round herrings), octopus, rabbitfish and crabs – including threatened shark and ray species as well as red line trigger fish, and the triple tail wrasse.
- **Madagascar** wants its entire open access coastal fish species to be managed by an ecosystem-based, rights-based and co-management approach, aligned with FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (2015), in the context of food security and poverty eradication. Multi-species, small-scale fishing using multi-fishing gear should be co-managed; with local communities developing fisheries resources for industrial and semi-industrial fisheries use. It was recommended that whereas key species fall under a regulatory framework, a management structure at the community level should exist to cover all of them. Open access species include giant clams, Elasmobranchs, sea cucumber, tuna, octopus, demersal fish, crabs, lobsters, eels.
- In **Mauritius** seven main species generally caught in the artisanal fishery are the *Lethrinus nebulosus* (capitaine), *Siganus sutor* (cordonnier), *Naso unicornis* (licorne), *Scarus spp* (cateau), *Acanthurus spp* (chirurgien), *Mugil cephalus* (mulet voile) and *Epinephelus spp* (vielle). The catch of artisanal fishermen can also comprise octopus,

shellfish (lobsters, crabs and shrimps) and tuna and tuna-like species. The octopus' fishery has been successfully managed.

- **Mozambique's** small pelagics (locally known as "magumba" / Hilsa kelle, and "papahi"/ *Thryssa vitirostris*, are open access and important for food security and livelihoods. Structured management of these species can be done through area-based co-management in the bays, especially small-scale shrimp fisheries and line fisheries.

Government intends to promote offshore tuna investment and coastal tuna fishing – considered currently under-exploited with potential to develop a SSF fishing and processing industry. Tuna and tuna like species could be structured into a management plan, such as the Strategic Plan for development of the tuna fishery, which provides for a total 130 industrial vessels, while the national fleet currently only exploits 10%. The tuna fishery has been dominated by the European Union, Japan and others, although since implementing fishing rights under Mozambique's new Fisheries Law, nationals are prioritized as fishing rights holders, and foreign fleets have stopped fishing in Mozambican waters (although some international players are in negotiations to return).

The Strategic Plan also highlights development of artisanal fishing infrastructure to support fisheries across the value chain. Though open access, these should be managed through implementation of community managed access fishing areas. Currently, besides a division of the fishing zone between industrial fishing (fishing for prawn) and the fishing community, they share other fishing zones.

- In the **Seychelles**, most fin-fish species are still open access, although a move towards a rights-based fishery has been initiated and will be phased in.
- **Tanzania** operates all its inshore marine fisheries, except in areas under MPA jurisdiction, on an open access basis, and stresses the reinforced implementation of existing management plans while introducing new ones. Priority is to be placed on the introduction of area specific management plans, in an ecosystem approach to protect habitat.

10. Wealth Management Approach - Fisheries Ability to Achieve Financial Sustainability and generate Resource Rents, including a Sustainable Modernisation and Financing Strategy empowering Small-Scale Fisheries, Fishers and Fish Workers across its Multiple Value Chains

10.1 Creating a Wealth Management Approach

Shifting the emphasis in fisheries management towards a wealth management approach, creates the potential for effective financial sustainability in terms of covering management costs.

A wealth creation strategy is critical to the ongoing sustainable development of SSF across the SWIO region, and must involve in-depth regional and national co-operation, including key developmental stakeholders along the fisheries value chain.

Sustainability:

Small-scale fisheries have primarily been encouraged to meet basic employment and food security needs – the sector has been a safety net for the poor in developing countries. With increasing populations, and migration to the coast being common, greater controls are essential if overfishing and increased poverty are not to set in.

Sustainable strategies for wealth management requires the ability to cover management costs, which can be done from generating resource rents in fisheries.

A lasting modernization and financing strategy could help achieve financial sustainability and generate resource rents, through empowering small-scale fisheries, fishers and fish workers across multiple value chains.

Achieving better catches is only sustainable if the fish stocks are large enough to support it. Management controls that provide specific access rights, with fishing effort managed ultimately on the basis of scientific assessment of the fish stocks, are aimed at achieving maximum sustainable yield. Given that certain SSF stocks are currently overfished, some fishers will have

to find alternative livelihoods, involving possible facilitation through Government programmes focused on optimizing fisheries and overall socio-economic development. Part of this also involves minimizing fish waste due to deterioration because of limited fish preservation infrastructure, which currently is a large problem in small-scale fisheries.

Influencing policy: A key requirement to increase the adoption of economically rational fisheries management, is to convince policymakers to focus on the wealth-generating potential of fish resources. This then provides a general policy framework within which other approaches, such as rights, incentives, and ecosystem-based fisheries management can be effectively applied. This approach is likely to prove more effective in influencing policy, providing flexibility especially in situations where rights-based systems either will not work or are politically unacceptable (Cunningham, S., et. al., 2009).

Economically efficient management systems increase value addition and the sector's contribution to the gross domestic product (GDP) and growth. However, economics currently have relatively little influence on fisheries policy, with this lack of influence particularly notable in developing countries, where effectively managed fish resources as a contribution to the GDP, are most urgently needed.

A wealth creation strategy is critical to the ongoing sustainable development of SSF across the SWIO region, and must involve in-depth regional and national co-operation, including key developmental stakeholders along the fisheries value chain.

Value-addition to a valuable resource such as fisheries has been shown to be a necessity for wealth creation. SWIO partner countries offer the following advice on value-addition and effective utilization of fisheries management money:

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| Comoros | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • need contribution of fishing communities and fishermen, as well as levies and taxes. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • dependent on planned and budgeted annual activities, much of which are currently provided through donor project money • creation of a budget line from the Finance Ministry (annual national budget) • proper management of taxes and levies • government should establish a budget line for CNCSP (that is monitoring, control and surveillance) • raise awareness among the most involved fishing stakeholders • invest in fisheries actions for the benefit of local communities while creating monitoring and control structure system • for effective use of funds in fisheries management, funds must arrive in the Fisheries Department account signed by the Ministry, with rigorous monitoring and with results plan assessed each quarter. |
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| Kenya | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • Requires more study through surveys. • Check catch amount coming in, and how it is being marketed. • Value is often based on “beach value” of fish, whereas more information required along the value chain. • Create career paths along the value chain, which requires infrastructure facilities. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • Engage stakeholders to reduce implementation costs. • Planning should involve resource users and enforcement agencies; this makes it more cost effective. • Involve key stakeholders in the budgeting process so that funds are channelled to proper use. • Project audits and participatory monitoring and evaluation should be encouraged. • Have active stakeholder participation in fisheries management so stakeholders understand how much is available for management and have more realistic idea of possibilities and responsibilities. • Money to be used for the intended activities. • Strengthen co-management structures through the BMUs, increase funding for MCS. • Strengthen national fisheries management fund (Fish Levy Trust Fund, Research and Management Funds) that support implementation of the plan. |
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| Madagascar | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • Create a more participatory approach at local level. • Clear improvement of resources availability in heavily exploited waterbodies already visible. • Economic value of the fishery is preserved, which lead will lead to economically beneficial but demographically sustainable, harvest of desired species. • Offers alternative livelihoods for some local communities (octopus value chain, carbon credit, etc.). • Without effective implementation, no added value observed except environmental destruction and reduction of the resource. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • Focus on local management plans and their effective implementation. • Allocate sufficient and consistent funds for fisheries management. • Involve all stakeholder in the management of fisheries. • Transparency essential. • Small-scale fishers should be represented in the steering committees. • Money collected through fisheries sector fees must be used for management of the fishery. |
| Mauritius | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • The focus has been on the development of a one-stop shop, i.e., the seafood hub which has been successful. The seafood industry is progressing towards becoming one of the pillars of the Mauritian economy. Fisheries do not only play a prominent role in food consumption in Mauritius but also contribute significantly to sustain the economic development of the country through processing fish caught by other countries. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • In capacity building and educating the fishing industry on sustainability and ecological integrity. |

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| Mozambique | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • In past decades the extractive fishing sector contributed more to GDP, but with expansion of aluminium industry and other mineral resources and gas exploration, fisheries decreased to 2% of GDP. • Agreed management rules amongst all stakeholders, resulting in transparency to all. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • Previous plan resulted in reduction of industrial capture in Mozambique and withdrawal of vessels, both resulting in reduction of fish capture and negative impact on income and exports. • Increase in artisanal capture did not bring gains to government, as most fish landings are unreported, and government has no fiscal gain from that production. • Much of production also goes wasted, due to lack of infrastructure to handle and process production. • With establishment of Management Plans, fisheries were ordered to provide maximum benefits without compromising environmental sustainability, and this objective has been achieved over time. |
| Seychelles | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • No Seychelles studies so far conducted in wealth creation strategies, though one scheduled for the Mahe Plateau Trap and Line Fishery Co-management Plan, expected to be completed in 2022. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • Invest more in fisheries research, capacity enhancement and monitoring control and surveillance. • Adopt a performance indicator approach. |

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| Tanzania | <p>Wealth creation and value addition strategies in FMP</p> <ul style="list-style-type: none"> • Wealth creation has been evident in some places, especially the Rumaki-Mafia-Kilwa (RUMAKI) Seascape, including the closure management regime applied in various octopus fishing areas, implying that NGOs' role is crucial for resource management to be effective. • With the prawn fishery plan now operational, fishers benefit by getting prawns for sale, and government through licensing. <p>Advice for effective utilization of fisheries management money</p> <ul style="list-style-type: none"> • MCS take up large costs of fisheries management, and no cost-effective MCS plan in place – therefore, must change the outlook from enforcing in the absence of a MCS plan, to adoption of an MCS management planning process. • Plan in discussion must uphold the interplay between research, compliance and capacity building mechanisms, and must provide for ploughing back part of the resource rent to meet cost of fisheries resource management in fishing communities, by purchasing fuel, maintenance of boats and vehicles for field work for extension services, and enforcement activities. |
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10.2 SWIO Government Spending on Fisheries Management / Plans

Ideally, governments would contribute towards funding of the operational sectors of resource management, research, capacity building and compliance, etc. However, the reality varies:

COMOROS

- Fisheries budget line from government limited, and in a way does not exist.
- All activities done through project money (from donors).
- After the current co-management project is completed, there will be no funds for continued activities.
- No government budget for implementation of management plans.
- Funds are available for salaries of the Directorate's officials, but any money for monitoring, control, and training would be scraped from any recent activity that was financed and accounted for in the state budget.

KENYA

- Allocated in annual budget.
- Blue economy is improving things, but government allocated funding also disappears in emergencies.
- Integrated financial management exists, but procurement processes are generally long.
- Limited funding for implementation: monitoring, capacity building, stock assessment, observer deployments.

KENYA PROGRAMME BASED BUDGET – FISHERIES IN US DOLLARS

| Programme/Financial Year | 2018/19 | 2019/20 | 2020/21 | 2021/22 |
|--|-----------|---------------|--------------|------------|
| Fisheries Policy, Strategy and Capacity Building | 4,414,407 | 405,000 | 1,128,000 | 5,426,337 |
| Management & Development of Capture Fisheries | 4,342,120 | 10,055,224.34 | 7,470,872.76 | 3,432,057 |
| Marine and Fisheries Research | 4,680,000 | 14,981,000 | 20,577,400 | 50,610,000 |

MADAGASCAR

- Budget allocated by the Ministry of Fisheries and Blue Economy to fisheries around 1,300,000 USD p.a.
- Each sector has its own budget (research, compliance, resource management).
- Information on the budget of each sector is not available.

MAURITIUS

- There is a low budget for monitoring, research and capacity building, relying mainly on regional and international fisheries organization funds for major research and capacity building.

MOZAMBIQUE

- Not clear as financial management is not transparent.
- License fees are sent to Finance Department to re-finance sectoral activities including implementation, i.e., monitoring, control, surveillance, co-management.

- No specific fund allocated to fishery sub-sectors, and fisheries operators do not fund government activities.
- No apparent dedicated budget for implementation of management plans.
- Government spending on resource management operations not shared with the fishing communities.

TANZANIA

- No precise data on sharing of resource rent associated with fisheries resource management.
- An important study area in order to inform policy making processes.

SEYCHELLES

- Rough budget of around USD 750,000 – USD 1 million, mostly from government and donor funds.

10.3 Fisheries Stakeholder Funding of Fisheries Management

So, what will it take for fisheries stakeholders to achieve funding for fisheries management?

