PROMOTE UPTAKE AND IMPLEMENTATION OF KNOWLEDGE, INNOVATIONS AND BEST PRACTICESTO INFORM POLICY CHANGE IN FISHERIES MANAGEMENT AND AQUACULTURE DEVELOPMENT AT NATIONAL AND REGIONAL LEVELS IN AFRICA

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PREPARED BY

NATIONAL FISHERIES RESOURCES RESEARCH INSTITUTE (NaFIRRI)

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FOR

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ACRONYMS

ABNJ	Areas beyond National Jurisdiction
ACEA	Centre of Excellence for Aquaculture
AFD	French Agency for Development
AfDB	African Development Bank
ALB	Albacore Tuna (ICCAT Species Code)
ANAF	Aquaculture Network of Africa
ATLAFCO	Ministerial Conference on Fisheries Cooperation among African \ States bordering the Atlantic
AU	African Union
AUDA-NEPAD	African Union Development Agency – New Partnership for Africa's Development
AU-IBAR	African Union-Inter-African Bureau for Animal Resources
AU-MS	African Union – Member States
AWFISNET	African Women Fish Processors and Traders Network
BCEAO	Central Bank of West African States
BET	Bigeye tuna (ICCAT Species Code)
CAADP	Comprehensive Africa Agriculture Development Programme
CAMFA	Conference of African Ministers of Fisheries and Aquaculture
CARICOM	Caribbean International Community
CARP	Community Action Research Programmes
CCLME	Canary Current Large Marine Ecosystems
CCRF	Code of Conduct for Responsible Fisheries
CFRAMP	CARICOM Fisheries Resource Assessment and Management Programme
CFAA	
CIFAA	Committee for Inland Fisheries and Aquaculture of Africa
CITES	United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
COPACE	Fisheries Committee for East Central Atlantic)
COREP	Regional Fisheries Committee for the Gulf of Guinea
CPC	Contracting Parties and Non-Contracting Cooperating Parties
CPCO	Comité des pêches pour le centre-ouest du Golfe de Guinée
CSOs	Civil Society Organizations
CTT	Common Trade Tariff
DEC	Delegation of the Economic Commission
DEU	Delegation of European Union
DFID	Department for International Development
DRC	Democratic Republic of Congo

DWFNs	Distant Water Fishing Nations
EA	East Africa
EAC	Eastern Africa Community
EAF	Ecosystem Approaches to Fisheries
ECA	Economic Commission for Africa
e-CAS	Electronic Catch Assessment Survey
ECOWAS	Economic Community of West African States
EDF	European Development Fund
EEZ	Exclusive Economic Zone
EFMIS	Electronic Fish Market Information System
EIB	European Investment Bank
EITI	Extractive Industries Transparency Initiative
EPA	Economic Partnership Agreement
EU	European Union
FAD	Fish Aggregating Device
FAO	United Nations Food and Agriculture Organization
FGEF	French Global Environmental Facility
FIP	Fishery Improvement projects
FISH-i Africa	Fish-i Africa partnership
FPA	Fisheries Partnership Agreement
FPV	Fisheries Protection Vessel
GEF	Global Environment Facility
GDP	Gross domestic product
GFCM	General Fisheries Commission for the Mediterranean
GDP	Gross Domestic Product
GNI	Gross National Income
GPS	Global Positioning System
ICCAT	International Commission for the Conservation of Atlantic Tunas
IDB	Islamic Development Bank
IEO	Instituto Español de Oceanografía
IGAD	Intergovernmental Authority on Development
ILO	International Labor Office
IOC	Indian Ocean Commission
IORA	Indian Ocean Rims-Association
IPOA	IUU International Plan of Action to Prevent, Deter and Eliminate
IOTC	Indian Ocean Tuna Organization
IPOA	IUU International Plan of Action to Prevent, Deter and Eliminate
IRD	Institute for Research and Development
IUCN	International Union for the Conservation of Nature
IUU	Illegal, Unreported and Unregulated Fishing
LCBC	
LME	Large Marine Ecosystems
LOSC	United Nations Convention on the Law of the Sea

LTA	Lake Tanganyika Authority
LTBP	Lake Tanganyika Biodiversity Project
LTR	Lake Tanganyika Research Project
LTRIEMP	Lake Tanganyika Regional Integrated Environmental Monitoring Programme
LVBC	Lake Victoria Basin Commission
LVFO	Lake Victoria Fisheries Organization
MCS	Monitoring, Control and Surveillance
MDG	Millennium Development Goal
MPAs	Marine Protected Areas
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NaFIRRI	National Fisheries Resources Research Institute
NAPA	National Adaptation Programmes of Action
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
NPOA	National Plan of Action to Prevent, Deter and Eliminate
NSA	Non-State Actors
OECD	Organization for Economic Cooperation and Development
OSBP	One-Stop-Border-Point
PAF	Partnership for African Fisheries
PAFPF	Pan-African Fisheries Policy Framework
PCSD	Policy Coherence for Sustainable Development
PFRNFAA	Policy Research Network for Fisheries and Aquaculture in Africa
PFRS	Policy Framework and Reform Strategy
PO	Producers' Organization
PPP	Public Private Partnership
PRSP	Poverty Reduction Strategy Paper
PSMA	Port State Measures Agreement
RBFM	Rights-Based Fisheries Management
RECs	Regional Economic Communities
REIs	Regional Economic Integrations
REOs	Regional Economic Organizations
RFBs	Regional Fisheries Bodies
RFMOs	Regional Fisheries Management Organizations
RFP	Regional Fisheries Organization
RSCs	Regional Seas Conventions
RTAs/Ps	Regional Trade Agreements/Policies
SACU	Southern Africa Customs Union
SADC V	Southern African Development Community
SAP-FL	Special Action Program to Combat Forced Labor
SCRS	Standing Committee on Research and Statistics
SDGs	Sustainable Development Goals

SEAFO	South East Atlantic Fisheries Organization
SKJ	Skipjack (ICCAT Species Code)
SMEs	Small and Medium Enterprises
SPADA	Special Programme for Aquaculture Development in Africa
SRFC	Sub-Regional Fisheries Commission
STR	Sundarban Tiger Reserve
SWIFC	South West Indian Ocean Fisheries Commission
UEMOA	Union Économique et Monétaire Ouest Africaine
UMA	Union Maghreb Arab
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFSA	United Nations Fish Stocks Agreement
UNICEF	United Nations Children's Fund
USAID	United State Agency for International Development
USD	United States Dollars
UVI	Unique Vessel Identifier
VMS	Vessel Monitoring System (by satellite)
WB	World Bank
WBC	Western boundary current
WBFM	Wealth Based Fisheries Management
WTO	World Trade Organization
YFT	Yellowfin Tuna (ICCAT Species Code)

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EXECUTIVE SUMMARY

This report presents outcomes of a study conducted by the National Fisheries Resources Research Institute (NaFIRRI), Uganda on behalf of the African Union – Inter-African Bureau for Animal Resources (AU-IBAR). The study aimed to foster the adoption and implementation of Knowledge, Innovations, and Best Practices from previous projects (FishGov1 and Fish Trade) to guide policy reforms in sustainable fisheries and aquaculture across African Union Member States (AU-MS).
The study focused on three key objectives:
1. Conducting a comprehensive review of outputs from FishGOV1 and Fish Trade projects to informing policy change.
2. Developing mechanisms to enhance the uptake of knowledge, innovations, and best practices at national and regional levels.
3. Organizing validation workshops to review and endorse the study's outcomes.

