



# A REVIEW OF THE NATIONAL FISHERIES MANAGEMENT PLANS FOR TANZANIA

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# **Fisheries Management Plans, Policies and Legal Framework in the Republic of Mauritius**

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## PREAMBLE

The Republic of Mauritius is an oceanic state with the largest Exclusive Economic Zone. This report presents findings from a study which was conducted in the United Republic of Tanzania to assess development and implementation of national Fisheries Management Plans (FMPs). The study was part of regional initiative, under the auspices of ECOFISH regional program, aimed at identifying strengths, weaknesses, opportunities and challenges of existing FMPs in the SWIO region. Furthermore, the study focused on identifying other key coastal fisheries that are still operating fully under open access regime, and thus in need of FMPs. The assessment was conducted while also gauging the efficacy of enabling environment as provided by relevant national policies and legal framework.

Similarly, the Code of Conduct for Responsible Fisheries (The Code: FAO, 1995), and the Voluntary Guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication (SSF Guidelines: FAO, 2015) were used in providing important guidelines for the assessment. It ought to be added that the study team shared knowledge, skills and experiences on the subject matter with resource persons from across the region. The approach helped to enrich the assessment. This report comprises six intertwined sections that provide details of the findings with regard to the efficacy of FMPs in United Republic of Tanzania.

In conclusion, the report points out that, large segment of fisheries in Tanzania, is still operating under an open access reference point. Therefore, it would be helpful to reinforce implementation of existing management plans while introducing new ones. The priority in this regard should be placed on effective introduction of area specific management plans, taking note of ecosystem approach to fisheries management, with habitat aspects being taken on board.

# ABBREVIATIONS AND ACRONYMS

<b>APFMP</b>	Artisanal Fishery Management Plan for small & medium pelagic
<b>ASMP</b>	Area Specific Management Plan
<b>BEST</b>	Blue Economy for Sustainable Transformation
<b>BK</b>	Bweni and Kanga fisheries management area in Mafia district.
<b>BMU</b>	Beach Management Unit
<b>CBO</b>	Community Based Organization
<b>CBT</b>	Community-Based Trainers
<b>CCC</b>	Central Coordination Committee
<b>CFMA</b>	Collaborative Fisheries Management Area
<b>CHABAMCA</b>	Changuu – Bawe Marine Conservation Area
<b>CPUE</b>	Catch Per Unit Effort
<b>CSO</b>	Civil Society Organization
<b>DMRS</b>	Dar es Salaam Marine Reserve System
<b>DED</b>	District Executive Director
<b>DOKICHUNDA</b>	Dongo, Kilindoni, Chunguruma, and Ndagoni fisheries management area Mafia district
<b>EAF</b>	Ecosystem Approach to Fisheries
<b>EEZ</b>	Exclusive Economic Zone
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FMP</b>	Fishery Management Plan
<b>GMP</b>	General Management Plan
<b>GN</b>	Government Notice
<b>GRT</b>	Gross Registered Tonnage
<b>ICM</b>	Integrated Coastal Management
<b>IUU</b>	Illegal Unreported and Unregulated Fishing
<b>JOJIBAKI</b>	Jojo, Jimbo, Banja and Kirongwe fisheries management area in Mafia district
<b>LGA</b>	Local Government Authority
<b>LPUE</b>	Landing Per Unit Effort
<b>MBCA</b>	Menai Bay Conservation Area
<b>MBREMP</b>	Mnazi-Bay and Ruvuma Estuary Marine Park
<b>MCA</b>	Marine Conservation Area
<b>MCS</b>	Monitoring Control and Surveillance

<b>MIMCA</b>	Mnemba Island Marine Conservation Area
<b>MIMP</b>	Mafia Island Marine Park
<b>MLF</b>	Ministry of Livestock and Fisheries
<b>MPA</b>	Marine Protected Area
<b>MPRU</b>	Marine Parks and Reserves Unit
<b>NGO</b>	Non-Governmental Organization
<b>NGO</b>	Non- Governmental Organization
<b>NPoA</b>	National Plan of Action
<b>NYAMANJISOPOJA</b>	Nyamatumungutungu, Maredeggu, Njianne, Somanga, Pombwe and Jaja fisheries management area in Kilwa district
<b>OFMP</b>	Octopus Fishery Management Plan
<b>PECCA</b>	Pemba Channel Conservation Area
<b>PFMP</b>	Prawn Fishery Management Plan
<b>RFMO</b>	Regional Fisheries Management Organisations
<b>RGZ</b>	Revolutionary Government of Zanzibar
<b>VFC</b>	Village Fishermen Committee
<b>SOMAKI</b>	Songomnara, Masoko and Kisiwani fisheries management area in Kilwa district
<b>SSF</b>	Small – Scale Fisheries
<b>SSF-Guidelines</b>	Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the context of food security and poverty eradication
<b>SSI</b>	Semi-Structured Interview
<b>SWIO</b>	South Western Indian Ocean
<b>SWOT /C</b>	Strengths, Weaknesses, Opportunities and Threats / Challenges
<b>TAFIRI</b>	Tanzania Fisheries Research Institute
<b>TCMP</b>	Tanzania Coastal Management Partnership
<b>TCZMP</b>	Tanga Coastal Zone Marine Park
<b>TIM4SI</b>	Tingi, Miteja, Mtandago, Mtukwao, Magengeni, and Singino fisheries management area in Kilwa district
<b>ToR</b>	ToR
<b>TUMCA</b>	Tumbatu Marine Conservation Area
<b>UNCLOS</b>	United Nations Convention on Law of the Sea
<b>URT</b>	United Republic of Tanzania
<b>WWF</b>	World Wide Fund for Nature
<b>ZFFS</b>	Zanzibar Fisheries Frame Survey