COMOROS

- Government, through the fisheries Ministry, should take this issue seriously.
- Taxes and levies, and license system – e.g., during opening period and season, tax 1% of harvested product for selling and put money in an account for fisher association – worked well with SWIOFish.
- Should have some activities that generate money, e.g., through contribution of foreigner visitors to Marine Parks.
- Fishermen's associations often claim to have the funds to manage themselves but lack management skills – they require training and support to be ready, as past experience in association management was negative.

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| KENYA | <ul style="list-style-type: none"> • Fish Levy Trust Fund generated from fish farmers, partners and Government, must be ploughed back to fishers and fish farmers: now in law to “operationalise” institutions. • Levy fund should be well managed and effectively ploughed back, through Board of Trustees with representatives to create trust, and semi-autonomously managed fund with Ministry giving guidance- only 15% allocated to admin, including: <ul style="list-style-type: none"> ○ marine fisheries ○ inland fisheries ○ fish processors ○ fish farmers ○ aquatic environment. • Require proper planning after undertaking a baseline survey of the needs of fishing stakeholders to determine their major requirements. • Engage stakeholders in resource mobilization. • Lobby government to set aside sufficient resources for fisheries management. • Consolidate impacts of fisheries management and disseminate widely. • Actively involve non-state actors in resource mobilization. • Capacity building of fishing stakeholders on fundraising. • Information sharing between fishing stakeholders to target fundraising opportunities. • Better understanding of the fishery and stock so that unrealistic expectations are reduced. Sometimes a fishery is just not profitable, then the nation needs to exit the fishery. • This will increase ownership of resources by stakeholders. |
| MADAGASCAR | <ul style="list-style-type: none"> • Implementing effective co-management plan including development of local income generating activities, and improvement of fish trade strategies for communities. • Make returning funds to the Ministry in charge of regulating fisheries more consistent – besides taxes being increased each year on fisheries activities. • Promote private sector engagement. • All stakeholders should be involved and consulted during fisheries management plan development - participatory process must be conducted in a transparent way. • Establish a parafiscal tax for the management of fishery resources. • Political determination. |

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| MAURITIUS | <ul style="list-style-type: none"> The Fishermen Investment Trust constantly aimed at democratizing access to the fishery resources of Mauritius and giving due recognition to the fishing community. The Trust targeted amongst others, artisanal fishermen and banks fishermen, in order to promote the development and diversification of fishing operations. |
| SEYCHELLES | <ul style="list-style-type: none"> Using funds is not an issue, however obtaining funds is the issue: end users of resources should contribute towards their sustainable management. Fair and transparent mechanism must be put in place. |
| MOZAMBIQUE | <ul style="list-style-type: none"> Cost-recovery measures have to be applied, where applicable. A good and well-structured strategy must be in place, based on a strong local authority. Improve availability of information on management costs with all parties involved and have a clear and transparent strategy on the use of funds. |
| TANZANIA | <ul style="list-style-type: none"> Re-organization essential: ensure that fishing communities get clearly defined tenure rights, to reorganize effectively in terms of area specific management plans, including generation of funds, financial management and effective management of resources. Without reorganization, chances for achieving funding are very slim. Advocate for ploughing back at least 20% of revenue generated as resource rent, to be used in management of respective fisheries. Should have legally codified consensus with regard to percentage of resource rent to be ploughed back for fisheries management and support of sustainable livelihoods. |

10.4 SSF Sustainable Modernisation and Financing Strategy

When fishing operations show profit, the country benefits through taxes. Therefore, for profits to increase, fishers' efficiency should improve so they can pay resource rents and finance resource management. For this, an SSF modernisation strategy is useful – such as that developed by the FAO (table below) to categorise SSF from an individual to a corporate business in terms of commercial modernization, including the vessel and its:

- fishing gear
- operational capability
- fish storage ability

- crewing organisation
- use of the catch through to end market requirement, along the value chain
- assessment of integration into the economy and management system.

Formal integration occurs when the fisher is licensed and can pay a catch landing fee and capture resource rent to help finance effective fisheries management.

| Fishing factors | Characteristics | Scoring values | | | |
|------------------------|--|---|---|---|--|
| | | 0 | 1 | 2 | 3 |
| Indicative gears | Fishing gear | Labour intensive gear | Passive gear | Gear with aggregating devices | Highly active gear |
| | mechanization | No mechanization | Small power winch/hauler powered off engine | Independently powered gear deployment/hauling | Fully mechanized gear deployment & hauling |
| Vessel | Size of fishing vessel | No vessel | <12m, <10GT | 24m, <50GT | >24m, >50GT |
| | Motorization | No engine | Outboard engine/inboard engine ≤100hp | inboard engine <400hp | inboard >400hp |
| Operations | Daily trip / multi-day | < 6 hours | day trip (< 24 hours) | < 4 days | > 4 days |
| | Fishing grounds / zone / distance from shore | < 100 m from shoreline/baseline/high-water mark | < 10 km from shoreline | < 20 km | > 20 km from shoreline/baselines |
| Storage / Preservation | Refrigeration / storage | No storage | Ice box (i.e., on deck) | Ice hold (i.e., below deck) | Refrigerated hold |

| Employment / Labour | Labour / crew | Individual and/or family members | Cooperative group | ≤ 2 paid crew | > 2 paid crew |
|---------------------|---|--|---|---|---|
| | Ownership | Owner / operator | Leased arrangement | Owner | Corporate business |
| | Time commitment | Occasional | Full-time, but seasonal | Part-time all year | Full-time |
| Use of catch | Disposal of catch | Household consumption / barter (exchange for payment in goods or services) | Local direct sale at landing site (exchange for monetary payment) | Sale to traders | Onboard processing and/or delivery to processors |
| | Utilization of catch, value adding / preservation | For direct human consumption | Chilled/locally processed/cur ed | Frozen | Frozen/chilled for factory processing (for human consumption or fishmeal) |
| | Integration into economy and/or management system | Informal not integrated (no fees required) | Integrated (registered, un-taxed) | Formal, integrated (licensed fisher, payment of landing fees) | Formal, integrated (licensed, taxed) |

Table on FAO small-scale fisheries commercial modernisation categorisation: characteristics and scoring values defined in the matrix.

Financial/modernization strategies that are under development for the small-scale sector, to empower fishers and fish workers across multiple value chains, include:

Comoros

- Training, though time consuming, to empower associations: monitoring; accounting; fundraising etc.
- Donor funding for projects to continue because government unable to take care of this.

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| Kenya | <ul style="list-style-type: none"> • Maritime institutions train fishers to transition from artisanal to semi-industrial. • Piloting modern boats for investors, aiming at “transition”. • Provision of modern fishing equipment to empower fishers go into the deep sea. • Infrastructure development to reduce post-harvest losses. • Fishers training on value addition and good marketing strategies. • Provision of fishing gear and equipment. • Mobile apps for information sharing. • Infrastructure for cold storage and mobility. • By registering as members of Beach Management Units (BMUs). • Operationalization of Fish Levy Trust Fund for sustainable funding mechanism. |
| Madagascar | <ul style="list-style-type: none"> • Access to finance grants, savings, and loans • The Village Savings and Loan Association (VSLA) model • High reliance on Internationally funded projects or NGOs, to empower small-scale fisheries all along the value chains. • Capacity development and professionalization. |
| Mauritius | <ul style="list-style-type: none"> • Training is provided to artisanal fishermen at the Fisheries Training and Extension Centre (among subjects taught fish handling, preservation and marketing, small business development, safety and security at sea, first aid, maintenance of boat and motors, fish cage culture project, use of sails). In addition, fishermen attending such courses are paid a daily stipend. • Demonstration of new fishing techniques on board research vessels e.g., use of collapsible traps and longline fishing techniques are carried out. Other training programmes include: <ul style="list-style-type: none"> • Training of skippers/mechanics (boats of less than 24m length). • “General course for Fisher” for aspiring fishermen. Provide the basic knowledge and skills to operate safely and efficiently in the outer lagoon fishery. • The Fish Aggregating Devices (FADs) Training Course dispensed to artisanal fishermen with the aim to relocate them from the heavily fished lagoon areas, into the open sea targeting pelagic species where catch rates are higher. The fishermen are provided with the knowledge and skills to fish around FADs safely and efficiently. |

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| Seychelles | <ul style="list-style-type: none"> • Funds for sectoral support under the Sustainable Fisheries Partnership Agreement with EU. • Donor funds (grants) for soft loans for investment in better fishing vessels to target more distant fishing grounds and to relieve pressure on coastal resources. |
| Tanzania | <ul style="list-style-type: none"> • Focus on introduction and strengthening of microcredit schemes, especially the Village Community Bank model coupled with capacity building efforts by using Community-Based Trainers as change agents. • Trained and employed over 700 fisheries extension officers for fisheries administration in different districts for management and capacity building. • Ongoing efforts towards formation of cooperatives for linking small holders to rewarding markets. • Occasional subsidies such as waiving import duties on fishing gears and other inputs. • Supply of subsidized inputs such as outboard engines and small cold storage facilities. • Industrial-scale fishing in inshore waters is restricted, with the exception of a small fleet of shrimp trawlers - a policy intervention to protect small holders from being excluded. • Tanzania Agriculture Development Bank provides to small-scale fishers by providing loans to those meeting set requirements. • Government encourages fishers to form cooperatives for recognition by banks to obtain loans. |

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| Mozambique | <ul style="list-style-type: none"> • Strategic thinking; good policy; identifying costs for management; stakeholder mobilization. Support for fishers, fish buyers, saving clubs and value chain players to identify value addition opportunities, and supporting them in developing business plans. • Seed money from stakeholders complemented by donor funding. • Small-scale fishing development projects (Artisanal Fisheries Project in the Sofala Bank, Propesca, PPNACD, etc.) aiming to improve livelihood conditions for artisanal fishing communities: better health, education and drinking water supply. • Practice of fishing activities based on traditional fishing gears and methods. • Expansion of networks for the sale of fishery products. • Some pilot projects supported by ProBlue. • Transfer of competence is required. • Several strategies e.g., REPMAR bring innovations for empowerment of communities, including establishment of APGC; return of 15% of fishing license fees to artisanal fishermen; accreditation of community members to support inspections. |
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Suggestions for achieving a Marine Small-scale Sustainable and Inclusive Rehabilitation Strategy:

SWIO partners ask for improved stakeholder empowerment through district Integrated Coastal Management Working Groups, to address current challenges of limited engagement, high dependence on donor funding, and enablement in the small-scale fishery sector.

The following main strategies have been identified for modernization of the small-scale fisheries sector:

- information research
 - promote and support FAO SSF guidelines implementation
- promote regional co-operation improved surveillance and control
- capacity building, including financial and technical support
- more (public, private) stakeholder engagement and capacity for ownership: e.g. involvement in EAF, rights-based management and co-management approaches
- involvement of all stakeholders from strategy to its implementation
- tools to maintain small-scale marine fisheries, e.g., marine parks; Community Conservation Areas / Plans e.g., breeding grounds
- development of various fishery management plans to guide resource exploitation
- involvement of all key stakeholders in design and implementation of the strategy
- securement of funding

- capacity building of the target communities, and direct support to fishers
- capacity building for BMUs to strengthen their participation in co-management
- opening of new markets
- stakeholder participation and involvement
- free, prior and informed consent
- establishment of fisheries co-management areas and of Locally Managed Marine Areas
- establishment of joint monitoring, control and surveillance (MCS)
- training on monitoring, MCS, data collection and analysis.
- review or updating of stock status for target species/fishery to review the management plans.
- agreement on fisheries goals and a specific strategy to achieve adopted fisheries goals
- consultation with stakeholders around strategy to achieve fisheries goals
- participatory development of Area Specific Management Plans
- ecosystem-based zoning
- Mozambique requests community managed fishing access areas
- strengthening of fisher-based organizations to enable sustainable and inclusive rehabilitation strategy for small-scale marine fisheries, starting with profiling of fishers for effective proportional representation so as to ensure inclusiveness in policy making, planning and implementation of resource management plans
- operationalization of management plans
- monitoring and evaluation of strategy implementation, in partnership with stakeholders
- regular reports to governments and stakeholders, re condition of fisheries
- recognition and empowerment of small-scale artisanal fishers, fish farmers and fish workers' responsible
- paradigm shift where required: change of attitude of some fishers effected through sensitization/extension services.

10.5 Requirements to Facilitate the SSF Sector properly entering the Commercial Private Sector

In order to properly enter the commercial private sector, small-scale fishers would have to put in place a few measures, such as:

Comoros: a progressive plan, over 30 years. And to have points of sale for product, or regional or international bilateral cooperation.