Key Recommendations:

a) *Monitoring, Control, and Surveillance (MCS):* Implement national and regional MCS mechanisms based on the issue of currently authorized vessels and advocating for a regional approach to encourage the establishment of coordination units.
b) *Ecolabeling and Fisheries Improvement Projects (FIP):* Support pilot projects at various scales, emphasizing the need for streamlined mandates among institutions to prevent overlap and duplication.
c) *Fisheries Management in Shared Waters:* Promote participatory processes and ensuring stakeholder involvement for robust management plans. Introduce new control technologies to combat illegal, unreported, and unregulated (IUU) fishing.
d) *Regional Cooperation:* Strengthen South-South cooperation and establish coordination mechanisms among regional bodies, ensuring policy coherence and collaboration with data centers.
e) *Holistic Aquaculture Development:* Develop holistic policies encompassing environmental management, environmental assessment procedures, waste disposal guidelines, and regulations for fish farms. Prioritize adherence to regional aquatic animal biosecurity frameworks.
f) *Standardization:* Develop standards and a code of practice for fish handling, processing, and distribution across the continent.
g) *Gender Inclusivity:* Conduct a gender analysis on ornamental fisheries and devise interventions to encourage the active participation of women and youths.

In conclusion, effective fisheries management and aquaculture development in Africa necessitates a comprehensive approach addressing the aforementioned thematic areas

at both national and regional levels. The endorsement and implementation of these recommendations are expected to contribute significantly to sustainable practices, governance, and conservation efforts in the sector.

CHAPTER ONE

PROMOTION OF THE UPTAKE AND IMPLEMENTATION OF KNOWLEDGE, INNOVATIONS AND BEST PRACTICES TO INFORM POLICY CHANGE IN FISHERIES MANAGEMENT AND AQUACULTURE DEVELOPMENT AT NATIONAL AND REGIONAL LEVELS IN AFRICA

1.0 Background to the Consultancy

The African continent is endowed with productive aquatic ecosystems (Marine and Freshwater) with significant fishing and aquaculture activities. The Fisheries and Aquaculture sector in Africa currently provides benefits in terms of economic growth, livelihoods and food security. However, the sector still has enormous potential to significantly increase its contribution to GDP, food security and poverty alleviation in the 5 regions of the continent. In a bid to increase the sustainable contribution of the fisheries and aquaculture sector, the Policy Framework and Reform Strategy (PFRS) for Fisheries and Aquaculture in Africa was endorsed by the 2014 African Union Joint Ministerial conference in Addis Ababa, Ethiopia (AU-IBAR, 2014). Thereafter, through the EU Fisheries Governance project phase 1 (FISHGOV1) implemented by AU-IBAR, the first continent-wide intervention in the African fisheries and aquaculture was implemented to address the following challenges: poor coordination among actors, lack of coherence in governance instruments and approaches, increasing incidences of illegal, unreported and unregulated (IUU) fishing due to weak capacity in the AU Member States, weak evidence to foster reform, generally weak capacity and poor infrastructure, and lack of inclusive governance (AU-IBAR, 2014).

In a bid to fulfil the Vision of her Strategic Plan 2018-2023, which is enshrined in the PFRS, the AU-IBAR implemented the EU-funded FISHGOV1 project between 2014 and 2018. The project encompassed 55 AU Member States and 8 Regional Economic Communities (RECs). The AU-IBAR, in collaboration with WorldFish and African Union Development Agency, AUDA-NEPAD, concurrently implemented the Fish Trade project during the same period (2013 – 2018). A lot of information generated is available in various reports and publications, which leaves a key strategic niche of packaging and dissemination of information and knowledge on animal resources including fisheries and aquaculture as enshrined in her strategic plan. As the information generated is mainly in workshop and consultancy reports and includes lessons and best practices, these need to be consolidated to support application of best practices and evidence-based decision making for the sustainable governance of the sector.

To this end, the challenge has remained on how to utilize the outputs from the two projects to guide policy reforms for sustainable fisheries and aquaculture in AU Member States. Utilization of outcomes of these projects for policy reforms has not been very successful in AU- Member States. Therefore, it was imperative to identify a mechanism of how to facilitate utilization of outcomes from the two projects. Subsequently, the National Fisheries Resources Research Institute (NaFIRRI) was contracted to undertake a consultancy towards promotion of uptake and implementation of knowledge, innovations and best practices (including those generated by FISHGOV1and Fish Trade projects) to inform policy change in Fisheries management and Aquaculture development at national and regional levels in Africa.

1.1.0 Understanding of the study to promote uptake and implementation of Knowledge, Innovations and Best Practices to inform policy change in fisheries management and aquaculture development at national and regional levels in Africa.

1.1.1 The objective of the consultancy

The consultancy is within the overall objective of the FISHGOV2 project that aimed to enhance the contribution of fisheries and aquaculture resources to food security and economic development in Africa. The objective of the contract was to promote uptake and implementation of knowledge, innovations and best practices (including those generated by FISHGOV1 and Fish Trade Projects) to inform policy change in fisheries management and aquaculture development at national and regional levels in Africa.

1.1.2 Geographical coverage

The consultancy study is continent-wide and was carried out in liaison with 55 AU Member States, relevant regional institutions including the eight Regional Economic Communities (RECs), Regional Fisheries Bodies (RFBs), Regional Sea Conventions (RSCs), Water Basin Commissions, and Non-State Actors (NSA) in Africa. NaFIRRI, a center of Excellence for fisheries and aquaculture in Africa, worked with target groups to collect information on the following areas: (i) the implementation of FISHGOV 1 and Fish Trade projects; (ii) best practices and key policy messages based on identified issues for policy reform in AU Member States and related institutions; (iii) Best practices and policy messages that are crucial to support rational governance of the sector by AU Member States; and relevant regional institutions.

1.1.3 Scope of work

The consultancy falls within the overall broad thematic area of the FISHGOV2 project on ensuring that Fisheries and Aquaculture policies in Africa are coherent with the Policy Framework and Reform Strategy (PFRS) and other AU priorities, and that these are coordinated at continental, regional and national levels. Specifically, the contract

largely entailed review of reports and documents generated from implementation of FISHGOV1 and Fish Trade projects. This was mainly for the formulation of best practices and key policy messages to enhance rational utilization by the AU Member States and regional institutions for reform of the Fisheries and Aquaculture sector for increased sustainable contribution by the sector to food security, livelihoods and socio-economic development of the continent. The consultancy was conducted from November 2022 to February 2024

1.1.4 The Purpose of the study

The purpose of this study was geared at the following: -

a) Examine relevant reports and the main outcomes from implementation of FISHGOV1 and Fish Trade projects;

b) Identify from the reports, and evaluate and assess relevant issues for the formulation of best practices and policy messages that are crucial to support rational governance of the sector by AU Member States and regional institutions;

c) Formulate best practices and key policy messages based on identified issues for policy reform in AU Member States and related institutions;

d) Facilitate a regional stakeholders' validation workshop in 3 Regions (i.e. West, Eastern and Northern Africa) for the consolidation of best practices and key messages on issues from review of outcomes from the FISHGOV1 and Fish Trade projects; and

e) Develop recommendations for facilitating the utilization of documented lessons and best practices in AU Member States and regional institutions to effect policy reforms.