# 1.0 INTRODUCTION

Coastal fisheries industry in the United Republic of Tanzania, as it is the case with many other countries in the world, is a major source of cheap animal protein to the growing human population, income to fishers, and employment to increasing number of youth and women. Likewise, the fisheries industry generates foreign currency to the country through exportation of fishery products. Hence, the socio-economic importance of this sub-sector cannot be overemphasized. With time, however, the industry is experiencing a number of challenges threatening resource sustainability and the very sustainable livelihood of fishers and other stakeholders. Overcapacity, overfishing, illegal fishing and environmental degradation vices are gaining momentum. Fishers continue fishing harder reducing numerous fish populations to extremely low levels, destabilizing marine ecosystems and impoverishing many coastal communities.

In view of the current situation, there is only one option left, and that is to strengthen fisheries resource management practices, especially effective development and implementation of Fisheries Management Plans (FMPs). With regard to management plans, fisheries authorities in mainland Tanzania and Zanzibar recognize the crucial role of FMP as an indispensable tool in resource management. Hence, efforts have been made to develop and implement FMPs in a number of fisheries. The FMPs are being developed through users' participation in planning and implementation of FMPs. However, due to financial constraints and other technical reasons several fisheries are yet to be covered.

Generally, the FMPs in Tanzania are structured based on basic guidelines provided by the Food and Agriculture Organization of the United Nations (FAO). The major components are coastal zone/fisheries management issues, ecological description of respective fishery, economics and social dimensions, and zoning. Also, the FMPs outline stakeholders or partners with their specific roles in management of respective fishery, management objectives, strategies to be used, and measures including access rights, regulations, co-management arrangement, and decision-making processes as well as data collection protocol.

Given the importance of having effective FMPs, as important tool for effective fishery resource management, the ECOFISH program of the Indian Ocean Commission, commissioned a regional study to assess the efficacy of existing management plans in supporting the overall goal of sustainable fisheries resource utilization. The assessment took into consideration integrated nature of the main functions of fisheries resource management. It included review of information gathering and analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with enforcement as necessary, of regulations or rules which govern fisheries activities. And more importantly to assess whether the FMPs are achieving resource management objectives. Detailed Terms of Reference (ToR) for this study is provided under Section 3 of this report.



## 2.0 BACKGROUND INFORMATION

The United Republic of Tanzania (URT) comprises Mainland Tanzania and Zanzibar. The latter retains semi-autonomous status including management of coastal fisheries under Zanzibar's jurisdiction. The fisheries industry in Tanzania is essentially small-scale, with the sub-sector generating over 98% of about 500,000 tons of annual fish landing from both marine (20%) and inland (80%) water fisheries. This figure, however, does not include catches from industrial fishing in the Exclusive Economic Zone (EEZ) because the associated catch is transhipped at sea to the international market. With regard to coastal fisheries, fishing operation is dominated by small-scale fishers though there is a small fleet of about 6-10 semi-industrial prawn trawlers (size below 150 GRT). Besides the fleet of shrimp trawlers, fishing for high value fishery products such as Octopus, Shrimp, Lobster and others is done by small-scale fishers who sell most of their catches to fish processing plants for processing and marketing to high-end markets such as tourist hotels and export markets.

The coastal fishery is multispecies with different sub-chains such as reef fishery, small pelagic fishery, large pelagic fishery, prawn fishery, octopus' fishery and others. Species being caught include mackerels, king fish, scavengers, parrot fish, sardines, rabbit fish, rays, sharks, and crustaceans. However, the main commercial coastal species are Prawns, Octopus, Lobster, Crabs, Tuna and tuna like species. In relation to fishing operation, coastal fishers in the country use a variety of fishing gears and methods such as gill netting, purse-seining/ring net fishing, long lining, hand lining, and trap fishing.

The most recent fisheries frame survey enumerated 53,035 small-scale primary fishers on mainland coastal fisheries. Specifically, 11,436 (21.56%) of them own fishing crafts, whereas 33,040 (62.30%) are crew members. They use 9,242 fishing crafts with sizes ranging between 2.5 metres to 10 metres with majority of the crafts, 6,476 (70%), falling between 2.5 – 5 metres category. Likewise, Mainland Tanzania has a total of 274 landing sites where fishers land their catch. In relation to fishers' organization, there are 174 landing sites with Beach Management Units (BMUs) though only 75 (43%) of them are registered by the Ministry of Livestock and Fisheries (MLF, Frame Survey 2018).