Kenya: Closing of gaps to build capacity building and move to semi-industrial fishing. Nationals have licenses but use Chinese vessels. Also:

- They should form cooperative societies to enable bargaining for recognition and access loans and incentives.
- Invest in training on management and financial literacy.
- Invest in gears and vessels to venture into offshore fisheries.
- Value addition and quality control.
- All these should be done after evaluation of the stocks to ensure fishing intensification does not lead to fisheries collapse.
- Strengthen BMUs membership.
- Trained on Small and Medium Enterprises.

Madagascar : Better organization through the co-management approach:

- improved quality of fish products from capture through post-capture activities
- improvement of commercialization strategy among co-management associations
- formal registration with the Ministries of Fisheries and of Commerce
- legally created structure (co-op), allowing fishers to structure at all levels (local, national and regional)
- training on value chain & transformation, sea safety, business, seafood safety, sanitation
- promotion of collectors who work in isolated areas with small-scale fishers
- well-organized structure at each link of the value chain
- socio-economic research including business cost study, study of family needs (health, retirement, children's education)
- renewal of fishing equipment.

Mauritius : • Cooperatives.

Mozambique: • Reduce post-harvest losses

- improve productivity of fishing gear
- reduce fishing effort on some species
- invest in businesses as cooperatives
- enable fishing communities to be professionally managed
- provide points of sale for product or have regional /international bilateral cooperation.

Tanzania: • Re-organization by small-scale fishers to commercialise their enterprises

- negotiating as united group, through strong Fisher-Based Organizations (FBOs) with government agencies, local and international traders for marketing linkages, and potential financiers.

Seychelles: • They need reliable sources of finance.

10.6 Achieving a win-win for national governments and the fishing industry

SWIO countries had these ideas on leveraging a winning platform for both government and industry:

- Very important, but we don't currently have it. – Comoros

Encourage better dialogue, invest in economic empowerment of fishermen, tax them without jeopardizing the income base. Create awareness and build capacity of relevant stakeholders, including of national authorities to negotiate agreements for national benefits – and be more transparent in fisheries agreements. Support fisheries management for improved production and attract direct and indirect employment.

– Kenya

- Implement co-management dialogue, engaging all stakeholders at the national level (government and fishing industry) on taxes, corporate social responsibility, employment, capacity building. There should be transparency every step of the way. Be aware that countries in the region have disparate levels of development and advance differently according to the political will. Basic infrastructures are absent for some (roads, hospitals, schools) and quality of work delivered is also inconsistent. – Madagascar

- Lots of investment facilities, tax rebates, infrastructural, port, airline facilities are provided to fishing industries facilitating job creation, income through exports, CSR – companies should reinvest 2% of their financial book profit towards societal development. – Mauritius

- Promote in-person engagement with fishers and other stakeholders. Implement a sustainable development programme. Fishery policy should be consistent, and fishery enterprises should be supported. – Mozambique

- Promote responsible fisheries resource management and sustainable livelihoods. Introduce collaborative fisheries management plans, orientating around sustainable livelihoods for economic, profit motive (for the fishing industry) and

ensuring fair representation and legitimacy of management plans. Diversify to alternative sources of livelihoods to deal with overcapacity and rapid population growth in coastal communities. – Tanzania

- Improve transparency. – Seychelles

10.7 Strengthening value chain to reduce post-harvest losses

Root causes of major post-harvest losses should be recognized and addressed, as they represent unnecessary waste, some of which is very significant, threatening fisheries sustainability and income. SWIO country stakeholder respondents identified losses as mostly due to lack of infrastructures, training and capacity, in three main categories:

- Lack of processing inputs, infrastructure & technology:
 - scattered fish landing sites away from vessel offloading points, washing stations and ice
 - lack of ice, lack of clean water, and lack of electricity in remote places
 - poor road networks
 - poor accommodation conditions on board fishing vessels
 - lack of storage facilities & post-harvest infrastructure
 - limited finances
 - generally, a high reliance on fresh fish on ice with limited cold storage freezing capacity.
 - Kenya specifies the need for open air boats, and cooperatives - which in the past collapsed and need reviving
 - Kenya is now investing in ice-making machines at landing sites and markets e.g., a complex in Mombasa
 - Tanzania specifies a need for technology to preserve and store fish, and for drying anchovy during the rainy season.
- Social issues & Training:
 - use of non-selective fishing gears or gears targeting juveniles, negatively impacts on landings and price
 - inappropriate techniques for storage, transport, and transformation of fish
 - poor fish handling practices, including hygiene
 - Weak technical capacity and knowledge for post-harvest activities (women), e.g., for fish processing

- social issues among women e.g., mobility and low level of education
- lack of training.
- Economical:
 - insufficient market access
 - poor market linkages and support
 - unfavorable marketing environment
 - poor packaging
 - inadequate market infrastructure
 - inadequate capital to access high value markets e.g., hotels
 - unaffordable electricity bills
 - bulk production of e.g., small pelagic (sardines) – without adequate storage facilities or sales planning, leads to oversupply of the market, and low profit compared to tuna or Nile perch with ready markets through fish processing industries.

11. Chart of National Priority and Transboundary Fisheries most effectively manageable through Bilateral/ Regional Cooperation

Most SWIO partner countries share prevalent resource species / areas with bordering countries and already have a level of co-operation with them. Below **chart** shows national and transboundary fisheries that could potentially be effectively managed through Bilateral/Regional Cooperation, with SWIO countries have specific conditions, as follows:

| Species | Partner countries | Conditions for cooperation |
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| <p>Tuna and tuna like</p> <p>Octopus</p> <p>Sea cucumber</p> <p>Lobster fisheries</p> | <p>Comoros</p> | <p>Need regional or international buyers for octopus, sea cucumber and lobster products.</p> <p>Bilateral cooperation with foreign nation / company for export and sale of seafood.</p> <p>Stakeholders should be surveyed for a more comprehensive list of fish species.</p> |
| <p>Large pelagic (tuna, bill fishes)</p> <p>Medium pelagic (Carangids - trevally, threadfin, amberjack, rainbow runner)</p> <p>Small tunas & bonitos</p> <p>Lobster</p> <p>Prawns</p> <p>Sea Cucumber</p> <p>Octopus</p> <p>Crabs</p> <p>Sharks and rays</p> <p>Aquarium fish</p> | <p>Kenya</p> | <p>Now developing bilateral MOU with Tanzania, and work at the regional level.</p> <p>Pelagics: can be co-managed through bilateral cooperation, agreements and memoranda of understanding between the neighbouring countries.</p> <p>Small pelagics e.g., sardines between south coast Kenya and north coast Tanzania through establishment of a proposed Transboundary Conservation Area between Kenya and Tanzania.</p> <p>Sea cucumber and octopus work, through advocating for closures.</p> <p>Crabs through cage culture.</p> <p>Sharks and rays, tuna, billfish and sailfish, aquarium fisheries, through establishing transboundary conservation areas.</p> |

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| <p>Particularly:</p> <p>Shallow water shrimp</p> <p>Sea cucumber</p> <p>Octopus</p> <p>Migratory species, e.g., tuna</p> | Madagascar | <p>Potentially all fisheries through consideration of the interests of all stakeholders (direct and indirect).</p> <p>Through reinforcement of collaboration among coastal countries in the region</p> <p>Aspects of data collection & processing, sharing of best practice and lessons learnt in fisheries management.</p> <p>Exchange and sharing of technical expertise to improve fisheries management.</p> <p>Exchange of information on number of licenses issued, catch per unit effort, detail of catches.</p> <p>Addressing IUU fishing.</p> <p>SWIO countries giving access to foreign fleets through agreement to fish transboundary fisheries, particularly tuna.</p> <p>Transboundary seascapes e.g., North Mozambique Channel seascape need regional collaboration.</p> <p>Regional governance and management for tuna.</p> <p>For other species, generally want to keep species management under control of national government and local partners, although they could be managed by bilateral or regional co-operation, but with clear transparency on management and governance.</p> <p>Want to avoid threats to SWIO country fishers and their fishing activities.</p> |
| Tuna and tuna-like species | Mauritius | <p>Under the IOTC the tuna fisheries are effectively managed despite being a migratory species, as a result of a consultative and collaborative approach. The tuna fishing and processing industry are effective and efficient since international management measures and export requirements were effectively applied.</p> |
| Tuna and tuna-like species | Seychelles | <p>managed by Indian Ocean Tuna Commission (IOTC)</p> |

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| Octopus Tuna | Mozambique | <p>Transboundary fisheries: through regional level.</p> <p>Tuna can be managed through regional and bilateral cooperation, in particular with Madagascar and Comoros, through joint management schemes.</p> <p>Octopus fishery in the northern province of Cabo Delgado, might have interactions in the border with the United Republic of Tanzania. WWF have already initiated an exercise of adopting management measures for this fishery</p> |
| Octopus Shrimp Sea cucumber Sharks and rays Small-pelagic fish Tuna and tuna-like fish | Tanzania | <p>Requires good bilateral or regional collaboration in managing high-value species, also occurring in other countries in the region.</p> <p>Effective sharing of experience and management strategies</p> <p>E.g., successful closure of octopus fishery has triggered intervention across the SWIO region.</p> <p>Recognition of exported fishery products to international markets is by country and zones – mishaps affect branding of products, thus need for bilateral or regional cooperation.</p> <p>Regional collaboration needed for trans-boundary stocks, e.g., tuna and tuna-like species</p> <p>Transboundary stocks of octopus in Mtwara Tanzania and Cabo Delgado in Mozambique; prawns off Tanga, Tanzania and Mombasa in Kenya, require joint resource management efforts / strategies to help ensure sustainability.</p> <p>Sea cucumber regional trade has damaged resource sustainability, e.g., in mainland Tanzania, government-imposed moratorium on sea cucumber fishing, though ongoing in Zanzibar. Urgent need for bilateral or regional joint efforts toward rational management and trade of sea cucumber.</p> |

12. Regional Fisheries Management Bodies Assistance

Across SWIO countries there are several **common management issues** in marine small-scale fisheries that can be tackled and regulated by regional fisheries bodies.

The South-West Indian Ocean Fisheries Commission (SWIOFC) has a Scientific Committee and recently approved setting up of a Socio-economic Committee where Ecofish can provide input.

Indian Ocean Tuna Commission (IOTC) purely covers migratory species in the high seas and SWIO country EEZs. IOTC rules are legally binding in terms of MCS. Of IOTC total catch, about 50% is by SSF. There are challenges of implementation and reporting by the SSF sector - while IOTC cannot monitor SSF, SWIO governments must do what is required.

Good catch data is obtained from industrial fishing fleets, but data from the small-scale sector is poor. Mandatory IOTC requirements are in place and the IOTC is constantly engaged in monitoring and providing assistance. With advances in technology, electronic monitoring is required and the SSF sector is gradually being included in this. IOTC identifies individual capacity of members and provide training, including new techniques on conservation and management measures. There are over 50 Conservation and Management Measures, including a working committee on data and statistics.

The Southern Indian Ocean Fisheries Agreement (SIOFA), works to develop fisheries and protect the ecosystem, and is operational in high seas, covering demersal (not migratory) species. The Scientific Committee, with funding from Australia and the EU, has good data on resources in the region. Catching oil fish is a developing opportunity. SIOFA vessels landing their fish into SWIO harbours also create positive socio-economic benefits. SIOFA involves contracting parties e.g., Mauritius and Seychelles, and non-contracting parties e.g., Comoros, supporting least developed parties and small island developing states. SWIO countries including Madagascar, Tanzania, Mozambique and Kenya are encouraged to join. Countries that are currently developing their harbours and fleets might benefit from the quite active SIOFA Scientific Committee. Non-contracting parties do not have decision-making powers in meetings, but benefit from outputs of the scientific committee, including SIOFA species data management and advice. Comoros as a non-contracting party catch snapper-like species on the banks north of Mauritius, and SIOFA manages catch effort and biological data under strict confidentiality rules.

To the **Comoros**, the most helpful would be sharing IUU fishing vessel data in the region through collaboration (for example: PRSP). Also, data collection and stock assessment, and general sharing of information with one another.