1.1.5 Expected outputs of the study

The expected outputs of the study are anchored on the following:

a) A Review of activities based on reports from implementation of FISHGOV1 and Fish Trade projects with critical issues identified for formulation of best practices and key policy messages for fisheries and aquaculture reform;

b) Documentation of Best practices and key messages crucial to improved reform of the fisheries and aquaculture management; and

c) Relevant documentation to support and facilitate three regional stakeholders' validation workshops.

1.1.7 *The Target groups of the study*

During the implementation of the study, the target groups were the AU Member States (AU MS), Regional Economic Communities (RECs), Regional Fisheries Bodies (RFBs), Regional Seas Conventions (RSC), Water Basin Commissions, Partners and Non-State actors. The selected institutions also facilitated and guided the conduct of one regional workshop for validation of the outcomes of the consultancy in the five regions of the continent (i.e. West, Central, East, Southern and Northern Africa).

1.1.8 Tasks and method of work

The tasks stipulated in the Terms of Reference (ToRs) of the consultancy were carried out using the approaches stated below.

Task One: Review relevant reports and the main outcomes from implementation of FishGOV1 and Fish Trade projects.

Under this Task, NaFIRRI organized zoom meetings with selected authorities in relevant organizations at national, regional and continental level. The meetings mainly discussed ways of promotion and uptake of knowledge, innovations and best practices with respect to the fisheries and aquaculture sectors. In addition, NaFIRRI reviewed literature on FISHGOV1 and Fish Trade projects on Fisheries, aquaculture, Socioeconomics and their allied Environmental practices in Africa. Appendix, 1 presents some of the relevant policy instruments, strategies, guidelines, documents and publications in Fisheries and Aquaculture that were reviewed. The information and knowledge compiled under Task One was later repackaged into different knowledge products to promote uptake and implementation of knowledge, innovations and best practices to inform policy change at national and regional levels

Task Two: Identify, evaluate and assess relevant issues from available reports for the formulation of best practices and policy messages that are crucial to support rational governance of the sector by AU Member States and regional institutions.

Under this Task, NaFIRRI in conjunction with other regional bodies such as LVBC, LVFO, RECs, RFMOs, RFBs and RSC had virtual meetings to address the formulation of best practices and key messages crucial to improved reform of the fisheries and aquaculture management. This was done in collaboration with AU-IBAR staff, in addition to survey monkey questioners that were sent to stakeholders to address areas of interventions.

Task Three: Formulate best practices and key policy messages based on identified issues for policy reform in AU Member States and regional institutions.

NaFIRRI generated information geared at building capacity for trade among private sector associations, women fish processors and traders, and aquaculture producers, to make better use of expanding trade opportunities through competitive small and medium-scale enterprises. The institution consulted regional organizations and bodies through virtual meetings, interviews and workshops. Best practices and key policy messages on the identified policy reforms in AU Member States and institutions were formulated through reviewing related documents and interactions with AU Member States and related Institutions in order to generate best practices and key policy messages.

Task Four: Facilitate regional stakeholders' validation workshops in three (3) Regions (i.e. Western, Eastern and Northern Africa) for the consolidation of best practices and key messages on issues from review of outcomes from the FishGov1 and Fish Trade projects.

Regional stakeholder workshops were organized in conjunction with AU- IBAR.

Task five: Develop recommendations for facilitating the utilization of documented lessons and best practices in AU Member States and regional institutions to effect policy reforms.

The consultants made several recommendations for policy reforms based on the lessons learnt and best practices obtained from the review of *FishGOV1 and Fish Trade projects* as well as opinions/views of the stakeholders who were interviewed. The stakeholders validated these recommendations during the regional stakeholders' workshop organized by AU-IBAR staff in order to facilitate the implementation of best practices and boost fish and aquaculture trade. The Regional stakeholders' validation workshops emphasized stakeholder engagement and involvement in the fisheries and aquaculture fish trade by providing information that guided quality fish trade in the region. Recommendations on documented lessons and best practices in AU Member States and regional institutions geared at policy reforms were submitted to AU-IBAR .

1.1.9 The guiding questions towards the study

For each of the tasks listed above, a checklist of guiding questions was developed to guide the consultants to obtain relevant information for the consultancy. The key questions were:

a) What were the main outcomes generated from the FISHGOV1 and FISH TRADE and other interventions?;

b) What are the relevant issues identified from the FISHGOV1 and FISH TRADE projects for the formulation of best practices and policy messages that are

crucial to support rational governance of the sector by AU Member States and regional institutions?;

c) What are the best practices and key policy messages identified for policy reform in AU Member States and regional institutions?;

d) What challenges affected the achievements of the FISHGOV1 and FISH TRADE objectives and lessons learnt?; and

e) What recommendations can facilitate the utilization of documented lessons and best practices in AU Member States and regional institutions to effect policy reforms?

1.1.10 *Data collection of the study*

a) Reports from activities implemented during FishGOV1 and Fish trade projects were submitted to the consultant by AU-IBAR;

b) The consultants worked with regional bodies such as Regional Economic Communities (RECs), Regional Fisheries Bodies (RFBs), Regional Seas Conventions (RSCs) and organizations such as Lake Victoria Basin Commission (LVBC) Lake Victoria Fisheries Organization (LVFO), World Fish, African Women Fish Processors and Traders Network (AWFISNET), Policy Research Network for Fisheries and Aquaculture in Africa (PFRNFAA) and regional NSA. Key informants in this study included independent experts who were largely involved in carrying out consultancy studies during FishGOV1 and Fish Trade projects. These sources provided the following:

   i. Information on the implementation of FISHGOV1 and Fish Trade projects; and

   ii. Best practices and key policy messages based on identified issues for policy reform in AU Member States and related institutions.

c) Best practices and policy messages that are crucial to support rational governance of the sector by AU Member States and regional institutions;

d) Data and information obtained through various mechanisms such as virtual meetings and consultative workshops, focus group discussions, key informant interviews, use of case studies, and literature reviews; and

e) Undertook pilot studies based on the generated information.

To note is that data collection method was based on snowball and Purposive sampling methods to cover gender at all levels.