On the other hand, there are 50,218 primary fishers in Zanzibar (31,328 in Unguja and 18,890 in Pemba). This number includes both male and female fishers (43,080 males and 4,394 female). Zanzibar has a total of 235 formal landing sites of which 109 (49%) are in Unguja and 126 (57%) in Pemba districts. Most of the landing sites 199 (85%) are within Marine Conservation Areas (MCAs), whereas only 36 (15%) are located outside MCAs system (RGZ-ZFFS 2020). In this context, landing sites situated within MCA are covered by GMPs of respective MCAs, and thus Zanzibar remains with only 36 areas that still operating under open access regime.

In general terms, the coastal fisheries in Tanzania are characterised by overcapacity, overfishing, illegal fishing and environmental degradation. Similarly, the fishery is associated with high post-harvest losses, mainly caused by perishable nature of fishery products and inadequate preservation facilities in dispersed remote fishing ground. In relation to social aspects, fishers face a number of challenges such as low level of technology, inadequate capital associated with limited credit facilities and population growth. The rapid population growth in coastal zone, mainly driven by migration of people from inland places of the country to the coast, exerts increasing pressure on finite fishery resources through joining fishing and thus increasing fishing effort or by expanding the market.

Furthermore, high price tag on some of these species have fuelled overfishing of certain species including prawn and sea cucumber species. The situation forced the government to impose moratorium on semi-industrial prawn fishing between 2007 and 2017, and on Sea cucumber fishing from mid 2000s to date. With new development taking place in marine and coastal environment, such as growth in blue economy, concerted efforts are needed in improving effective and efficiency of fisheries resource management if the finite fishery resource is to be sustained to sustain life in communities. It was for this reason that the government embarked on development and implementation of Fisheries Management Plans (FMPs).

The main objective of FMPs intervention is to complement traditional approach of using the relatively generalized Fisheries Policies, Fisheries Act, and Fisheries Regulations as the only tools for guiding fisheries resource management. These core instruments are just too broad to capture variability of an expansive fishing areas of the entire country (fig. 1 & fig. 2 below). The FMPs, in this regard, have comparative advantage that of being specific to a particular fishery.

The following sections provide a review with regard to development and implementation of FMPs in The United Republic of Tanzania.



**Fig.1 Fisheries profile of Tanzania**



**Fig.2 Spatial distribution of landing sites observed in 2018 fisheries frame survey.**

### 3.0 TERMS OF REFERENCE

The specific Terms of Reference for this study were spelt out as follows:

- i) Inventory of the existing regional, trans-boundary and national management plans and their implementation status.
- ii) A quick assessment of the existing management plans to identify their relevance /adequacy against the FAO standards and Guidelines.
- iii) Identifying socio-economically significant fish species or fisheries in the local communities that are still open access and can be subject to a structured management plan or co-management;
- iv) Mapping national priority and trans-boundary fisheries resources that can be managed more effectively through bilateral or regional cooperation.
- v) Assessment of the capacity needs and gaps, and constraints and barriers analysis to propose a feasible theory change and road map to improve the effectiveness of management plans;
- vi) Keynotes for policy dialogues and advocacies, awareness-raising and sensitisation, and communications

## 4.0 METHODOLOGY

The study applied explorative method including review of historical data and available literature such as fisheries and other policies, regulations, existing FMPs and other relevant documents. Also, a checklist was prepared based on ToR requirements, to guide Semi-Structured Interviews (SSI) sessions. The Focus groups and Key Informants Interviews were conducted through both face-to-face sessions and by virtual mode using zoom platform. A total of 126 respondents were interviewed including fisheries policy makers, managers, extension officers, fisheries researchers, MPA personnel, and experts from the academia. More importantly fishers, BMU leaders and traders were engaged including change agents from Non-Governmental Organizations (NGOs) working in fisheries and related fields. The preliminary findings were validated through stakeholders' meeting before final analysis and reporting.

## 5.0 FINDINGS

The findings from the study are presented hereunder including major issues that are challenging effort towards realisation of responsible fisheries resource management and improved sustainable livelihood in the country:

### 5.1 Review of fisheries management practices in Tanzania

Since gaining independence way back in 1960s, the United Republic of Tanzania has been trying to institute rational management of its fisheries resource for sustainability's sake and to improve sustainable livelihood of the growing human population. For years, the government placed much attention on enforcement of fisheries regulation while paying minimum attention on other critical functions of fisheries resource management such as development of Fisheries Management Plans (FMPs). However, the shortfall was later on internalised and corrected, today changes are taking place with increasing support for development and implementation of FMPs as a cornerstone for effective responsible fisheries management.

Nevertheless, there are several factors that are challenging effective fisheries resource management in Tanzania. Some of the factors raised are:

- i) The open access nature of coastal fisheries, taking note that fisheries resource is perhaps the only natural resource, which is being exploited

while at the same time being conserved or protected.