Kenya's prawn management plan has been successful, but Kenya requires more knowledge exchange between countries and local communities, to tackle common and overlapping problems such as:

- Illegal, unreported and unregulated fishing.
- Transboundary regulations.
- Monitoring, surveillance and enforcement.
- Migrant fishing.
- Open access nature.
- Overfishing in one nation and exporting to another e.g., sea cucumbers and shark fins.
- Gear size, gear type and restrictions to curb illegal/destructive fishing gears.
- Licenses to limit entry.
- Temporary closures of some areas for specific purpose (e.g., spawning aggregations).
- Stakeholder involvement.
- Buy-in from fishers.
- Funding for implementing plans.

Mauritius needs assistance with development of its fisheries information system, including providing technical assistance in improving small-scale fisheries management.

Madagascar asks for collaborative focus on combating resources over-exploitation and destruction of the coastal and marine ecosystem on which fisheries productivity depends. It needs help in implementation of fisheries management plans, where lack of funds and problems with disbursement procedure hamper implementation of planned activities. It would support activities aimed at moving away from open access, promote respect for fishing closures, tackle IUU fishing, regulate fishing areas and fishing gear, and focus on developing good markets and marketing.

Several challenges have already been identified by **Mozambique's** SWIOFC Scientific Committee, such as management of sea cucumber, octopus, shallow water shrimp, small pelagic and a demersal working group. However, as an advisory body, SWIOFC prioritizes information and knowledge sharing, but not regulations. Fishing rights; management measures including regulations; fish markets; incentives /subsidies; and improving communication connections between stakeholders are also important issues.

Tanzania would appreciate tackling of common management issues across SWIO countries including collection of data and information flow systems, and strengthening of fisheries monitoring, control and surveillance (MCS). It is further concerned about illegal fishing gears and harvesting and processing of undersized fish. Also, institutionalization and operationalization of management plans, cost-effective MCS Plans, and financing mechanisms for resource management.

Seychelles is concerned about limited resources and capacity for research and MCS, as well as stakeholder lack of empowerment, resulting in limited engagement.

SWIO partners also envisaged the positive impacts that the introduction of a Regional Plan for Fisheries Surveillance could have for coastal fisheries:

- Regional plan for fisheries surveillance essential to fight IUU fishing with regional cooperation - would reduce loss from fish capture considerably.
- Important to facilitate coordination of MCS activities, particularly in the EEZs of member countries in the IO, for bilateral/regional collaboration leading to reduction and control of illegal fishing.
- Collaboration among fisheries inspectors, and co-operation between countries, e.g., monitoring of fishing vessels.
- Deployment of fishing patrols to fight IUU fishing and surveillance and patrolling of the EEZ.
- Standard operating procedures for surveillance: regional surveillance plan for better fisheries inspection.
- Strengthening MCS Training and Operation for security in distant areas where illegal fishing occurs.
- Successful Regional Coastal Surveillance Plan depends on efficiency at national level - requires effective national capacity, followed by roll-out for the region.
- Assistance in implementation of regulations and laws, and licensing control.
- Need for money to realize positive impacts.
- Better protection for highly migratory and sedentary fish species; improved conservation efforts
increased sustainability of fish stocks.
- Reduced inter-country conflicts on shared stocks resource utilization.
- More reliable and transparent data on fishing in national waters.
- Harmonized approach to addressing trans-boundary fisheries management challenges and information sharing.
- Cost reduction, technical and technological exchanges, exchanges of reliable information.

12.1 SWIO Countries Building Co-operative Synergies

SWIO countries have already been building complementary and subsidiary relationships, and have achieved some synergies in the region, as is evident in key fisheries management achievements and **programmes in progress**:

- The **Comoros** encourages co-management at the national level, while promoting regional collaboration, e.g., Regional Plan for Control and Surveillance (PRSP) as very important to support.
- **Kenya's** transboundary tuna strategies guide the exploitation of tuna. Good fisheries co-management areas and plans have been formulated and financed, and enhance

discussions on management of shared stocks and regional integration, e.g., Kenya-Tanzania transboundary conservation area. Improved fisheries regulation compliance and data collection are also achievements.

- **Madagascar** already has the TGRH, TGRN and PAP guide in place, and invites a comparison of results of the SWIOFC, IOC and IOTC programmes, SWIOFish (The World Bank), and the Nansen-Programme (FAO). Coastal fisheries management plans are in process for all coastal regions and the "Plan Directeur de la Pêche et de l'Aquaculture", policy plan has been developed – a collaboration between Fisheries and Aquaculture.
- In **Mozambique**, the SWIOFC - Nairobi Convention Partnership Project aims to address areas of common concern for fisheries and environment, with mutual reinforcement interventions and targeting small scale fisheries. SWIOFC also works on MCS activities through its guidelines.
- **Tanzania** lists as major achievement the non-decline of fish production in the past four decades, indicating effective fisheries resource management, through actions such as:
 - Establishment of Beach Management Units (BMUs) in most fishing villages, with fishers involved.
 - although improved institutional capacity of the BMUs is needed
 - Joint Fisheries Management Areas (CFMA), and steps for Integrated Coastal Zone Management
 - high-value fisheries (e.g., prawn and octopus) are closely managed with management planning; setting rules and regulations; data and information flow; MCS - and most importantly, the BMUs
 - introduction of a closure regime on certain reef fisheries to enable collaborating stakeholders to internalize benefits of responsible fisheries management
 - effective management has led to improved stock profiling of prawns / shrimp and lifting of a semi-industrial prawn fishing ban with small-scale and semi-industrial prawn fishers adhering to the FMP
 - a policy of restricting primary fishing activities of small-scale fishing practices has helped curb overcapacity and overfishing, benefiting small-scale fishers
 - coordinated management efforts at national, local and village government levels, and collaboration with regional programmes (e.g., SmartFish) have enabled eradication of dynamite fishing in coastal fisheries, thus helping to protect coral reefs and species diversity
 - incorporating communities/stakeholders in fisheries data collection using mobile phones
 - community involvement and awareness in plan implementation (school environmental education/environmental Clubs) especially in Marine Parks

- Civil Society Organizations (CSOs) and NGOs improved service delivery in fishing communities
 - tuna management collaboration in the IO region (regional).
- **Seychelles** advises building capacities at regional and national level, rather than heavy reliance on external consultants.

13. Ecosystem Approach to Fisheries and Creating an Enabling Environment following the UNEP-Nairobi Convention, UN Agenda 2030, Transforming Africa 2063, and the Blue Economy Paradigm of Economic Efficiency, Social Justice and Environmental Integrity

13.1 Using an Ecosystem Approach to Fisheries to create an enabling environment

SWIO countries have access to instruments such as the UNEP-Nairobi Convention, UN Agenda 2030, Transforming Africa 2063, and the Blue Economy Paradigm to help shape an enabling environment based on economic efficiency, social justice and environmental integrity. To what extent are SWIO governments **moving towards rights-based/ecosystem-based management**, to secure sustainable access for small-scale and artisanal fishers? They also list any **other enabling fisheries management architecture required**:

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| Comoros: | <p>At national policy and legal level, updated policies will have to consider the environment, biodiversity loss, and Blue Economy approach. A pilot project is suggested at operational management, research and compliance level; while at governance level, capacity building and training, sharing and collaboration.</p> <p>Rights/ecosystem-based: Not yet in place but should reinforce the CNCSP for effective implementation of of regulations. Other: Co-management, better control and surveillance (evaluation activities).</p> |
| Madagascar | <p>Ensure local fishers rights are respected: Build and enhance inter-sectorial policy dialogue for stakeholders on application and implementation, understanding the different interactions.</p> <p>Rights/ecosystem-based: Right-based management is progressing. A major step was proclaiming 2-nautical miles-EEZ for small-scale fishing. SWIOFish 2 Project plans to incorporate small-scale fisheries management plan in all coastal regions of Madagascar. Locally Managed Marine Areas (LMMA) and Marine Protected Areas (MPAs) are in place; and PAP Fisheries Management Plan is ecosystem-based and rights-based.</p> <p>Other: Core model of Blue Ventures NGO includes securing fishers' right to fisheries; community fisheries management; finance - grants, saving and loans; better financial return on fishing. Also required are marine spatial planning; collection of basic data (quantity per species) per fisherman in an area; and climate change mitigation. Need an instrument to measure effectiveness of fisheries management.</p> |
| Mauritius | <p>Through a consultative and collaborative approach, by creating awareness on a balance between resource exploitation and ecological importance. Having all the conventions, policy papers will not be positively impacting, unless people at top level understand the essence, and transform the recommendations into actions.</p> <p>Most of the anthropogenic-induced impacts are gradually being addressed at the national level through Environmental Impact Assessment, inter-ministerial committees, policies, regulations and sensitisation campaigns. Since the 1990's, in order to reduce fishing pressure in the lagoon, the Government has progressively formulated, reviewed and executed several strategies like the proclamation and management of marine protected areas, promoting Fish Aggregating Devices, closed seasons for net and octopus' fisheries. Sensitisation and capacity building of coastal communities in maintenance of coral nurseries and coral plantation, are being promoted for a potential workforce in the reef restoration, protection and conservation programme.</p> |
| Mozambique | <p>Participation and engagement of all stakeholders relevant for fisheries management a key principle of EAF approach. International and regional policy</p> |

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| | <p>instruments, e.g., SDGs and Agenda 2063, provide guidance and show commitment of Governments to work together to achieve goals, which the EAF can help achieve.</p> <p>Rights/ecosystem-based: Recently adopted Maritime Fisheries Regulations (REPMAR) brings innovation for improving management. Community management of fisheries areas were established by law and ensures involvement and participations of all stakeholders.</p> <p>Other: Fisheries management does not succeed with beautiful policy and strategy documents but implemented on the ground with good practices and strong, participatory and empowered fishing authority, applying fisheries extension programs.</p> |
| Kenya | <p>Consider non-state actors as key in implementing government policies and provide funding,</p> <p>e.g., Ocean Decade of Marine Science.</p> <p>Investing in coastal ecosystem restoration of poorly managed ecosystem.</p> <p>Reduced land to sea pollution, reduced sea-based pollution.</p> <p>Rights/ecosystem-based: Regulations are being implemented to uplift the small-scale sector, by introducing rights-based fisheries management and capacity building, and moving away from foreign domination of commercial fishing industry. Government in consultation with stakeholders are developing Marine Access Rights Regulations intended to promote rights-based access and sustainable utilization of fisheries resources, including through advocating an ecosystem approach to small scale fishery in establishing devolved management frameworks (e.g., BMUs with co-management plans to be endorsed and supported with financing to ensure monitoring and other management activities. Stakeholders should strategize to create an enabling environment to maintain sustainable fish stocks, good fishing methods, and safeguard fish breeding through diversification of fisher community livelihoods, marine protected areas, enclosures and mangrove restoration practices.</p> |
| Tanzania | <p>Should be coordinated at regional level, focusing on establishment of proper network for information sharing and utilization of available opportunities in member countries. Include joint working groups for each major thematic area. Develop collaborative regional projects to enhance sharing of knowledge and skills, while enabling learning from each other.</p> <p>Rights/ecosystem based: Efforts are being made towards ecosystem-based management, including through Integrated Coastal Resource Management (ICRM) and establishment of Collaborative Fisheries Management Areas (CFMAs) for improved resource use.</p> |

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| | Other: Establishment of a Fisheries Management Fund to meet costs of resource management would improve implementation of resource management plans – should go concurrently with solid data and information flow system, legitimate rules and regulations, and cost-effective Monitoring, Control and Surveillance (MCS) system. |
| Seychelles | <p>An enabling environment for greater stakeholder engagement, and a sustainable financing mechanism should be developed and implemented.</p> <p>Rights/ecosystem based: An ecosystem-based approach to fisheries management already exists, and right-based fisheries management will be implemented in a phased approach.</p> |

13.2 UNEP Nairobi Convention – Climate Change and Biodiversity Loss

Environmental targets are the focus of organisations such as the UNEP Nairobi Convention, covering **climate change and bio-diversity loss**. They receive recognition to some extent, in SWIO countries:

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| Comoros | Recognition of international environmental targets |
| | <ul style="list-style-type: none"> • No environmental consideration in co-management plans – e.g., of climate change and biodiversity loss • High consideration for Marine Parks • Much effort needed for effective environmental management. |