1.1.11 Data analysis and report preparation

Data were analyzed and reports were written, organized and submitted to AU-IBAR as described in detailed sections mentioned below. The report prepared covered the following:

a) Reviews and other outcomes generated from the implementation of FISHGOV1 and Fish Trade projects to promote uptake and implementation of knowledge, innovations and best practices to inform policy change at national and regional levels;
b) ii) Mechanisms for enhancing uptake of knowledge, innovations and best practices to inform policy changes at national and regional levels of the continent;
c) Formulated best practices and key policy messages based on identified issues for policy reform in AU Member States and related institutions;
d) Recommendations in facilitating the utilization of documented lessons and best practices in AU Member States and regional institutions to effect policy reforms; and
e) Beyond the virtual Zoom meetings, team members convened in physical general meetings to deliberate on the assigned tasks as illustrated in Plates 1 and 2. This hybrid approach ensured a comprehensive exploration of key elements and fostered in-depth discussions among team members.



Plate 1: Consultants at one of the working Meetings at Mukono Zonal Agricultural Research Institute in Uganda. (Photo Credit: Turyashemererwa Martin)



Plate 2: Director addressing the working group at Mukono Zonal Agricultural Research Institute in Uganda. (Photo Credit: Turyashemererwa Martin)

CHAPTER TWO

RELEVANT REPORTS AND THE MAIN OUTCOMES FROM IMPLEMENTATION OF FISHGOV 1 AND FISH TRADE PROJECTS

2.0 BACKGROUND INFORMATION ON THE FISHGOV1, FISH TRADE PROJECTS, ORNAMENTAL FISHERIES AND AQUACULTURE IN AFRICA

This Chapter outlines the outcomes of FISHGOV1 and Fish trade projects, Aquaculture and ornamental fisheries in Africa. The outcomes are under thematic areas of fisheries management, Fish trade and Aquaculture under FISHGOV1. The reviews focused on workshop reports of Monitoring Control and Surveillance (MCS) for combating Illegal Unreported and Unregulated fisheries (IUU) in the five regions of Africa; reports of Expert consultation on Ecolabeling certification and Fisheries Improvement Project, (FIP); Performance of the Regional Fisheries Bodies (FFBs), Fisheries Management issues in shared lakes and rivers; Negotiating fisheries access arrangements with a regional approach; Governance of Large Marine Ecosystems (LMEs); Fisheries Management approaches and practices; Coordination; and regional cooperation in fisheries management.

Reviews on Fish Trade Projects implemented in Africa focused on inter and intra-regional fish trade including harmonizing regional Fish trade policies; critical factors; fish trade corridors and one stop border enhancement; and engagement of women and youth along fisheries and aquaculture value chain. The review on Aquaculture development in Africa focused on Aquaculture production; extension practices in aquaculture systems; best aquaculture practices; and ornamental fish exploitation and trade. In the review process emphasis was placed on key outcomes of previous projects, key policy messages and recommendations, policy gaps, lessons learnt, prevailing challenges, and proposals on how to improve the MCS programs to ensure they are sufficient in their operations on the African continent.

Reviews of the outcomes of FISHGOV1; fish trade projects, aquaculture and ornamental fisheries in Africa was undertaken. This was done under three thematic areas i.e.: Fisheries management in Africa under FISHGOV1; Fish trade; and aquaculture. Reviews on fisheries management under FISHGOV1 focused on workshop reports undertaken on Monitoring Control and Surveillance (MCS) for combating Illegal unreported and unregulated fisheries (IUU) in the five regions of Africa; Expert consultations on Ecolabeling certification and Fisheries Improvement Projects (FIP); Performance of the Regional Fisheries Bodies (RFBs); Fisheries Management issues in

shared lakes and rivers; Negotiating fisheries access arrangements with a regional approach; Governance of Large Marine Ecosystems (LMEs); Fisheries Management approaches and practices; Coordination; and regional cooperation in fisheries management. Reviews on Fish Trade Projects implemented in Africa focused on inter and intra-regional fish trade including harmonizing regional Fish trade policies, critical factors, fish trade corridors and one stop border enhancement; and engagement of women and youth along fisheries and aquaculture value chain. The review on Aquaculture development in Africa focused on Aquaculture production, extension practices in aquaculture systems, best aquaculture practices, and ornamental fish exploitation and trade. Below are details of each of the thematic areas with emphasis on identifying key outcomes of previous projects, key policy messages and recommendations, policy gaps, lessons learnt, prevailing challenges, and proposals on how to improve the MCS programs to ensure they are sufficient in their operations on the African continent.

2.1 FISHERIES MANAGEMENT IN AFRICA

2.1.1 Monitoring Control and surveillance in the African Member States

At a global level, fish is the most important source (37%) of animal protein in Africa, broken down as follows: marine fish (21 %); inland water fish (11 %); and aquaculture (5 %). The per capita medium average fish consumption for the African Member States in 2010 was 9.1kg/year, which is less than half of the global average of 18.4kg/year. The fisheries and aquaculture sector in Africa employ about 12.3 million people (FAO, 2022). Half of the 12.3 million people employed in the whole fisheries sector are fishermen, 4.9 million (42.4 %) are processors, and 0.9 million (7.5 %) work in fish farming. More than half of the fishermen (55 %) are employed in inland fisheries, whereas the largest share of processors (42%) works in marine artisanal fisheries, followed by 30% in inland fisheries and 28% in industrial fisheries. Many small-scale ('artisanal') fisheries involve high food and livelihood dependency on fishing, and often represent employment of last resort, particularly in weak and post conflict states. The total annual Africa fisheries production is estimated to be about 8 million metric tons, which represents about 5% of world fisheries production, and contributes at least 10 billion USD to African economies every year. Illegal unreported and unregulated (IUU) fishing is a global phenomenon with severe environmental and socio-economic impacts. It is estimated that 20% of all catches in the world are from IUU fishing (FAO, 2021) (Plate 3).

Developing countries pay the highest price for these illegal activities. The implementation of Monitoring Control and Surveillance (MCS) to combat IUU fishing has its legal basis in international binding and nonbinding instruments such as the United Nations Convention on the Law of the Sea, UN Fish Stocks Agreement, FAO

Compliance Agreement, the FAO Code of Conduct for Responsible Fisheries and the International Plans of Action to Prevent, Deter, and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU) (non-binding), and the FAO Port State Measures Agreement (binding) and ancillary instruments.



Plate 3: The use of beach seine on Lake Victoria, Kenyan part (IUU) fishing. (Photo Credit: Dr. Jospeth. Nyaunde)

These instruments provide the adoption of a number of MCS measures and tools all along the production, supply and value chain. The fishery in Africa is characterized by weak MCS systems and high incidences of IUU fishing activities, contributing to overfishing problems and resulting in a loss of revenues, food security and other social benefits for the concerned populations. This was observed under the Advocacy paper (AU-IBAR, 2016) that critically addressed some of the intervention areas in the IUU such as: Main points; Key characteristics of IUU fishing in Africa; Economic impacts; Social impacts; Environmental impacts; Motivating factors for IUU fishing; Factors making Africa vulnerable to IUU fishing; Forms of support required to strengthen the capacity of African coastal Member States to effectively curb IUU fishing; Technical measures for combatting IUU fishing; and finally the Action Plan on curbing IUU at both national and regional levels. To improve the capacity of sustainable management and better share benefits of the management of fisheries resources in Africa, the African Union has developed a Policy Framework and Reform Strategy for Fisheries and Aquaculture, adopted by the 23rd summit of African Heads of States and Governments in Malabo, Equatorial Guinea, in June 2014. To contribute to the implementation of the

AU Policy Framework and Reform Strategy, the African Union has received support from the European Union to implement a project on 'Strengthening institutional capacity to improve the governance of the fisheries and aquaculture sector in Africa.