- ii) Inadequate data and information flow system including inadequate marketing, economic and social data and information on the different fishery sectors' aspects to guide policy and decision-making processes. The situation is aggravated by inadequate funds for conducting research as per national research agenda.
- iii) Weak institutional linkages and partnership working arrangement among key resource management institutions, both public and private ones.
- iv) Inadequate institutional capacity of Beach Management Units (BMUs) to meet the resource management challenges at community level. The situation is further aggravated by entrenched fear for social reprisal (*muhali*) once one stands against unacceptable fishing practices in a community.
- v) Lack of environmental education and awareness among key stakeholder regarding consequences of environmental degradation on sustainability of fishery resources and their own sustainable livelihoods.
- vi) Over dependence on fishery resources for livelihoods in coastal communities coupled with inadequate alternative sources of livelihoods.
- vii) Poverty and profit motive attracting increased number of people in fisheries fuelling over-capacity, overfishing and environmental degradation to an extent of threatening sustainability of fishery resources.
- viii) Insufficient number of fisheries staff in the midst of weak fisheries co-management regime. For example, it is estimated that currently there are about 700 fisheries extension staff as opposed to the required 16,000 staff across the country.
- ix) High cost of fisheries resource management, especially the MCS function, in the midst of inadequate financial resources to meet those costs.
- x) The licensing regime is not very effective for resource management, with several Local Government Authorities treating it as source of revenue generation rather than resource management tool.

### **5.1.1 POLICIES AND LEGAL FRAMEWORK**

The two governments, mainland Tanzania and Zanzibar, have been devising different programmes and projects aimed at developing small-scale fisheries in the country guided by pro-poor fisheries policies. With regard to fisheries management plans, there has been great efforts made on this frontier, including assisting fishers to get organized through establishment of different

platform such as Beach Management Units (BMUs) on mainland and Shehia / Village Fishermen Committees (S / VFCs) in Zanzibar. Similarly, consultative practice between central, Local and Village governments is being reinforced especially when it comes to, policy formulation, setting of rules and regulations as well as in developing fisheries management plans. For example, one cannot get a fishing license if he has not been approved by BMU.

More importantly, both Mainland Tanzania and Zanzibar have Fisheries Policies (URT MLF 2015 and RGZ 2014), Acts (Fisheries Act No 22 of 2003 and Zanzibar Fisheries Act No. 7 of 2010) together with respective Regulations that guide management of fisheries resources even in areas not covered by any FMPs. However, it is important at this point, to ensure that these core instruments codify development and implementation of FMPs as cornerstone for rational fisheries resource management. Again, the core instruments are too broad to capture fishery specific diversities on the ground, and thus the need for development of FMPs to cover all fisheries in the country, while revising outdated ones to meet changes taking place in the industry. It would be better if the instruments to take note of changes such as the ones brought by Blue Economy development. Similarly, it is recommended that the FMPs be gazetted, through Government Notices, for legal basis and legitimacy's sake. Perhaps, it is important to point out that the country has finalized development of a National Plan of Action (NPoA) for implementation of Small-Scale Guidelines in the context of food security and poverty eradication (The SSF Guidelines) (MLF, 2021).

The main objective of the NPoA is to provide a framework that would enhance the contribution of SSF to incomes, food security and nutrition, and to support the progressive realization of the right to adequate food for all. The purpose is to enable the Ministry, fishers and other collaborators to achieve the objectives of the SSF Guidelines in Tanzania. Furthermore, the NPoA is directed to both State and non-State actors, and the private sector involved in small-scale fisheries. An important point in this context is the fact that the NPoA has underscored an urgent need to ensure each fishery in the country has a management plan (MLF, 2021).

### **5.1.2 MANAGEMENT GOALS AND OBJECTIVES**

The Fisheries Policy (MLF 2015) has stipulated the fisheries goal which is to contribute to national poverty reduction objective through sustainable management and utilization of the fisheries resources. The main objective is to develop a robust, competitive and efficient fisheries sector that contribute to food security and nutrition, growth of the national economy and improvement of the wellbeing of fisheries stakeholders while conserving the environment. Specifically, the policy aims at ensuring effective management

and sustainability of fisheries resources and aquatic environment among other specific objectives. Development and implementation of Fisheries Management plans (FMPs) is one of management tool / strategies that are being applied.

### **5.1.3 MANAGEMENT PLANS AND THEIR PURPOSES IN TANZANIA**

The Fisheries Management Plans (FMPs) are considered to be instruments for planning and operational management to meet fisheries goals, as stated in National Fisheries Policy (MLF, 2015). The main purpose of the FMPs is to provide guidelines and procedure for resource management towards achieving economic efficiency and value of a respective fishery, as well as improved sustainable livelihoods and environmental sustainability. Rapid population growth in coastal areas coupled with increasing demand for fish in domestic and international markets compels adoption of more effective resource management practices and tools including management plans. Specific issues that make strengthening of FMPs an urgent obligation have been outlined under section 5.1.4 of this report.