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| Kenya | <ul style="list-style-type: none"> Kenya Marine and Fisheries Research Institute focuses on mangrove rehabilitation: villages get US\$2,000 /month to invest for benefit of conservation. Highly focused, but limited understanding of reality of biodiversity loss and climate change by fisher and other key community stakeholders - need for regional and local programs to benefit fisher communities. Insufficient focus on environment targets, besides protection of critical habitats such as coral reefs, mangroves and seagrasses. Across the region less than 8% of coastal and marine areas are protected. However, studies have shown areas e.g., TBCA between Kenya and Tanzania, and between northern Tanzania and Southern Mozambique are climate refugia and recommended for protection. Beach erosion becoming a problem in Kipini and Ngomeni north coast of Kenya, with little intervention. |
| Madagascar | <ul style="list-style-type: none"> Depends on where funding is applied. Need local Climate Adaptation and restoration plans for degraded and critical areas. UNEP Nairobi Convention and recent WIO SAP as yet little impact and recognition in the fishery sector. Ministry of Fisheries promotes preservation of marine resources but lacks clear implementation plan. Ministry of Environment policy for sustainable development focus more on preservation of biodiversity. Recommend inclusion in basic education programme of conservation of biodiversity, restoration of mangroves, and prohibitions related to use of natural wood (charcoal, construction, etc.). |
| Mauritius | <ul style="list-style-type: none"> The main objective of the Climate Change Act 2020 is to mitigate and address the adverse effects of climate change and developing Mauritius into a greener economy, whilst respecting the obligations of Mauritius under the United Nations Framework Convention on Climate Change, the Kyoto Protocol, the Paris Agreement and any other related conventions. |
| Mozambique | <ul style="list-style-type: none"> Shown commitment to rehabilitation of critical habitats by Government and civil society for restoration of mangrove forests along the coastline. Habitat conservation and restoration: no-take reserves and other MPAs are being planned (including a mangrove strategy and other initiatives). |

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| Tanzania | <ul style="list-style-type: none"> • Mitigation of climate change and biodiversity now a major government concern. • President of Tanzania speech at COP26 (2021 United Nations Climate Change Conference) shows determination to participate in global initiatives on environmental protection and climate change – efforts aimed at fulfilling global environmental targets and national objectives include: <ul style="list-style-type: none"> ◦ government training for more marine and fisheries scientists, to build capacity of institutions responsible for training and research. ◦ purpose - to improve data and information flow systems for improved ocean health, and enhancement of marine biodiversity. ◦ Government has banned importation and use of plastic bags to reduce waste generation and promotes use of recyclable materials. |
| Seychelles | <ul style="list-style-type: none"> • Will be accepted if provides alternative livelihood to address overcapacity in the fisheries sector. |

13.3 Blue Economy - Potential benefits for SWIO Countries

The Blue Economy regime promotes sustainable development targets of economic efficiency, social justice and environmental integrity. SWIO country stakeholders are both hesitant and hopeful that their fisheries sectors will also benefit:

- Blue Economy is an attractive concept for WIO nations and they see potential for national development, so that some have started marine spatial planning (MSP) - an inclusive planning approach supposed to allow all relevant stakeholders adequate involvement.
- The Ministry of Fisheries (Madagascar) has integrated the Blue Economy in its structure, now being the Ministry of Fisheries and Blue Economy, though the policy is not yet clear, and stakeholders are uncertain how it could benefit the fisheries sector.
- Blue Economy principles would help prevent activities that erode sustainable development.
- Communities participating will commit to rehabilitation of coral reefs and actions to stop destructive fishing practices and promote the 3 elements of economic efficiency, social justice and environmental integrity.
- There is need for awareness raising initiatives on the new concept of Blue Economy (BE), although the campaign is gaining momentum, with sectors of gas and oil exploration; marine transportation; tourism; mining; energy; and biotechnology; exerting much pressure on the fisheries sector.
- May provide alternative livelihood to address overcapacity in the fisheries sector.

- There is an urgent need for involving the fishing industry more among policy makers.
- It has potential to benefit the fisheries sector, but so far, the common fisherman and the natural environment are yet to experience those intended benefits.
- For now, the blue economy is just a slogan, there is no yet concrete recognition of benefits.
- It is too early to assess the benefits of a Blue Economy Strategy for the fisheries sector.
- What is meant by social justice? Because the community suffers in poverty with damaged roads, no hospitals, no security, no schools – which is why the concepts of health, retirement, education, and renewal of equipment, should be calculated into the selling price of fish.
- Interplay between economics, social and environmental integrity will only be understood once more decision-makers understand the impacts of external factors (pollution, environmental degradation) on marine productivity.
- Urgent need for re-organization and consolidation of data and information (e.g., Ocean Health Index – OHI) to inform the integrated policy-making process.

13.4 Establishment of a Sustainable Development Reference System at national and regional levels through building intra-and interagency linkages

Establishment of a Sustainable Development Reference System (SDRS) is a key Ecofish strategic proposal:

- Marine fisheries partner countries of the EA-SA-IO region accept to establish an SDRS for their fisheries at national and regional levels in collaboration with a Regional Fisheries Body, e.g., South-West Indian Ocean Fisheries Commission (SWIOFC).
- The proposed SDRS should develop a strong link with the Nairobi Convention as part of UNEP's Regional Seas Programme. Besides championing the regional Blue Economy, the platform is to address the issue of climate change and biodiversity loss in the region.
- To develop and operationalise a useful SDRS, a consistent fisheries policy and management framework, as well as a wide range of interdisciplinary expertise and multiple data sources will need to be harnessed. Generally, a fisheries SDRS needs to be established at the parent ministry with formal linkage with other fisheries related public and private organisations.
- Should SDRS be adopted by countries in the SWIO region, most of the datasets needed to create the fisheries SDRS exist in the partner countries but are scattered because of the prevailing silo approach of administrative organisations. The proposed

intervention would create synergies and value-added by building intra and interagency linkages at various geographic scales in the best interest of the region (*Sweenarain. S. 25 March 2021*).

Emphasis will be placed on developing a SDRS, as a follow-on from this assignment.

SWIO country stakeholder responses to using inter-disciplinary expertise and multiple data sources to build a Sustainable Development Reference System (SDRS) at national and regional levels were:

| COUNTRY | BENEFITS & CHALLENGES OF A SUSTAINABLE DEVELOPMENT REFERENCE SYSTEM (SDRS) |
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| COMOROS | <p>BENEFITS</p> <ul style="list-style-type: none"> Nationally: though SDRS could generate effective fisheries data together with analysis (stock assessment data, coral reef degradation data statistics etc.). Also, the possibility of assessment of fisheries policy and management plans. Regionally: exchange of information with countries with better data collection. |
| KENYA | <p>BENEFITS</p> <ul style="list-style-type: none"> Nationally: ability to build links with key relevant institutions e.g., National Planning and Kenya Bureau of Statistics. Assistance to determine the value of fisheries beyond beach price - value chain benefits and GDP. Regionally: IUU fishing regulation. |
| MADAGASCAR | <p>BENEFITS:</p> <ul style="list-style-type: none"> Nationally: availability of expertise and data from different sectors and sources to be sustainably utilised (management plans formulation etc.). Regionally: Madagascar has joined the Fisheries Transparency Initiative (FITI) for better identification of objectives and indicators (baseline data), and more synergy in the implementation of data collection and sharing. <p>CHALLENGES:</p> <ul style="list-style-type: none"> Gathering of the data from different sources. Difficult to work as an inter-disciplinary team on documents, though output likely to be good quality. Finding common ground on which sector/field/agenda to prioritise. How to achieve transdisciplinary expertise. How to use data effectively: can be indicative, decision-making, part of policy ability to integrate into economic and environmental objectives. |

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| MAURITIUS | <p>BENEFITS</p> <ul style="list-style-type: none"> • Obtain guidance through science driven information to the policy makers. • Government has set up a National Coral Reef Network to come up with the most appropriate remedial actions to better protect and conserve marine biodiversity. <p>CHALLENGES</p> <ul style="list-style-type: none"> • Inadequate fisheries information along with a lack of proper Fisheries Information System. • Capacity building required. |
| MOZAMBIQUE | <p>BENEFITS</p> <ul style="list-style-type: none"> • Nationally: ideal where no strong fisheries administration in place locally. • Offers a structured system for collecting statistical information on the ground. • Will boost inter-disciplinarity approach at the national level <p>CHALLENGES:</p> <ul style="list-style-type: none"> • An intersectoral approach is key for sustainable development, especially for fisheries and environmental management. • Formal and informal platforms / networks important to bring fisheries and environment experts to work together. |
| TANZANIA | <p>BENEFITS</p> <ul style="list-style-type: none"> • Nationally: assistance to identify signs of and mitigate resource over-exploitation, modifications of ecosystems, economic losses, and conflicts in resource management and fish trade – current trends threaten long-term sustainability of fisheries and the contribution of fisheries to food supply. • Need for SDRS to enhance interplay between ecology, economics, and social dimensions in resource management and sustainable livelihood. • Major benefit of SDRS is its ecosystem rather than sector-based approach. <p>CHALLENGES:</p> <ul style="list-style-type: none"> • New approaches to fisheries management should embrace conservation, environmental, as well as social and economic considerations. • Establishing multi-task working groups is timewise and financially demanding. • Operationalization could be complex - best to start at the national level |
| SEYCHELLES | <p>CHALLENGES</p> <ul style="list-style-type: none"> • Nationally: lack of coherence and collaboration amongst local agencies. |

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| | <ul style="list-style-type: none"> • Regionally: duplication of effort and lack of continuity from one project to another. • Brain drains as personnel move to greener pastures at international level. |
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13.5 Monitoring tool for implementation of Ecosystem Approach to Fisheries and FMPs

The FAO has a potentially comprehensive tool for assessing monitoring and implementation of Fisheries Management Plans. This tool, in the FAO manual introduced in 2021, uses an ecosystem approach to fisheries management, based on the three EAF components:

- Ability to achieve
- Ecological well-being
- Human well-being

Ability to achieve represents the management and institutional systems in place to deliver wanted outcomes (e.g., access and tenure systems, compliance, democratic processes, conflict resolution, stakeholder participation), along with external drivers (not controlled by the fishery). This component contains 2 subcomponents: governance and external drivers, where governance contains 12 elements:

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.

“Ecological wellbeing” concerns all ecological assets (e.g., stocks, habitats, ecosystems) relevant to the fishery and ecosystem in which it occurs; and impacts being generated by the fishery that may be affecting them. This component has three subcomponents and 6 elements to evaluate:

1. retained species: target species, bycatch species
2. non-retained species: discards and endangered, threatened and protected (ETP) species
3. general ecosystem: benthic habitats, ecosystem structure and function.

“Human well-being” is a key driver in an EAF - defined by FAO as: “a condition in which all members of society are able to determine and meet their needs and have a range of choices to meet their potential” (Garcia et al., 2003). Thus, ecosystem health is essential for human health and well-being; and it is essential to maintain the capacity of aquatic resources to produce food and employment. Elements of human well-being are grouped into 4 categories: livelihood; food and nutrition security; health and safety; gender and equity. Each element is scored at 3 levels: national level; at the scale of directly dependent fishing communities; and at the scale of indirectly dependent fishing communities (FAO, 2021).

14. Proposed Feasibility Theory Change / Road Map for Improved Management Plans

The Road Map to move fisheries away from open access, and improve fisheries management plans across the SWIO Region, requires:

- ▶ Undertaking effective stakeholder dialogue at the grass-roots fisher community/ association level, including NGO's that are assisting fishers, talking to national fisheries management administration and scientific research staff, as well as regional fisheries management organisations, and donor agencies, the intention being to leverage ideas, resources and co-operation; and to create momentum for positive moves towards better fisheries management through a team approach of co-management, harnessing different strengths of the involved stakeholders.
- ▶ Stakeholders jointly taking on more ownership and accountability of resource management challenges, will provide opportunities to deal with resource access issues, and move to introduced MCS controls that can be policed, improving the socio-economic status of fish communities and allowing gradual introduction of resource management tools such as resource rents to help fund fisheries management administration.
- ▶ Through a co-management team approach, broadening the traditional focus on bio-ecological sustainability factors, to include socio-economic features prevalent in the region.
- ▶ Leverage regional co-operation, involving collaboration between partner countries to avoid duplication of effort and wastage of resources.