MCS Components and tools have three spatial components: land, sea, and air. The land component of an MCS system serves as the base of operations and the coordinating center for all MCS activities from which governments can regulate the deployment of resources to best address changing situations. It is the sector responsible for port inspections and the monitoring of trans-shipments and trade in fish products to ensure compliance with fisheries legislation. The sea component includes MCS activities undertaken in marine areas under the jurisdiction of a State and may cover high seas areas. The technology involved in the sea component of MCS includes radar, sonar, and vessel platforms (Plate 4).

The air component of MCS is usually the first level of response to a Coastal States or region of concern and covers the air and space equipment such as aircrafts and satellites used in MCS activities. The flexibility, speed and deterrence of air surveillance make it a very useful and cost-effective tool for fisheries management. Different States and regions would have different application and combination of the land, sea, and air components of their MCS systems, based on cost, commitment, organizational structure, and fisheries management issues and priorities.

In order to address holistically various thematic areas of The National and Regional Monitoring Control and Surveillance (MCS) in the African states, studies were carried out on:

a) *"Status of the Fisheries Monitoring, Control and Surveillance Systems in North Africa Strengthening National and Regional Capacities for Combating Illegal, Unreported and Unregulated Fishing August 2016";*

b) *"Status of Monitoring, Control and Surveillance Systems in Southern Africa Strengthening National and Regional Capacities for Combating Illegal"; "Unreported and Unregulated Fishing"*

c) *Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa; creating a conducive and enabling environment for the fish sector to create equitable, social and economic development in Africa"*

d) *"Status of Monitoring, Control and Surveillance Systems in East Africa Strengthening National and Regional Capacities for Combating Illegal, Unreported and Unregulated Fishing";*

e) *"Economic, Social and Environmental impacts of Illegal, Unreported and Unregulated Fishing (IUU) in Africa - A Plan of Action; Advocacy Paper. AU-IBAR Reports"*

f) *" The Pan African Policy Framework and Reform Strategy for Fisheries and Aquaculture 2014";and*

g) *"The AU Guidelines for implementation of Policy framework and Reform Strategy incorporate criteria and indicators to facilitate domestication of relevant provisions in national and regional policies"*



Plate 4: Some of the Research vessels used for Fisheries Research and MCS under SMARTFISH in East African region. (Photo Credit: Dr. Samuel Bassa)

The studies came out with various outcomes from the MCS areas and these were as follows: i) Capacity development for Fishery Research Institutions); ii) Standardization of data collection at sea (including protocol, processing and analysis); iii) Data analysis at national level and sub-regional level; iv) Adoption of participatory fisheries management mechanisms/approaches; v) Fisheries management programs that account for and integrate ecological interactions e.g. by-catch; vi) habitat quality, and socio-economic concerns; vii) effective and sustainable regional MCS systems operating in all regions; viii) Various strategies and actions were identified as crucial for the implementation of this policy area; viii) creating an enabling environment for sustainable management and for generating the potential of the resources; ix) designing and applying appropriate users' rights-based systems; x) conducting fisheries within enforceable regulatory frameworks through an appropriate statutory/regulatory framework that is clearly understood, enforceable and supported by resource users and others, hence, the development and strengthening of the institutional framework for MCS for combating IUU fishing; xi) Strengthening information systems, and designing and applying risk management framework. xii) Transparency, accountability and effective participation of stakeholders; xiii) Coherent and harmonized international

fisheries issues at regional levels; xiv) Harmonized approaches to the management and development of shared Fisheries and ecosystems; xv) RECs and RFBs as positive forces for regional economic integration; xvi) Sector strategy built around the generation and sustainability of societal benefits in many countries and user rights-based fisheries tools introduced across Africa; xvii) Viable fisheries and aquaculture Small and Medium-Size Enterprises (SMEs) operating in many countries; xviii) Effective and sustainable regional Monitoring, Control and Surveillance (MCS) systems operating in all regions; xix) Food security and nutrition in addition to the existing and potential employment opportunities; xvi) Women and gender relations; xx) Human rights along the coast of Africa; and xxi) Fishing and fishery related activities such as boat building and net making. Thus, Fishing provides an important 'safety net' for the poor especially in times of hardship.

2.1.2 Ecolabeling and Fisheries Improvement projects (FIP); expert consultations in the African countries

This study was done from various reports such as: i) *"Awareness Creation Workshop on Fishery Improvement Projects (FIPS) For Eco-Labelling Certification towards Sustainable Fisheries and Market Access" 11th July 2015 Abidjan, Cote D'Ivoire; ii) "Capacity Building Workshop on Fisheries Improvement Program, 19th - 21st September 2018, Zanzibar Tanzania"; iii) "Capacity Building Workshop on Fisheries Improvement for Sustainable Fisheries in Africa, 14–19 December 2016, Yaoundé, Cameroon"; and iv) "Report of the Workshop on: Promoting a Regional Approach to Fisheries Improvement and Certification for Octopus Fisheries in the Southwest Indian Ocean (Phase 1): SWIO Regional Pre-Assessment for Octopus Project Initiation Meeting with Key Stakeholders Involved in the Project.*

Awareness enhancing and training workshops were designed to build capacity for African fisheries to benefit from Certification and Ecolabelling that were held in various parts of the African continent. Two of them were in Zanzibar, Tanzania in 2015 and 2017; then in 2015 in Abidjan, Cote D'Ivoire; and also in Yaoundé, Cameroon in 2016. These were organized by the African Union Inter-African Bureau for Animal Resources (AU-IBAR) in collaboration with the Africa Regional Standard Organization (ARSO) and Marine Stewardship Council (MSC) with support from the European Union. The event provided a platform for participants to use international sustainable fisheries standards as a tool to improve fisheries and help protect livelihoods and economic development. Participants were from selected parts of African countries, drawn from government fisheries departments, scientists and experts as well as the private sector that participated at the workshop, which was targeted to build their knowledge and skills on fisheries improvements and certification. With the growing interest in supply of sustainable fish products, an increasing number of fisheries are targeted using the ARSO's Standard to promote sustainable fish production in Africa. These workshops were aimed at building stakeholders' capacity to ensure that more African fisheries can embark on the journey to sustainability and certification. The study looked at the

outcomes of the intervention area and the best practices in addition to the challenges faced. The certification was looking at the fisheries and other aquatic organisms in the fisheries for examples Certification for Octopus Fisheries in the Southwest Indian Ocean.