### **5.1.4 MAJOR ISSUES ASSOCIATED WITH FISHERIES RESOURCE MANAGEMENT**

Salient issues in coastal fisheries resource management in the country can be summarised as follows:

- i) Overcapacity, Overfishing, illegal fishing practices and environmental degradation have become endemic threatening resource sustainability and sustainable livelihoods in fishing communities.
- ii) Trade-off between the zeal for increased income, food-fish supply, employment and export revenue from SSF on one hand, and resource sustainability on the other hand.
- iii) Inadequate institutional capacity to meet the challenge of introducing effective fisheries co-management regime, taking note of existing complexities in SSF, multitude of fish species, large number of fishers, dispersed fishing grounds, and numerous landing sites. Likewise, most of Beach Management Units (BMUs) established across the country do not have capacity to exercise effective management of fishery resources in their jurisdictional areas.
- iv) Inadequate financial resources for building institutional capacity and linkages of key institutions to meet resource management challenges,



including development and implementation of Fisheries management plans.

- v) High cost of financing fisheries resource management in the absence of an effective mechanism for ploughing back part of the resource rent to cover the cost.
- vi) Small number of government-employed fisheries extension workers to meet the demand, while the use of community-based change agents or social carrier of innovation is yet to gain roots.
- vii) Low level (number) of users' participation and representation in policy making processes and setting of fisheries regulations reduces legitimacy of resource management tools including a few management plans in place.
- viii) Fisheries Monitoring, Control and Surveillance (MCS) function consumes large amount of fund for resource management, but the system itself is not sustainable partly because of high enforcement cost in the midst of limited fund and low level of users' participation in resource management activities.
- ix) Inadequate scientific data and information flow system to inform decision-making process for rational resource management and sustainable livelihood regime; and
- x) The low involvement of NGOs and CBOs in advocacy and constituencies building for effective resource management planning and implementation.

The salient issues mentioned above and other such issues, compelled the two governments to put more efforts on responsible fisheries resource management including development and implementation of Fisheries Management Plans (FMPs).

### **5.1.5 EXISTING FISHERIES MANAGEMENT PLANS**

Three models of FMPs are being applied in the country:

- i) Area Specific Management Plans
- ii) Fishery-Based Management Plans
- iii) General Management Plans for MPAs and MCAs



### **i) Area Specific Management Plan**

The common practice whereby fishers from different villages or fishing communities' fish in the same fishing grounds say a reef, makes it important for respective fishers to collaborate in developing management plans for their fishery. Such arrangement has clear benefits including ability to reduce potential inter-village conflicts, and more importantly collaborative management planning enhances legitimacy of rules and regulations for improved compliance. In this respect, the government in collaboration with NGOs, especially WWF, played a pivotal role in constituencies building towards Collaborative Fisheries Management Areas (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 (ASMP) were developed and are being implemented. Examples of ASMP model include the following ones:

- 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 Kirongwe (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 in the same fishing grounds. According to general guidelines, each BMU is supposed to elect 5 members to represent in joint Central Coordination Committee (CCC) for development and implementation of the ASM plan. The role of the government and NGOs, in this context, is mainly that of empowering fishers and BMU leadership altogether 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 another model which embraced Ecosystem Approach to Fisheries management, through Integrated Coastal Management (ICM) regime. The process begins with formation of District ICM working group, which comprises technical staff from respective LGA. In many cases it includes fisheries officer, forest, and 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 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 Areas Specific Management Plan
- 2) Mkulanga District Areas Specific Management Plan
- 3) Pangani District Areas Specific Management Plan

## **ii) Fishery-Based Management Plans**

With regard to fishery-based management plans, the government has prioritized high value fisheries 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 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**

The establishment of Marine Park Areas (MPAs) on Mainland Tanzania, and Marine Conservation Areas (MCA) in Zanzibar has proved to be one of effective fisheries resource management measures in the country by limiting the open access fishing. So far the country has 9 MPAs and MCAs (4 in Mainland and 5 in 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).

## 5.1.6 PERFORMANCE OF EXISTING FISHERIES MANAGEMENT PLANS

Generally, fisheries management performance in the country has been appreciative especially in terms of sustaining employment in the sector. For example, the number of full-time primary fishers in Mainland increased from 78,672 in 1998 to 183,800 in 2014, with the number of people employment in secondary sector increasing from 2 million people in 1998 to more than 4 million people in 2014 (MLF, 2015 National Fisheries Policy). The same pattern happened in Zanzibar where the number of fishers increased from 34,269 in 2007 to 49,332 in 2016 (RGZ, 2016 frame survey report). Likewise, fish production from capture fisheries increased from 348,000 tons in 1998 to 365,974 tons in 2014, to about 470,000 tons in 2019 (MLF, 2020).

In relation to specific management performance, respondents were explicit over declining Catch Per Unit Effort (CPUE) as well as Landing Per Unit Effort (LPUE). Similar observations are placed on reduced size of individual fish being caught, and absence of certain fish species that used to be common in small-scale fish catches. It ought to be added, in this context, that significant declining of prawn catches in early 2000 forced the government to impose moratorium on industrial prawn fishing back in year 2007 before the ban was lifted 10 years after in 2017. Similarly, moratorium has been imposed on Sea cucumber (*Beche der mer*) fishing. The situation made it necessary to introduce FMPs for mitigation of deteriorating scenario.