- ▶ Reconnection to political and national policies – so that governments are walking the talk.
- ▶ Potentially move away from business as usual and focus on transformation.
- ▶ Understand fisheries management plans, and how effective they potentially can be in terms of earning money for the country, if effectively implemented.
- ▶ Start moving towards a “wealth management approach” to reach financial sustainability, including a modernisation and financing strategy for the small-scale sector.
- ▶ Becoming more commercially orientated, considering the complete fisheries value chain. Commercial efficiency will result in the opportunity to charge a fair economic rent, including funding fisheries management, promoting better resource utilization, and long-term benefit to stakeholders.
- ▶ Develop an “enabling environment” architecture with necessary data collection and assessment, both biological and socio-economic, in terms of providing management direction, and monitoring project implementation.

15. Regional Capacity Development Strategy and Action Plan for Coastal Marine Fisheries in the SWIO Region

Coastal marine fisheries across the SWIO region involve primarily the same species, with SWIO countries grappling with the same developmental challenges, with varying degrees of success. All countries want to succeed in developing their fisheries sectors, and from a socio-economic perspective it is clear that positive outcomes in development of the small-scale fisheries sector will result in significant benefits. Countries can lease large fishing vessels or give access to their EEZs via fishing access agreements, e.g., Oman is one state that is interested in rapidly developing its fleet - however, there is currently more fishing effort available in the SWIO region than there is fish, and the status of fish stocks is a constraint to fishing development. SWIO states wanting to increase their industrial fleets are advised to do so strategically, as most fisheries are at MSY.

With discussion and feedback from stakeholders across the SWIO nations studied in this assignment, as well as with regional fisheries organisations and those involved in donor projects, it is clear that stakeholders want to co-operate with, and learn from each other.

This study has shown that the SSF sector is significant in terms of the number of people it sustains, although in some cases a key concern is the diminishing returns due to increasing population and overfishing. Due to current limited SSF value chain infrastructure, benefits to individual country GDP are generally low, with Governments' financial support to fisheries management and development capacity also consequently limited. There is strong recognition, however, of the fisheries development opportunities, and the realisation that joint co-operation across the region will create a win-win for SWIO countries, helping fast-track capacity development.

Covid has shown that co-operation through online workshops works, and in certain circumstances going forward, given the significant distances between SWIO countries, this provides a real opportunity for regular collaboration at low cost.

1. Included under the subheadings below are responses from stakeholders across the SWIO region. Enhancing regional cooperation in marine fisheries

Enhancing regional cooperation in marine fisheries will strengthen national capacity across the SWIO countries. This collaboration is based on the priorities of each country, developing synergies through harnessing the different strengths of countries across the region. At a basic level, it is information sharing among different regional frameworks and initiatives, as well as coastal and marine resources management.

Political will is needed. It will require formulation and implementation of a common regional work plan for fisheries management, mindful of the diverse needs of different SWIO countries. Collaborative arrangements can be strengthened through establishment of joint technical working groups for key thematic areas, with representatives from each member country. As well as national capacity strengthening, there is the opportunity of regular workshops on SWIO country transboundary resources.

Capacity in **Ecofish**, **Indian Ocean Commission** and regional organisations including **SWIOFC**, **IOTC** and **SIOFA** as well as fisheries donor projects in the region should be leveraged to assist SWIO national country fisheries management agencies, to create a win-win for national and fishing industry interests.

The problem of 'unreported and unregulated' fishing in SSF should be addressed. A Regional Surveillance Programme has been running since 2007, covering transboundary fisheries, particularly tuna, with inclusion of small-scale fisheries since 2017. However, the open access nature of fisheries hamper MCS efforts. A priority future strategy for the **Indian Ocean Commission Regional Plan for Fisheries Surveillance** is to work with effective

Fisheries Management Plans in SSF's to make MCS more effective. For this, sensitization and a local change of mindset is required.

In general, regional agencies are strong and have good capacity. But, as the best regional mechanism will only be as strong as its weakest link, there is need for weaknesses at national level in SWIO countries, to be addressed through capacity building and effective establishment of FMPs, breaking away from open access to also ensure more effective MCS. Regional organisations can help improve compliance and assist with local capacity building. MCS capacity needs of SWIO countries should therefore be established - both people and equipment requirements. The IOTC's Regional Observer Programme is developing observer standards capacity, e.g., via country specific workshops. In Seychelles, proper development of MAHE Plato is effectively happening in a phased approach.

2. Updating fishery policies and management plans

Ultimately the key element of success of fishery policies and management plans is their successful implementation, and consequently there is the need to review these, as required, to ensure success. This is primarily a national level driven process, however, at the regional level there can be exchange of expertise among scientists and fisheries managers. Both technical and financial resources are required.

A situation analysis should be conducted in order to identify gaps for informed review of policies and management plans, and this should occur with the consultation of all partners.

There is a need for national and regional capacity building in EAF, rights-based management, co-management, marine spatial planning approaches and their implementation. This requires exchange and sharing of experiences both within and between SWIO countries. Given the need to promote fisheries management plans with ever increasing population pressures, to ensure resource sustainability and effective operationalisation of the small-scale fisheries sector, at the regional level there is the opportunity to prepare a regional policy and procedures quality manual to provide common guidelines/protocols for fisheries policy and operationalization of management plans.

To achieve the above, policy dialogue should be maintained, involving organizing national, and then regional committees. Incorporated within this is: promoting socio-economic empowerment of small-scale fisheries; investing in governance; capacity building of resource users and managers and streamlining crosscutting government policies; and making amendments based on empirical and local evidence, as well as utilizing the precautionary approach.

SWIO countries acknowledge that past policy and governance failures exist, and have suggested strategies for overcoming those in order to achieve effective fisheries management transformation:

- Overcome through capacity building and training.
- Gradually remove open-access regimes.
- Overturn top-down approach to management where resource users are not considered key stakeholders in the management, by including a bottom-up approach.
- Broaden stakeholder involvement in policy formulation.
- Include consideration of transboundary resources in individual country policy.
- Take responsibility.
- Through assessment of past policy and governance, in order to understand the different constraints.
- Co-management coupled with Marine Park management.
- Transformation requires moving to semi-industrial fishing slowly at local, national, regional trade levels.
- Good policy documents or Fisheries Management Plans fail without effective implementation - identify management gaps while implementing and strive for effective governance. Lack of political goodwill results in failures.
- Activities related to the environment are always sensitive.
- Sensitize politicians.
- Need user-friendly documents/messages to publicize - e.g., don't fish the young fish.
- Both top down and bottom-up consensus is required.
- Improving trade provides high value returns.
- Learn from others and reduce costs through co-operation.
- Remove barriers that hinder trade – harmonise taxes so as to simplify trade.
- Try to promote trade to a large country, e.g., Democratic Republic of the Congo (DRC).
- Give due consideration of EAF, rights-based management, marine spatial planning, and co-management in the management plans implementation.
- Provide a budget to implement strategic documents.
- Be more transparent.
- Maintain a governance and development policy over a long period (results often only in 15 years).
- Politicians should reduce interference on technical issues of fisheries management; rather define policies and control their application.
- Strengthen fisheries administration to be well-structured at the local level, with adequate institutional capacity and qualified staff.
- Overcome past policy and governance failures and focus on socio-economic behaviour (understanding communities' interests) and fishing behaviour.
- Focus more on conservation and collaborative management in fisheries.
- Avoid politics in fisheries resource management matters.
- Regulate user rights aspects.
- Conduct research to identify management gaps in policy briefs and constituencies building.

- Strengthen institutional capacity of key civil society organizations to effectively participate.
- Promote collaborative fisheries management to achieve effective fisheries management transformation, through incorporating:
 - zoning of the water body / bodies
 - establishing inclusive data and information flow system, which incorporates data and information on biological, catch and effort, environmental, socio-economic, marketing, licensing, and surveillance to inform operationalization of management plans
 - profiling of key stakeholders for proportional representation
 - collaborative review of standing rules and regulations in order to have legitimate legal framework for gradual ascending to cost effective voluntary compliance
 - building institutional capacity of NGOs and CSOs to meet constituencies building challenge.
 - Avoid top-down approach of bypassing stakeholders.
 - Less reliance on external expertise.
 - Promote capacity at national and regional levels.
 - Develop sustainable financing mechanisms.

Policy dialogue, awareness and communication required to ensure services focus on common goals:

- Agree on an ecosystems approach to small-scale fisheries and aquaculture.
- Fisheries agencies working in synergy and complementarity.
- Need strong collaboration between ECOFISH and SWIOFC.
- Contact should include: inter and intra country workshops, common publications, structured dialogue forums, etc; exchange visits to successful sites.
- Establish an entity that liaises with different country organisations to streamline activities.
- Inform managers on the ground on outcomes of discussions and commitments made at high government level - and give them the resources and training to implement agreements made.
- Ensure effective policy and legal framework in place at national policy and legal levels.
- Reinforce research and put strong management plans in place at operational management, research and compliance levels.
- Need for more education at the governance level.
- Raise awareness.
- Fishing communities have voting, hence bargaining power, so should focus on Members of Parliament, Regional Governors and resource users – to bring stakeholders together and build consensus.

- Organise regional workshops with those effected, promote high participation of partner countries.
- Promote transparency and collaboration.
- Complement political dialogue with effective implementation, and get real synergy among all players – e.g., all the ministries working in rural development.
- Urgent need for collaborative intervention in coastal fisheries resource management at regional level on major cross-cutting issues.
- Well-designed and effectively implemented regional training for empowerment in respective participating countries - focus on sharing experience and good case studies, illustrating successful techniques experienced in the region.
- Training should be used to establish a network of Community Practitioners for strengthening policy dialogue and awareness towards common goals.
- Inter and intra country workshops, common publications, structured dialogue forums, etc; exchange visits to successful sites.
- Establish an entity that liaises with different country organisations to streamline activities.
- Many discussions and commitments are at high government level, so the managers on the ground need to be made aware of these and given the resources and training to implement agreements.

3. Promote proper functioning of small-scale fisheries registration and licensing frameworks

There is general agreement amongst SWIO country stakeholders that a small-scale fisheries registration and licensing framework is really needed, and that it would make sense to develop a standard regional system. With this would be the need to strengthen the capacity of participating countries in terms of database management and monitoring mechanisms. With this would come the need to invest in personnel and systems for data collection and aggregation. It could potentially be linked through the Indian Ocean Commissions Plan Regionale de Surveillance de Pêche (*PRSP*).

Through this process, FAO Small-Scale Fisheries Guidelines should be adopted, strengthening collaborative (co-management) fisheries by ensuring that resources users participate in compliance to harvest rules. The process would also include reviewing terms and conditions of the registration and licensing framework.

Depending on the small-scale fisheries registration and licensing frameworks established, a large sensitisation campaign would be required, where fishers have to be engaged through co-management structures with a focus on decentralized bodies at local level. This requires capacitating local government authorities to reach fishers in villages for licensing, as well as establishing user friendly methods of enabling fishers to make payments, and get fishing

licenses, instead of requiring fishers to travel long distances for licensing/boat registration. There is also the potential to introduce a technology-based registration system by using renewable biometric licenses.

4. Building capacity regionally and nationally

Capacity building is a high priority amongst SWIO stakeholders, not only at the regional level, but also nationally, both in terms of personnel training and infrastructure funding. There is a need to undertake a capacity needs assessment, identifying key staff requirements, an inventory of needs, and conducting capacity building based on the results of that assessment through a Capacity Development Programme.

Statutory Fisheries Bodies are constituted by international agreement between States, where they have regulatory powers in addition to broad advisory powers, adopting, for example, conservation and management measures that are binding on their members.

Strong long-term programmes and projects can enable capacity building for regional bodies, rather than short-term projects. Institutionalization through protocols and agreements is important for countries to work together, resulting in effective cooperation. There is general agreement that there is need for more joint activities, designing and financing projects common across a number of SWIO countries. Also, to establish on-line training programmes for key players across the region, in order to meet human resources development challenges.

5. Facilitating collaboration in natural resources management

The complexities brought by the interplay between ecology, economics, social and technological aspects of natural resource management can easily outwit any single-handed management regime. Thus, there is an urgent need for collaborative management of natural resources through exchange of information and expertise, requiring greater financial support. The importance of profiling of key actors for proportional representation in planning and implementation of natural resource management is critical.

In some countries such as Tanzania, Beach Management Units (BMUs), comprising stakeholders from different sectors utilising the sea have been established, incorporating village communities, but participation in resource management is minimal. The intention of the BMU's is good, but for them to be effective, capacity building and engaging communities is needed at a deeper level. BMUs need to benefit not only fisheries but should start focusing on the ecosystem as a whole.