The stakeholders recommended that AU-IBAR should set up a FIP Working Group comprising representation from AU-IBAR, WWF, AEM, NEPAD and MSC with AU-IBAR providing leadership and convening of the working group. The immediate task of the steering group was to: i) generate an initial list of fisheries for consideration in the pilots based on the criteria agreed by the AU Member States. This could be undertaken by MSC and WWF with input from other experts in the region known to both MSC and WWF; ii) Narrow down to a smaller sub-set of pilots from the initial list. Here, it was proposed that this could be done through a small workshop involving members of the working group and perhaps one or two experts; iii) Determine the scope of activities within the selected FIPs and increased understanding of the ARSO fishery certification standards through providing trained and certified auditors from selected AU Member States in line with the 3 sustainability standards; iv) Increased knowledge, understanding and appreciation of FIPs as tools for sustainable and profitable fish production provided to producers/processors for aquaculture and capture fisheries to prepare their documentation and streamline their operations in line with the requirements of the standards; v) Identified and prepared potential African producers/processors for auditing and certification of EcoMark Africa (EMA) label in line with the sustainability standards; vi) Increased understanding of the MSC fishery certification standards; vii) Increased knowledge, understanding and appreciation of FIPs as tools for sustainable and profitable fisheries resources management; viii) Identified potential African fisheries that could be piloted for FIPs; and ix) Improvement and Certification for Octopus Fisheries in the Southwest Indian Ocean.

2.1.3 Performance review of RFBs in the African countries

Regional Fishery Bodies (RFBs) are a mechanism through which States or organizations that are parties to an international fishery agreement or arrangement work together towards the conservation, management and/or development of fisheries. The mandates of RFBs vary. Some RFBs have an advisory mandate, and provide advice, decisions or coordinating mechanisms that are not binding on their members. Some RFBs have a management mandate and are referred to as Regional Fisheries Management Organizations (RFMOs). They adopt fisheries conservation and management measures that are binding on their members. The functions of RFBs also vary and includes: i) the collection, analysis and dissemination of information and data; ii) coordinating fisheries management through joint schemes and mechanisms; iii) serving as a technical and policy forum, and taking decisions relating to conservation; and iv) management, development and responsible use of the resources. The difference between a "Regional

Fishery Body" and a "Regional Fishery Arrangement" is that the former has an established Secretariat that operates under a governing body of Member States, while the latter does not have. Regional Fisheries Bodies can be considered as specialized institutions, which generally facilitate regional efforts and approach in the conservation, management, and the development of fisheries and aquaculture. Since international cooperation is required for the long-term sustainability of fisheries and responsible aquaculture development at regional levels, RFBs can play a critical role for the management of fishery and aquaculture resources in a particular region or sub region especially with regard to shared fish stocks. A number of these RFBs exist in South- East Africa and are as listed below: Committee for Inland Fisheries and Aquaculture of Africa (CIFAA); Southwest Indian Ocean Fisheries Commission (SWIOFC); Lake Tanganyika Authority (LTA); Lake Victoria Fisheries Organization (LVFO); Lake Victoria Basin Commission (LVBC); Aquaculture Network for Africa (ANAF); and Zambezi Watercourse Commission (ZAMCOM).

The overall objective of this exercise is to rationalize the RFBs in order to enhance the effectiveness of their performance and efficiency in delivery of their respective mandates as well as development of a framework for forging institutional or intra-agency and inter-agency collaborations. Specifically, they are mandated: i) To carry review of their mandates, structure and institutional set-up; ii) Undertake assessment of their past and current activities in fisheries and aquaculture and the impact of their activities in their geographical area of competency; iii) Assessment of their capacities and gaps in line with their mandates; and iv) To ensure institutional linkages with similar organizations within the region.

Studies from areas such as "*Institutional Assessment of Regional Fisheries Bodies and Water Basin Commissions in South-East Africa; the inaugural session in 1999; the biennial RSN meetings facilitated discussion and information sharing among all bodies*". These meetings addressed the outcomes of COFI and focus on issues of major importance to the RFBs, including the role of RFBs in global and regional fisheries processes. A major thrust with respect to strengthened cooperation among FAO and non-FAO RFBs and arrangements was provided by the 1998 High-Level Panel of External Experts in Fisheries, appointed by the Director-General of FAO to consider, inter alia, future challenges in fisheries governance. The panel addressed FAO's role in working to encourage more coherent management approaches among RFBs, and recommended that FAO should, inter alia, convene a special meeting of FAO and non-FAO bodies in order to: i) identify and address common problems and constraints; ii) develop strategies and mechanisms to address constraints; iii) share experiences and lessons learned; and iv) improve the effectiveness of the RFBs.

2.1.4 Fisheries management issues in shared lakes and rivers in the African countries

The literature reviewed indicated that Inland water bodies in East Africa such as lakes Victoria, Albert and Edward systems are natural capital assets managed in a manner to not only maintain existing benefits (food security, livelihoods and income), but also seek to increase the sustainable contribution of the sub-sector to the blue economy growth of Member States. These systems are shared water bodies such as: Lake Victoria is shared by Uganda, Kenya and Tanzania main land meanwhile Albert and Edward waters are shared by Uganda and Democratic Republic of Congo. The current benefits of these systems are however under threat from a variety of sources, key amongst that include poor governance frameworks, open access nature, unsustainable fishing practices, weak capacity, threats by climate change, environmental and other natural disasters, lack of alternative livelihoods, etc. The vast majority of these water bodies are shared ecosystems, which in turn pose significant management challenges to regional fisheries management bodies. The PFRS promotes sustainable development of small-scale fisheries on the continent that includes inland fisheries development. The formulation of realistic fisheries management plans informed by assessment of management and development issues could be a precursor to solving some of the challenges in the subsector.

Lakes Edward and Albert (LEA) are internationally recognized water bodies with a catchment area of 47,500 km^2. The two lakes are of major ecological significance because they support a wide diversity of aquatic flora and fauna. They also play major economic roles in the riparian countries, including fishing industry for local consumption and export, water supply (for domestic and industrial purposes), lake transportation, and irrigation. The Nile Basin Initiative (NBI) within the Nile Equatorial Lakes Subsidiary Action Plan (NELSAP) and in furtherance to implementing its broad mandate to develop an integrated Lake Management Plan (ILMP) is developing and managing the fisheries in Lakes Edward and Albert (LEAF). The partner States are DR Congo and Uganda. Currently Uganda and Democratic of Congo have come up with the headquarter governing the two water bodies based in Uganda that is governing the two ecosystems thus addressing the challenges of the systems and the communities utilizing the fisheries resources of these lakes.