The question on whether existing FMPs have or are achieving intended goal? It ought to be pointed out that, development and implementation of FMPs in Tanzania is still at an early stage of development. Initially, the general perception was that, having Fisheries policy, Act and Regulation in place was sufficient to effect rational fisheries resource management. With time, however, it became apparent that it would be extremely difficult to have effective and efficient fisheries resource management regime in the absence of FMPs. Therefore, with such background, and in the absence of concise evaluation study, it is rather premature to tell precisely whether a few existing FMPs are achieving their goals.

Perhaps, it is important to highlight some initial gains from implementation of FMPs and GMPs. For example, the collaboration between the government and NGOs have made it possible for collaborative Area Specific Management Planning to take roots in some fishing communities. This has resulted into evidence-based successes such as high catches through introduction of say octopus closures management regime. Also, the vivid positive gains have made other communities to adopt the approach voluntarily. The good performance of MPAs and MCAs, exhibiting relatively high CPUE and fish species that can hardly be observed outside MPAs, is another testimony of greater benefits that fishers stand to gain from developing and effective implementation of management plans.

### **5.1.7 SOCIO-ECONOMIC IMPACT OF EXISTING FISHERIES MANAGEMENT PLANS**

The socio-economic contribution of coastal fisheries in Tanzania is relatively huge, especially in terms of food fish supply, employment, and income generation in fishing communities. Specifically, fish tends to be a cheap source of animal protein to great majority of people in the country, providing over 30% of animal protein needs. Similarly, it is highly nutritive food with Omega-3 fatty acid, Vitamins, protein and minerals, and thus play part in keeping malnutrition at bay. With regard to employment, fishing industry has become a safety net for majority of coastal people who could have been in streets begging. Put all these factors together, one would not be wrong to suggest that rational management of fishery resources is synonymous with increased socio-economic benefit not only in fishing communities but the entire population at large.

The recent practice of certain communities to come together to plan management of their respective fishing grounds, such as reefs, has led to improved fish catches in respective areas. For example, in octopus fishing communities where they apply closed season management regime, fishers are experiencing increased catches to an extent of attracting large number of women into active octopus fishing. This exemplary case could substantiate the notion that fishers stand to secure greater socio-economic benefits from their fishery resources once development and implementation of FMP are put into practical effect.

On the other hand, however, the do and don'ts that are embedded in FMPs could result into changes in traditional fishing practices, compelling fishers to find alternative ways to sustain their life including migration to other places. The case of prawn fishers, in Rufiji delta fishing communities, who migrate to Mafia during closed season for prawn is one of such social consequences that may occur in the course of FMP's implementation.

### **5.1.8 SWOT ANALYSIS OF EXISTING FISHERIES MANAGEMENT PLANS**

Despite all that have been said, there are still a number of challenges of developing and implementation of FMPs in the country. The Strengths, Weaknesses, Opportunities and Threat / Challenges of existing FMPs are shown in the SWOT/ C matrix presented hereafter:

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>○ Supportive Fisheries Policy, Legal framework and NPoA for SSF Guidelines</li> <li>○ Existence of BMUs and other fisher-based associations</li> <li>○ Functioning Directorate of Fisheries and LGAs fisheries sections</li> <li>○ Government determination to develop SSF</li> <li>○ Presence of fisheries training and research institutions</li> <li>○ Development of NPoA for implementation of SSF Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>○ Lack of knowledge, skills and awareness among resource users and extension workers regarding FMPs</li> <li>○ Inadequate human and financial resources for effective FMPs development and implementation</li> <li>○ Lack of tenure rights in SSF</li> <li>○ Inadequate number of fisheries extension officers</li> <li>○ Weak management institutions at local level</li> </ul>
Opportunities	Threats / Challenges
<ul style="list-style-type: none"> <li>○ Regional cooperation</li> <li>○ Growing number of CSOs and NGOs working in fisheries resource governance and management</li> <li>○ Management institutions are buying the FMP's idea.</li> <li>○ Mobile phone technology is improving communication among resource users and managers</li> </ul>	<ul style="list-style-type: none"> <li>○ Some fishing grounds are in remote areas difficult to access</li> <li>○ Poverty and economic motives</li> <li>○ Rapid population growth in coastal areas</li> <li>○ High demand for fish associated with high price tag fuelling overexploitation of resource</li> <li>○ Escalating illegal fishing in the midst of weak enforcement capacity</li> </ul>

## 5.2 Priority fisheries still under open access that need FMPs

Although great efforts have been made in introducing FMPs in the country, there is a long list of coastal fisheries that are yet to be covered by any FMP. Therefore, it would be helpful to consider these fisheries in order to improve management practice and sustainability of the resources. The priority in this regard should be placed on successful introduction of area specific management plans, taking note of ecosystem approach to fisheries management with habitat aspects being taken on board. Respondents have strongly underscored an urgent need for management plans, especially for the following priority list:

- 1) Area Specific Fishery Management Plans within the Framework of Community-based management approach especially for reef fisheries;
- 2) Integrated Coastal Resources Management plans including habitat consideration;
- 3) Sardine / anchovy (Dagaa) fishery management plan (separate from broader Small and Medium Pelagic Management Plan);
- 4) Lobster fishery management plan;
- 5) Squid fishery management Plan;
- 6) Crab fishery management Plan;
- 7) Sharks and Rays fishery management plan (consideration should be provided for endangered shark species);
- 8) Sea cucumber fishery management plan (to be developed once the moratorium is lifted); and
- 9) Ornamental fishery management plan.