What is required is strengthening collaborative (co-management) fisheries resource management systems, by ensuring that resources are protected and used sustainably by engaging communities much more through training in biodiversity conservation strategies, so that they develop a change of attitude, appreciating the bigger picture. Both managers and fishers should be involved, until the theme is clearly understood and adapted, including extension services training.

This can be achieved through institutional re-arrangement. The current set-up in mainland Tanzania is such that they have BMUs on the ground, then Local Government Authorities (LGAs), and Central government at the top level. However, there is no clear division of responsibilities and authority with regard to all functions of fisheries resource management including: management planning; data and information flow systems; decision making; setting of rules and regulations; MCS; and evaluation. A strategically good entry point is advocacy for Area Specific Management Plans.

Communication networks need to be established. A transdisciplinary platform of stakeholders involved in natural resource management should be established to encourage implementation of good joint decisions in this area and improve synergy and complementarity of interventions.

Dialogue should occur at all levels, including regular regional workshops. Management of shared and cross-border resources should be included in this.

Other stakeholder recommendations included: fostering political goodwill; exchange programmes between peers, knowledge transfer on lessons learned; awareness creation on benefits of collaboration, transparency and alignment of goals and objectives; enhance joint fisheries management initiatives, shared capacity, reliable catch data and improved reporting, improved legal enforcement; and sustaining biodiversity; marine spatial plans that take into consideration fisheries and environmental needs; bring stakeholders on conservation together; and support communities through BMU, and LMMAs within the framework of Other Effective Area-Based Conservation Measures (OECMs).

Specific governance strategies should include a holistic approach on co-management, based on principles of:

- presence of enforceable legislation
- involvement of stakeholders in formulation of legislation
- inclusive, transparent and active governance (clear governing system, effective information sharing)
- collective, coordinated and participatory, focused and clear decision-making process and structure
- rights-based management
- empowerment of fishers in the supply chain (democratic and inclusive co-management)

- defined and legitimate governance structures and institutions
- effective compliance-building mechanisms, with monitoring control and surveillance authority
- governance system able to respond to adaptive management processes
- equal distribution of the benefits of management
- inventory recordkeeping of main players, exploited resources and exploitable resources
- state recognition of effective local management, e.g., MIHARI network in Madagascar, where legal texts established by zone
- For sustainability, research has recommended the following management measures:
 - Fish biomass targets for unfished reefs 1,200 kg/ha and 600 kg/ha - 300 kg/ha in fished reefs.
 - At the current fish stock biomass of 20 tons/km² the fishers can fish 17 kg/km² in a day.
However, if fish stocks are 50 tons/km² fishers can fish 27 kg/km² per day.
 - At the current fish stocks of 20 tons/km² only 5 fishers per square kilometre are recommended. However, if stocks are at 50 tons/km² up to 10 fishers per square kilometre are recommended.
 - In order to have co-existence between fishers using different fishing gears, 10cm (~3.5 inch) mesh size nets are recommended.
 - Gated traps are recommended to reduce bycatch and increase catch value.

Specific management strategies may include:

1. agreement on fisheries goals
2. a specific strategy to achieve adopted fisheries goals
3. consultation with stakeholders around strategy to achieve fisheries goals
4. participatory development of Area Specific Management Plans
5. ecosystem-based zoning
6. Mozambique requests community managed fishing access areas
7. strengthening of fisher-based organizations to enable sustainable and inclusive rehabilitation strategy for small-scale marine fisheries, starting with profiling of fishers for effective proportional representation so as to ensure inclusiveness in policy making, planning and implementation of resource management plans
8. operationalization of management plans
9. monitoring and evaluation of strategy implementation, in partnership with stakeholders
10. regular reports to governments and stakeholders, re condition of fisheries
11. recognition and empowerment of small-scale artisanal fishers, fish farmers and fish workers' responsible, and sustainable use of resources
12. paradigm shift where required: change of attitude of some fishers effected through sensitization/extension services

13. capacity building including training
14. address limited resources and capacity for research and MCS.

6. Improving data collection to monitor fisheries management progress

Most stakeholders consider better data collection to monitor fisheries management progress through tools such as a Sustainable Development Reference System, as critical. It was felt, however, that national data systems should first be improved, before focusing regionally. Data and information flow systems should adequately reflect biological, catches, fishing effort, environmental, socio-economic, marketing, licensing, and surveillance data. This will require financial and technical support. And besides sorting out the finances and who to take charge, the need for improved training for people involved at the national level and procuring the necessary equipment and materials for that purpose, should be resolved – probably through utilization of new technologies of data collection applications. This would require facilitating technological exchange, data collection and harmonizing types of information for sharing within and between partner countries, Regular regional workshops were suggested to facilitate this.

7. Establishing a network for climate adaptation

To establish a network for climate adaptation, knowledge exchange is needed, which would require marshaling financial and technical support, and decisions to be taken on who to be in charge. A view was that it should occur at both national and regional levels, with dialogue required at all levels - and for momentum, there should be regular regional workshops for all stakeholders.

Identifying and bringing together different projects and/or institutions working on climate change is required, and more harmonization of climate change information systems through introducing working groups on climate issues. Member states and institutions responsible for climate adaptation matters should be involved, through establishing a network of volunteers and Civil Society Organizations (CSO) to plan and operationalize climate adaptation. It has also been suggested that the network, to maximise synergies, should include complementary work, broadening the mandate beyond merely climate adaptation. Institutional capacity building would be needed for effective results.

8. Support small-scale fisheries - biodiversity conservation activities

Stakeholders want to support small-scale fisheries biodiversity conservation activities, as long as they are linked to good practices, and sustainable models of fishing. Proper consultation with small-scale fishers is essential since requirements may vary from one geographical area to another. Through such consultation, it should be established which various biodiversity conservation activities in small-scale fisheries should be assisted, and through which modalities - and to agree regionally on types of support to be provided and by whom, always effectively engaging small-scale fisheries. Best practice modalities of engaging small-scale fisheries in biodiversity conservation activities should be shared in the region.

Biodiversity conservation activities should be incorporated to support implementation of EAF and co-management approaches, and implementation of FAO SSF guidelines; involvement and capacity building of all stakeholders, and modelling of successes and benefits gained by the fishing communities.

16. Recommendations

This report, through stakeholder engagement across SWIO countries, has identified many issues which can form a baseline for strategic actions going forward, which in turn can be fed into informed management strategies and plans.

A clear principle is that the challenges to effectively developing the small-scale sector are many, which cannot be resolved by each country working on its own. This assignment has involved many stakeholders being consulted, and the level of knowledge and expertise within the SWIO region is significant, as well as the willingness to share expertise for the greater good of the region. Financial resources, however, particularly in terms of government budgets to manage SSFs are well below what is required. It is essential therefore that strategies are developed for co-operative capacity development across the SWIO region, involving regional fisheries organisations, national fisheries management stakeholders, fisher communities and associations as well as those further along the fisheries marketing chain, that leverage financial resources and implementation going forward, through cost-effective teamwork. The emphasis should shift from SWIO countries individually struggling on their own to achieve effective fisheries management, which is so critically needed, to one of regional co-operation and collaboration, resulting in more effective fisheries development across SWIO countries.

Fisheries Management Plans

General agreement is that small-scale fisheries sustainability is now being threatened by demographic increases in coastal population, and a key priority is to move away from open access fishing, to help ensure these fisheries remain sustainable in the future. Fisheries management plans, particularly those considered priority fisheries (although in the case of some countries the plans are area based, including all species), are being put forward as the best way to deal with the problem of open access. Area Specific Management Plans work very well where there is effective community involvement, as well as General Management Plans in Marine Protected Areas.

Management plans should reflect political will, to achieve positive implications at the community level.

The biggest challenge, however, is successful implementation of the plans. As a start, co-management is considered essential in SSFs, where fishing community participation in fisheries management is vital, and this requires good representation by all key stakeholders. Beach Management Units in some countries have been set up as a means to bring together stakeholders, but the fisheries sector in some cases is falling short of its responsibility by not being effectively represented, and consequently their issues are not being effectively

deal with. A study needs to be undertaken to establish what the problem is, so that fisheries co-management can be effectively promoted going forward.

Local governments have been included in management plan development, but they also need to be a party involved to promote successful implementation. In other cases, NGOs have been put forward as management partners, particularly to fill organisational capacity gaps the fishing communities may not have. Generally, NGOs focus on prioritizing donor requirements which is understandable, but there is the need to broaden network links, where guides developed to help facilitate FMP models, and circulated within the SWIO region.

Rules and regulations are frequently top-down, and consequently lack legitimacy, resulting in it being difficult to get co-operation from all key stakeholders. Co-management encourages broad stakeholder participation, improving legitimacy, and consequently compliance. This initial consultation is expensive and time consuming, so needs to be effectively budgeted for, where possible with donor assistance, as the ownership it creates will pay dividends in the end.

There are a number of Fisheries Management Plans in the SWIO Region where delays are being experienced in finalizing management plans. Regional organisations are being requested to leverage resources to overcome these obstacles.

Where countries are developing fisheries management plans, this study has shown that SWIO countries that are further ahead in their development, are willing to share their experiences and lessons learnt, so other countries can borrow from these management plans to help refine their own. The World Bank SWIOFish 2 Project, among others, is currently working on developing fisheries management plan best practice, and this knowledge should be circulated, to help ensure that resources are not wasted.

At the regional level there is the need to strengthen prioritizing research and analysis, and implementation of fisheries management plans as the national level. At the regional level there is a need to guide on how to continue with FMPs, given the problem of implementation.

Fisheries management plans have often been designed around FAO guidelines. Monitoring progress of FMPs is critical, and the FAO have recently developed EAF Monitoring Guidelines which will be useful in monitoring FMPs.

Formal Representation

The SSF fisheries sector, is encouraged to develop effective fishing associations as they become a formal voice when speaking to government on behalf of their members. Given that this study has shown the real need for stakeholders across the fisheries sector, both national and regional, to work as a team to maximise benefits, and minimise wastage of

resources, it is very important that fishers become properly organized, in terms of representing themselves.

Financing Cost Effective Fisheries and Wealth Management

Currently many Fisheries Management Plans have been developed with the aid of donor funding, SWIO governments not having the financial budgets to properly support this. Ongoing donor funding is required during this establishment phase of effective FMPs, but serious consideration should now be given to development of financing mechanisms from within SWIO countries. A Fisheries Development Fund for financing effective fisheries management and development of fisheries is critical for long-term sustainability. Kenya is currently establishing regulations for a Fisheries Levy Fund, and stakeholders have stated in this report their recommendation on funding of fisheries management. It is also necessary to ensure effective decentralization of decision making and financial resources from central government to sub-national authorities, to provide the necessary finances to enable on the ground participation of local government and fisher communities in management processes.

To move towards wealth management, emphasis must be placed on socio-economic as well as biological sustainability priorities. SWIOFC have now established a Socio-economic as well as Scientific Committee, where Ecofish will focus on facilitating development relevant socio-economic information.

The FAO, as amplified in this report, are working towards a small-scale fisheries' sustainable modernisation and financing strategy. This strategic process needs regional collaboration.

A good fisheries value chain is critical to development. Without effective training and the right infrastructure, fishers will remain at the mercy of middlemen, and not be able to uplift themselves and the SSF sector to the benefit of improved GDP. Fish waste in the SSF sector is as much as 30-70%, and this must be turned around, both for fisheries sustainability reasons, and socio-economic income. With good infrastructure, and market research and promotion, fish can be processed and supplied to meet client needs, including regular, reliable production, providing opportunities for significant increase in market accessibility, and consequent profitability. Only when good prices are being achieved, with effective commercial management systems in place, and fishers no longer living on the breadline, can resource rents through fish levies be effectively applied to fund fisheries management.

Another element of wealth creation is professionalism and care for members of the sector. For SSF fishers in the SWIO region, due to lack of expertise and more extreme weather events, it is becoming a job of risk, rather than a job for life. This can be improved through additional training capacity, and exchange trips within the SWIO region, resulting in benefits of experience from other countries. Social responsibility is a key factor going forward, if SSF sector lives are to be uplifted. The FAO is developing a guide on this subject, which should be a useful resource.

Both SWIO countries and donor projects operating in the region are realizing and prioritizing development of a commercially effective small-scale fisheries sector, involving activities such as enhancing livelihoods, improving markets for fish products, reducing IUU fishing, improving maritime safety, building capacity in running a business, utilising fish aggregation devices to improve fishing efficiency, and operating within ordered fisheries management plans. Through a good team approach to joint regional and national fisheries co-operation, significant efficiencies can be attained, to advance cost-effective management.