The Lake Victoria Basin is one of Africa's largest transboundary water resources; it surrounds the second largest freshwater Lake in the world and the most important source of freshwater fish on the African continent. The Lake also provides employment, income, and water for domestic and industrial use, lake transport as well as hydroelectric power generation additionally, the lake is an important moderator of regional climate. For fisheries purposes, the Lake is shared by Kenya, Tanzania and Uganda. With high human population growth rate, pollution, and increased economic

activities and benefits in the lake basin, the fish stocks are declining; and this could exacerbate the poverty and food security problems of the region. Lake Victoria Fisheries Organization (LVFO) is an intergovernmental institution established in 1994 through a convention (Convention for the establishment of the Lake Victoria Fisheries Organization). The contracting parties are Republic of Kenya, Republic of Uganda and United Republic of Tanzania. The East African Community was first established in 1967, dissolved in 1977, and re-established in 2000 under Article 9(3) of the Treaty recognized LVFO as one of its specialized institutions. Article 8 of the Protocol establishing LVBC makes provision for the Partner States to manage, develop and utilize fisheries resources of the basin in accordance with the Convention establishing the Lake Victoria Fisheries Organization. This organization controls Lake Victoria Fisheries resources in Uganda, Kenya, Tanzania, Rwanda and Burundi. It is mandated to foster cooperation among the Partner States by harmonizing national measures, developing and adopting conservation and management measures for the sustainable utilization of living resources of Lake Victoria for maximum socio-economic benefits. Whose functions are basically: Promote the proper management and optimum utilization of fisheries and other resources of the lake; Enhance the capacity of existing fisheries institutions; Provide a forum for discussion of the impacts of initiatives on the lake; Provide for the conduct of research on the living resources of the lake and its environment; Coordinate and undertake training and extension in all aspects of fisheries; Consider and advise on the impact of introductions of exotic organisms into the Lake Victoria; Serve as a clearing house and a data bank for information on the fisheries of the lake; and Promote the dissemination of information.

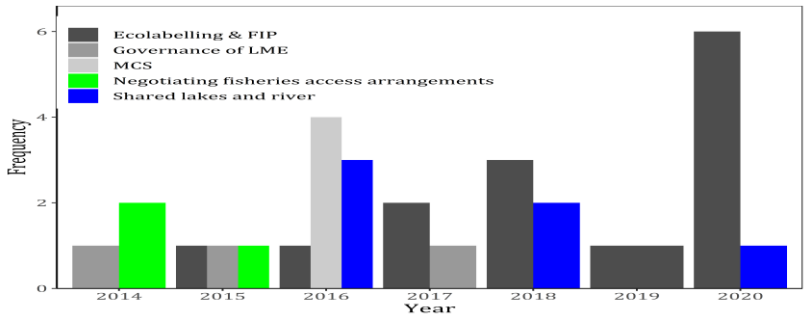

Figure 1: Reviewed cases in the fisheries management under FISHGOV1

Documents evaluated under this study were *"Studies on: i) "Fisheries Management and Development Processes in Lake Victoria - Enhancing Regional Fisheries Management Plan"; ii) "An Assessment of Fisheries Management and Development Processes in the Zambezi Watercourse and Suggestions for Integrating Fisheries within Zambezi Basin Strategic Plan"; iii) "An Assessment of Fisheries Management and Development Processes in Lake Tanganyika and Suggestions for Enhancing the Fisheries Management Plan for Lake Tanganyika"; iv) "Fisheries Management and Development Processes In Lakes Edward And Albert: Developing a*

Fisheries Management Plan within the Framework of the Integrated Lakes Management Plan"; v) "Develop/Enhance Management Plan in Selected Inland Water Bodies in Northern Region of Africa"; and vi) "Report of the Workshop on the Regional Stakeholders Validation Workshop for Implementation of Lake Chad Fisheries Management Plan 5-7 March 2018, Yaoundé, Cameroon."

The outcomes from these reports included the following: i) Integration in EAC thus more human, more markets, and expansion of fisheries and aquaculture; ii) Organized fisher associations and industry and existing fisheries management regimes; iii) Abundant water resources with high fisheries and aquaculture potentials; iii) Resource mobilization strategies can be supported by the EAC and Development partners; iv) Production of a management plan based on an in-depth analysis of issues, challenges and trends on fisheries and development in selected water bodies in Africa; v) Identification of gaps in existing fisheries and legislations for inland fisheries and proposal for realistic options for policy formulation and regulatory frameworks; vii) Essential Guidelines and Regional Action Plans for sustainable management of selected inland water bodies. Both the Lake Tanganyika Research Project (LTR) and Lake Tanganyika Biodiversity Project (LTBP) contributed a wealth of knowledge on the status of fisheries and biodiversity in the lake and highlighted the need for the riparian countries to find joint management solutions for transboundary environmental threats; viii) The LEAF I Pilot Project was designed as a pilot project to generate replicable experiences in the management of fisheries resources in a transboundary context to avail the Governments of DR Congo and Uganda with sustainable investment and management plans for the joint use of the water and fisheries resources of LEA, and to highlight the characteristics and nature of Lakes Edward and Albert Basin (LEAB) and the major socio-economic problems. This led to: i) strengthen collaboration for rational and sustainable development and management of the shared water bodies by adopting joint fisheries and watershed management measures; ii) foster bilateral cooperation and peace between riparian communities as well as at national level through consultative meetings; iii) adopt joint fishing regulations for harmonizing fishing activities in order to minimize conflicts regarding the lakes; iv) contribute to conservation of biological diversity in the two lakes; iv) reduce loss of life through the establishment of safety regulations and standards; and also v) reduce loss of life through the establishment of safety regulations and standards.

In addition to that, fisheries must be seen as a core component of the agriculture sector, as well as an entry point for multi-sectoral interventions aimed at improving nutrition and health outcomes such as: i) The capacity of LCBC partner states for effective implementation of Fisheries Management plan was reinforced; ii) A bankable project for implementation of Lake Chad FMP taking into account cross-border concerns and national particularities was adopted for fund raising; iii) Strategic approach towards implementation of selected key aspects of Objective of the Lake Chad FMP was validated for implementation that included the following: a) Laws relating to the

improvement of the selectivity of fishing gears and prohibited fishing methods reviewed and updated; b) A sustainable funding mechanism for co-management structures put in place; c) Operational capacities of non-state actors improved d) Research programs on fisheries resources developed; and e) Good adaptation and resilience practices formulated, introduced and strengthened.

2.1.5 Negotiating fisheries access arrangements – Regional approach in the African countries

The literature indicated that there is multiplicity of fisheries agreements between African States bordering the Atlantic Ocean and distant-water fishing countries (or their nationals), a manifestation of the diversity of situations encountered and the need to harness each of them to the best effect. However, in the absence of an evaluation of the various agreements in force, African coastal countries are unable to assess the economic and social benefits accruing from such agreements, as well as the associated environmental impacts. One of such is tunas, out of all species, it has been observed to be targeted by longline fleets, which could potentially benefit from the regional management of access. Tunas are not the subject of strong commitment by States to relinquish their claim to sovereign rights as is the case with demersal and small pelagic resources. Several fisheries organizations such as Sub-Regional Fisheries Commission (SRFC), Comité des pêches pour le centre-ouest du Golfe de Guinée (Fisheries Committee for West Central Gulf of Guinea FCWC/ (CPCO), Commission régionale des pêches du Golfe de Guinée (Regional Fisheries Committee for the Gulf of Guinea (COREP), Comité des Pêches pour l'Atlantique Centre-Est (Fisheries Committee for East Central Atlantic (COPACE), African States bordering the Atlantic (ATLAFCO), a tuna fisheries management organization (ICCAT) and an international fisheries management organization covering Area 47 South East Atlantic Fisheries Organization (SEAFO) operate on the border with the Atlantic and as such, can organize (or participate in) the management of regional fisheries agreements. Given International Commission for the Conservation of Atlantic Tunas's (ICCAT) current mandate, it can contribute its scientific expertise to a regional initiative, while Ministerial Conference on Fisheries Cooperation among African States bordering the Atlantic (ATLAFCO), or an organization established expressly for this purpose, can manage the access to tuna resources. Nonetheless, the implementation of the said initiative requires the political commitment of all coastal states in the form of a government resolution that would initiate the process of the implementation of regional fisheries agreements. The first step consists of harmonizing national regulatory frameworks and creating an African Union (AU) Group of Experts that is able to lay the building blocks of the initiative as well as provide support to coastal countries in order to develop their capacity to negotiate and manage agreements. The second step comprise the political validation of the selected institutional structure at the level of the AU, and the third step involves institutionally

implementing the process of allocating access to tuna resources and the management of agreements.