While it is true that catches being landed from many of the identified fisheries listed above is relatively low, but most of these species command high market prices both in domestic and export markets. Hence, they are at high risk of being over exploited if management intervention measures are not taken immediately.

### **5.3 Strengthening co-management for addressing Open Access**

Fisheries in Tanzania is characterised by multiplicity of fish species, fishing gears and methods, fishing boats, numerous fishing grounds and landing sites among many other factors. Consequently, management of the resource is rather complex, hard and costly for the government to manage it single-handed. Hence, the thrust is placed on engaging resource users in collaborative resource management. Main forms and institutions involved in coastal fisheries management include:

- i) Beach Management Units (BMUs) in Tanzania Mainland.
- ii) Village Fishermen Committees (*Shehia*) in Zanzibar.
- iii) Other fishers' organizations at different levels.
- iv) Collaborative Fisheries Management Areas (CFMAs).
- v) Marine Protected Areas (MPAs).
- vi) Village Liaison Committees (VCLs) for fishing villages in MPA areas.
- vii) Marine Conservation Areas (MCAs) in Zanzibar.

- viii) Non-Governmental Organizations (NGOs).
- ix) Local Government Authorities (LGAs); and
- x) Central Government Institutions and Agencies.

With exception of NGOs, LGAs, and Central government, the performance of majority of fisher-based organizations or arrangements appears to vary considerably. For example, some of the BMUs are achieving some successes such as mobilising communities towards planning for seasonal closure of coral reefs and creation of infrastructure or maintaining existing ones for improved fisheries operations. However, the fishers' organizations or arrangements appear to be facing significant challenges of institutional capacity and inadequate financial resources for planning and effective implementation of management plans.

In addressing those challenges, Mainland Tanzania has finalised development of National Plan of Action (NPoA) for implementation of the Voluntary Guidelines for Securing sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (the SSF Guidelines) (MLF, 2021). Also, work is in progress towards developing a similar plan of action on SSF but specific for Zanzibar. The main objective of the NPoA is to provide a framework that would enhance the contribution of small-scale fisheries to incomes, food security and nutrition, and to support the progressive realization of the right to adequate food for all. The urgency of developing and implementation of fisheries management plans is one of the major issues highlighted in the NPoA. More importantly, the SSF Guidelines have underscored the importance of user participation and capacity development to improve the small-scale fishers. Otherwise, there is a list of lessons that have been learned in relation to introduction of fisheries co-management in small-scale fisheries in Tanzania including the following:

- i) Strong Beach Management Units (BMU) is crucial in engaging resource users in co-management, and thus the need for restructuring this institution for improved proportional representation of different fishers' groups.
- ii) It is important to ensure that fishers are regularly updated with regard to research findings, policy and regulatory guidelines. This is an effective way of building constituencies for greater support in resource management.
- iii) The co-management arrangement requires roles and responsibilities to be clear and understood at community level. Also, a monitoring plan should be prepared to assess implementations of various agreed upon activities.
- iv) The cost of fisheries management is rather high. However, other sectors in the Blue Economy, such as those investing in tourist hotels, can be mobilized to contribute towards implementation of management plans in general and enforcement in particular.

- v) Promoting institutional partnerships between Public and Private Institutions including NGOs is an effective tool for effective management planning and implementation of management plans under co-management arrangement.
- vi) Sharing important data and information with fishers, including emerging management measures, effects of different fishing gear and techniques is very important in getting key stakeholders involved, and even in improving legitimacy of rules and regulations for voluntary compliance.
- vii) Provision of micro-credit scheme tends to accelerate socio-economic development of people in fishing communities coupled with creation of alternative sources of livelihood in communities, and thus help to reduce pressure from fisheries; and
- viii) The use of Community-Based Trainers (CBT) also known as Social Carriers of Technology / Innovation is sustainable and cost-effective means of mitigating inadequate number of fisheries extension officers required in strengthening fishers' organizations and implementation of management plans in communities.

Building institutional capacity of these local institutions could be one of the most effective way for strengthening development and implementation of Fisheries Management Plans for effective fisheries co-management.

## 5.4 Capacity needs, gaps and measures

In view of the current situation, with regard to fisheries resource management, the importance of building institutional capacity of management institutions to meet improved FMPs development and implementation challenges cannot be overemphasised. Some of the capacity measures include:

- i) Revise Fisheries Management Plans that are outdated.
- ii) Building institutional capacity of management institutions in country to meet the challenge of developing and implementation of effective fisheries management plans.
- iii) Re-tooling of basic material and equipment for effective implementation of Fisheries Management Plans.
- iv) Financing for development and implementation of other management plans for priority fisheries that are fully under open access regime.
- v) Develop curricular and provide training of trainers: Community-Based Trainers or Social carriers of innovations to complement services being provided by a few government-based fisheries extension officers.