Monitoring, Control and Surveillance

SWIO's Regional Surveillance Programme, as of 2017, in addition to migratory tuna, is now also covering small-scale fisheries. Effective MCS in an open access fishery is near impossible. With development of FMPs, MCS Plans should still be carefully planned to be effective, and to avoid high-cost implications. Going forward the priority is to work with a good fisheries management plan, as a pilot case. This requires at the national level. sensitizing fishers both on the management plan, and on MCS. At the regional level, capacity needs of SWIO countries need to be assessed, covering both human and equipment, leading to assessing priority needs. Through working with regional organisations, such as the IOTC who is developing observer standards, this will help improve compliance, though for example national workshops. At the SSF level, there is the need to change the mindset, so that in addition to illegal fishing, unreported and unregulated fishing also is deal with.

Training

Capacity building is essential, both regionally and nationally. Regional and national bodies as well as NGOs can play a major facilitatory role. Also, Government fisheries administrations do not have the necessary number of fisheries management officers on the ground, so there is a critical need to train selected Community-Based Trainers (CBTs) / Social Carriers of Innovations (SCI), to assist government officers.

Data and Information Flow

Management Plans are not stand alone. There is a need for solid supporting data and information flow systems. This should comprise both fisheries biological data and socio-economic data. In addition, there is environmental data, including that linked to the blue economy involving tools such as Marine Spatial Planning. Ecofish is advocating development of a Sustainable Development Reference System, in support of this. This will comprise both national and regional co-operation and strategizing for effective collaboration.

All key fisheries management stakeholders require assessment of data, both biological and socio-economic, requiring filling the gap of data collection and proper analysis, so that policy makers and fisheries managers have the necessary information to make effective decisions.

The fisher community can also become more fully engaged and supporting, when there is more scientific backup through data gathering and analysis.

Gender Equality

The need to promote gender equality was identified by Mauritius, where an oil spill significantly impacted women fishers who glean the reefs on foot. Registered fishers in Mauritius receive compensation following adverse events, and this oil spill highlighted those women fishers primarily operate in the informal sector, with little or no community-based involvement. It also highlighted the need to study women's roles more closely in the fisheries sector through socio-economic assessment, going forward. They are known to be fish traders, promoting entrepreneurship, working along the value chain, and by making a point of including women in formal participatory management structures, they will be given more visibility, being better represented, and able to present their concerns, promoting women as a whole in fisheries. This is a key requirement to leveraging the development of the fisheries sector.

Blue Economy

While a new concept for many SWIO countries, governments are embracing this new development paradigm. What it is showing is that fisheries is no longer the main player utilising the maritime environment. Fisheries and Tourism as stakeholders can work together, as it is in the interests of both to ensure sustainable use of the marine environment. The Covid pandemic has not helped tourism, but thankfully tourist numbers are steadily increasing again, and tourism can be a strong ally, particularly to small-scale fisheries, potentially providing financial resources to boost common interests. The maritime sector also offers possibly alternative jobs for fishers. Other ocean stakeholders such as oil and gas exploration, and new players exploring deep sea ocean mining, are much more powerful than fisheries, in that they can potentially influence government's GDP much more significantly. Going forward, the fisheries sector must ensure it is represented at meetings where all these stakeholders are present, to protect its interests.

Marine Spatial Planning is becoming a common talking point, good in that it allows all activities to be mapped from a planning perspective. It has a significant weakness, however, in that it is two dimensional, and does not consider impacts that are brought about through potential pollution of the water column, and which can then be spread widely through ocean currents. Consequently, from a fisheries perspective, multiple management mechanisms for

the marine environment should be considered, well controlled marine parks as an example, being beneficial both to fisheries and tourism.

Assessment and Refinement of Strategies

In this report a Regional Capacity Development Strategy and Action Plan with stakeholder suggestions, has been put forward for future review and refinement. Also proposed is a Feasibility Theory Change/Road Map for Improved Management Plans for assessment. And stakeholders have put forward open access fish species easily subject to management plans/co-management for future prioritization. National priority and transboundary fisheries most effectively manageable through bilateral/regional co-operation are also listed for assessment and future prioritization.

Actionable recommendations for improved management include:

- ▶ Address the open access nature of fisheries through mechanisms such as fisheries management plans to help protect sustainability of the resource.
- ▶ Stakeholders have stressed that effective implementation of management plans is critical, so adequate resources need to be provided to achieve this through management strategies.
- ▶ Develop political support for fisheries management plans and wealth creation strategies, resulting in incorporation of plans into country national government annual planning processes so that solutions are sought at all levels.
- ▶ Consideration of exit strategies by excess fishers, to reduce fishing effort.
- ▶ Diversify livelihoods of fisher community to reduce the sustainability pressure exerted on the resource, such as training and capacity building to facilitate moving into the maritime shipping sector, tourism sector, and potentially through NGOs in aquaculture, including on-growing sea cucumber, and mud-crab farming. This is an important area that will require broad consultation, as without alternative employment, it will be very hard to reduce fishing pressure.
- ▶ Strengthen fisheries co-management, and bilateral and regional cooperation.
- ▶ Assess open access fisheries which are suited to become FMPs and prioritise.
- ▶ Assess national priority and transboundary fisheries most effectively manageable through bilateral/regional cooperation.
- ▶ Promote fisheries short-term closures where it can be demonstrated that better prices can be obtained after a closure period, e.g., octopus fishery.
- ▶ Ensuring tenure rights is essential for fishers that actively rely on fishing for their income.
- ▶ Promote electronic registration of small-scale fishers, to help organize them and make it a more formal system, the emphasis being on improving fisheries management, and not as a form of revenue collection.

- ▶ To help promote wealth creation and strengthening of the value chain to fishers, provide marketing support.
- ▶ Development of sustainable, long-term funding and investment strategies, to cover costs of co-management, including options such as a Fisheries Levy Fund to be applied to commercial value chain operators.
- ▶ Fisheries Departments of county governments to embrace and prioritise allocate funds for co-management implementation.
- ▶ Local communities to partner with other stakeholders for both financial and technical support.
- ▶ FMPs need solid supporting data, and an information flow system. In support of this, as well as biology data, socio-economic data is also essential.
- ▶ Strengthen sharing of knowledge, skills and experience.
- ▶ Awareness creation across all levels of governance, including co-management principles.
- ▶ Capacity building at all levels is required, as well as technology transfer between countries. This so that those involved in the fisheries, as well as those that manage the fisheries obtain training, so that those along the fisheries value chain are better prepared.
- ▶ Training and capacity building stakeholders should be involved in the implementation of the management plans.
- ▶ Establish and maintain training and capacity building for fisheries communities.
- ▶ Train selected Community-Based Trainers (CBTs) / Social Carriers of Innovations (SCI), to assist government officers.
- ▶ While allowing for individual country development preferences, generic guidelines should be developed for utilisation, both regionally and at the national level.
- ▶ Focus on good research, and overcoming bureaucratic delays.
- ▶ Ensure effective decentralization of decision- making (and financial resources) from central government to sub-national authorities, to enable participation of local residents and rural communities.
- ▶ Financial resources to be allocated for scientific research and to inform management plans.
- ▶ Monitoring, control and surveillance to be considered from setting up of co-management and be sent to the MCS Administration.
- ▶ Establish and maintain intensive monitoring, control and surveillance.
- ▶ Issue fishery-specific licenses for priority fisheries to address challenges of by-catch in small-scale fisheries, e.g., ring-net (purse seine) fishers catching large quantities of prawns during the prawn closure
- ▶ Regulate bycatch to below 10% of a total catch of target species.
- ▶ Regulate prawn and octopus fisheries, where industrial fishers abide by the management plan, but not artisanal fishers, due to remote nature of fishing grounds, as well non-compliance of some fishers and lack of political will.

- ▶ Address the gender issue.
- ▶ Monitoring and evaluation should involve partnership with all stakeholders.
- ▶ The FAO has recently published a monitoring tool for the ecosystem approach to fisheries which many management plans are modelled on, and this tool should be applied to help ensure effective implementation of the plan.
- ▶ Assess and refine as appropriate, the proposed Regional Capacity Development Strategy and Action Plan developed in this report from initial stakeholder engagement.
- ▶ Assess and refine the Proposed Feasibility Theory Change / Road Map for Improved Management Plans developed in this report.

17. Conclusion

Small-scale fisheries, due to their open access nature, made worse by increasing population numbers on the coast of SWIO countries, are no longer the government food security and livelihood safety net for the coastal population, that they once were. Fisheries management plans have been put forward as an effective mechanism to overcome the problem of open access, through introducing fisheries management controls and user rights, that promote fisheries resource sustainability.

The challenge till now has been that with SSFs comprising so many different species in smaller numbers, compared to industrial fisheries, Governments often do not have the capacity, either financial, manpower, or monitoring control and surveillance, to ensure effective implementation of these management plans. Co-management has been put forward as a way to share the responsibility of management across all key stakeholders. With effective communication and understanding between stakeholders, trust and ownership in terms of taking on management responsibilities is developed, with effective management by-laws, and fisheries scientists and economists assessing data to facilitate implementation. Even so, managing and financing these plans remains a major challenge.

There is an urgent need to address funding mechanisms, countries such as Kenya introducing a Fisheries Levy Fund on fisheries value chain stakeholders, to help plough back into fisheries management, part of the resource rent being generated for respective fisheries. This money needs to filter down and support stakeholders such as local government and fishing communities/associations who need resources to undertake implementation. The real problem is effective implementation, and resources are needed for this. Training of trainer programmes are also required at regional and national levels to build capacity. MCS is a major issue, particularly at SWIO country level, where with IUU fishing, the problem for SSF is the UU, that is unreported and unregulated fishing. The IOC Regional Plan for Fisheries Surveillance is working with regional organisations such as the IOTC and SIOFA to improve compliance, and at the country level decisions are being made, for example, on what would be the best approach to capacitate MCS observers. Madagascar is also working on developing Management Plans based on co-management involving fishing community participation, along its entire coastline, by geographic region involving all fish species, where NGOs act as facilitators, and where a guide for the elaboration of FMPs was developed in 2019, so priorities are harmonised. The ambition is to find an effective balance between human and ecological wellbeing, aimed at making the fisheries sector a real lever for development. As the FMP formula is coming together through real life lessons, together with SWIOFish 2 funding, this should facilitate expansion, with new opportunities for regional co-operation in the Indian Ocean.

The World Bank SWIOFish 2 Project is also promoting management plans, in areas such as Zanzibar. These plans, within their framework apply a lot of the lessons learnt from an

implementation perspective, including MCS. The Kenya FAO Coral Reefs Project through Japanese funding is looking at improving coral reef fisheries; improving markets; reducing IUU fishing; improving maritime safety; and looking at fish aggregation devices to improve fishing efficiency. The World Bank funded Kenya Marine Fishery and Socio-economic Project over the next 2-3 years has provisions for financing development of new management plans and reviewing existing ones. Also, in Madagascar, a FAO project creating an enabling environment aimed at securing the sustainability of the artisanal SSF sector was initiated in late 2021. SWIOFC continues to regionally co-ordinate fisheries management, particularly from a biological sustainability perspective, and is also working to strengthen socio-economic sustainability, working with Ecofish. Developing a wealth management approach going forward is a key priority, both to effectively modernize the small-scale fisheries sector, reducing unnecessary waste of caught fish due to weak infrastructure links in the value chain, create sustainable internal funding, and improve the SSF contribution to SWIO countries' GDP.

SWIO countries are all deeply involved in the move towards fisheries management plans, as detailed by the information both in this report and in each of the SWIO country FMP Reports, developed as part of this project. Financial and implementation challenges are a real issue, but co-operatively harnessing the knowledge and resources of: SWIO country stakeholders; regional fisheries organisations; ongoing fisheries management plan projects; and donor agencies; will create critical leverage. Thereby providing a means to dealing with difficult issues that players operating on their own are not able to deal with, strengthening resources and capacity development, enabling an exciting opportunity to strategically facilitate fast tracking sustainable development of the SSF sector in the SWIO Region. The outcomes of this consultancy should feed into informed management strategies and plans.



ECOFISH INTEGRATED PROGRAMME MANAGEMENT UNIT

BLUE TOWER | 4th FLOOR | RUE DE L'INSTITUT | EBÈNE 72201 | MAURITIUS | TEL: +230 402 6100

info@ecofish-programme.org

www.ecofish-programme.org