- vi) Review licensing regime so that licenses are used as fisheries resource management tools instead of current practice of using license as source of income generation for Local Government Authorities (LGAs).
- vii) Provide environmental education for fishers and other stakeholders in communities in order to raise awareness regarding environmental conservation and protection.

## 5.5 Financing of fisheries management Plans

The fund for development and implementation of FMPs on Mainland Tanzania is mainly sourced from government appropriation budget or through donor-funded projects and programmes. Besides financing of GMPs that govern management of MPAs and MCAs in Mainland and Zanzibar respectively, there is no fixed or common formula for financing rest of FMPs. The unpredictability of funding is exacerbated by multiplicity of fishing grounds, gears and methods as well as an extensive coastal area that has to be covered the cost of developing and implementation of FMPs in the country.

One major shortfall is that existing FMPs do not have budget estimates for implementation, and thus financing mechanism is inconsistent. Nevertheless, experience suggest that large chunk of fund made available for fisheries management purpose is used to meet the cost of Fisheries Monitoring, Control and Surveillance (MCS) Operation and Training. It is estimated that this particular function would need a minimum of 2% of total value of harvested catch from respective fishery. For example, prawn or shrimp fishery produces an average of 2000 tons per annum, selling at an average of TSh. 5,000 per kilo. Hence, the fishery generates about Tsh. 10 billion per annum. The 2%, in this context, would be about Tsh 200 million, which should be ploughed back to cover cost of managing the resource including development or review on management plans.

In Zanzibar, over 80% of landing sites (*Shehia*) are within the Marine Conservation Areas (MCA) with potential funding being generated from the growing tourism industry. Currently, the RGZ is in the process of instituting regulation which would enable ploughing back certain percent of resource rent to cover for the cost of implementing General Management Plans (GMPs). The rest of landing sites, about 36 sites, are located outside MCA (RGZ, 2020). These sites would need Area Specific Management Plans (ASMPs) and financing mechanism for implementation.

Nevertheless, the importance of conducting a thorough study on MCS planning and cost of implementing each management plan cannot be overemphasized. The study would help in strengthening MCS operation, while taking cost-benefit analysis into context including required material, facilities and equipment for effective and efficient management regime.

## 5.6 Regional cooperation on Trans-boundary stocks

With regard to trans-boundary stocks, majority of respondents, 75%, have pointed out that most of the high-value species found in the country are also available in other countries in the region. It includes octopus, shrimp, sea cucumber, sharks and rays and even small-pelagic fish. Therefore, the importance of bilateral or regional collaboration, in managing these fisheries, cannot be over emphasized especially through sharing of experience and management strategies. The successful closure of octopus fishery, for example, has triggered adoption of the intervention across the region. Moreover, fishery products being exported to international markets are recognized by country and zones. If something goes wrong in one country it can affect branding of products from other countries, and thus the need for bilateral or regional cooperation.

Experience suggests that the quest for regional collaboration has always been there, unfortunately the move has been sluggish. All in all, the presence of highly migratory tuna and tuna-like species across the region, and scenario such as trans-boundary stocks of Octopus in Mtwara in Tanzania and Cabo Delgado in Mozambique or prawns of Tanga in Tanzania and Mombasa in Kenya are stocks that require joint FMPs and other resource management efforts and strategies for sustainability's sake.

Potential areas for collaboration include:

- i) Development of common regional guideline for development of management plans in the region;
- ii) Development of common regional protocol data and information flow system;
- iii) Regional training and joint operation (where practical) for Fisheries Monitoring, Control and Surveillance (MCS) function;
- iv) Establishing system for sharing trade and marketing information;
- v) Develop guidelines on basic requirements for successful introduction of fisheries co-management in small-scale fisheries in the region; and
- vi) Building institutional capacity of key institutions to meet FMPs development and implementation challenges.

## 6.0 CONCLUSION AND RECOMMENDATIONS

In conclusion, study has found that small-scale coastal fisheries can hardly be managed in the absence of users' participation in management of respective fisheries under co-management regime. On the other hand, development and effective implementation of FMPs is basic requirement for successful fisheries co-management regime. Therefore, more efforts have to be made in introducing the culture of developing and effective implementation of FMPs in all fisheries and or significant ecosystem areas. The basic requirements for successful introduction of FMPs are:

- i) Constituencies building to gain increased moral, technical and financial support for development and effective implementation of fisheries management plans.
- ii) Resource users' representation during development and implementation of FMPs, is critical in achieving positive results, and thus it is important to profile fishers for effecting proportional representation in decision-making process.
- iii) The cost of FMP's development and implementation could be a limiting factor to effective resource management, and thus there is an urgent need for addressing funding mechanism including exploring the possibility of ploughing back part of the resource rent being generated for management or respective fisheries.
- iv) Increased effort should be placed on Area Specific Management Planning because the model is cost-effective, is of particular interest to resource users, and has basic requirements for successful co-management arrangement.
- v) The issue of legal framework for FMPs should be considered including enacting by-laws for Area Specific Management Plans, providing Government Notices (GN), (gazetting), and codifying FMPs in other policy and legal instruments.
- vi) Training of trainer's program should be developed at regional and national levels to support successful development and implementation of FMPs for effective sustainable resource management.

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