Under the regional approach, evaluation was done on "Review of Previous and Current Fisheries Agreements concluded by some African Union Member States in West and Central Africa".

The expected outcome was actually a speculation based on past results and some probability of continuity. In other words, the expected gain is primarily a result of the catch volumes through the application of the contract in the case of the renewal of a protocol on past fisheries data in the case of a new agreement on biological assessments; and in the case of the EU on the ex-ante evaluation of the opportunity to negotiate an agreement with the coastal countries.

2.1.6 Governance of Large Marine Ecosystems (LMEs) and Fisheries management approaches and practices in the African countries

The African Union Interafrican Bureau for Animal Resources and the AUD-NEPAD Planning and Coordinating Agency in collaboration with the government of Kenya with support from the European Union organized an "Expert Consultative Workshop on Fisheries Resources Management Options and/or Approaches in the African Context" from 20th to 22nd March 2017 in Mombasa, Kenya. The main aim was to create awareness and broaden the knowledge of African Union Member States in various fisheries management options, tools and approaches to ensure informed and rational decisions taken on the applications of appropriate management systems for national and regional fisheries in the African context. The African Union Member States included experts from countries such as, Angola, Benin, Cameroon, Gabon, Kenya, Madagascar, Mauritania, Senegal, Sierra Leone, Tanzania and Tunisia in addition to FAO and AU-IBAR.

Awareness was created among member states on the concepts, principles and the processes of implementation for Ecosystem Approaches to Fisheries (EAF), Rights-Based Fisheries Management (RBFM), Co-management, Community-Based Management of Marine Protected Areas (MPAs) and Wealth Based Fisheries Management (WBFM). An important recommendation and appropriate guidelines on the fisheries management approaches and tools - Ecosystem Approach to Fisheries (EAF), Marine Protected Areas (MPA), Co-management and Rights Based Fisheries Management (RBFM) - were developed/piloted, and existing cases on experiences, lessons and practices documented for continued education of AU Member States. AU Member States were requested to fully integrate and align management approaches/tools within their fisheries management programs.

This study was based on the following reports: i) *"Report of the Interactive Workshop on Lessons Learnt and Best Practices for Enhancing Governance of African Large Marine Ecosystems, 17-19 December 2014 Douala, Cameroon"; ii) "Final Report of Expert Consultative Workshop on Fisheries Resources Management"; iii) "Approaches And Tools in Africa "Enhancing Fisheries Management Capacity in Africa for Sustainability, Productivity and Profitability Mombasa, Kenya"; iv) "Lessons Learnt and Best Practices in The Management of Large Marine Ecosystems (LMEs) in Africa."; and v) "A Publication of AU-IBAR with funding from the project 'Strengthening institutional capacity to enhance governance of the fisheries sector in Africa"*.

The key expected outcomes of this study were: i) Consolidated lessons and best practices on governance of Africa LMEs; and ii) Developed action plans or roadmap for the sustainable governance of African LMEs. Following the technical sessions, group work and discussions, the following outcomes were reached: i) Awareness was created among member states on the concepts, principles and the processes of implementation for EAF, RBFM, Co-management, MPAs and Wealth Based Management; ii) The participants assessed the status of implementation of each management tool or approach and identified key challenges, lessons learnt and proposed actions to enhance their implementation; iii) The experts observed that the application of these management tools has largely been through donor support, and member states had not fully integrated the approaches within their fisheries management programs; iv) Experts noted that issues of capacity building, institutional arrangements, appropriate legal frameworks and financial mechanisms are critical for the successful implementation of these management approaches and tools; v) The experts noted that the wealth-based approach has had very limited application in member states due to insufficient knowledge on the tool and methodology; vi) The experts further noted that data required (biological, social and economic) for effective application of the management tools is still a major challenge. The meeting outcomes were lessons learnt and best practices for improving governance of Africa LMEs.

2.1.7 Coordination and regional cooperation in fisheries management in the African countries

A program on institutional linkages brought together representatives of Regional Fisheries Bodies (RFBs), Regional Economic Communities (RECs), and Water Basin Authorities to chart a roadmap for building and strengthening institutional collaboration in African fisheries and aquaculture sector. This mainly focused on enhancing collaboration amongst: i) the RFBs and the RECs; ii) the RFBs and the Regional Fisheries Management organizations (RFMOs); iii) Water Basin Management Authorities; and iv) non-fish sectors such as mining and forestry. The main outcome was on the recommendations by the participants for the African Union to establish a forum or platform for RFBs with the day-to-day coordination at the Conference of African Ministers of Fisheries and Aquaculture (CAMFA) Secretariat. The AU was also

charged with the responsibility to undertake an assessment of the institutional set-up and performance of the RFBs as well as facilitate their formal linkages with the Regional Economic Communities. This program supported the forum for all stakeholders for enhanced institutional coordination and collaboration of all the regional bodies in Africa. Such regional forum was organized in both Ghana and Kenya on operationalization of the African reform mechanism (AFRM).

The studies quantified the following reports such as: i) "*Report of the Consultative Meeting to Validate the Terms of Reference and Rules of Procedure for RFBs and Establishment of a Continental Platform for Regional Fisheries Bodies in Africa 22nd – 24th April, 2015, Cotonou, Benin;" ii) "Report of the Meeting on Operationalizing the African Fisheries Reform Mechanism (AFRM) Naivasha, Kenya, 19-21 June, 2014"; and iii) "Report of a Meeting on Enhancing Institutional Collaboration in Fisheries and Aquaculture 10-12 July 2014 Accra, Ghana"*. The Expected Outcomes were proposed to be as follows: i) The Terms of Reference and Rule of Procedures for continental platform for RFBs reviewed and validated by the stakeholders; ii) The institutional assessment reports of RFBs are reviewed and validated; iii) A roadmap for operationalizing terms of reference and rules of procedures for continental platform for RFBs is established (developing institutional linkages for sustainable fisheries management and aquaculture development. iv. Recommendations for establishing linkages between RECs and RFBs were made); and v) A framework for formalizing linkages between RECs and RFBs adopted.

Outcomes were commensurate with all the three pillars of sustainable development – economic, social and environmental: i) Consensus reached with stakeholders on the rationalization of RFBs; ii) A roadmap established for developing institutional linkages for sustainable fisheries management and aquaculture development. The main outcome of the meeting was the recommendations by the participants for the African Union to establish a forum or platform for RFBs with the day-to-day coordination at the CAMFA Secretariat. The AU was also charged with the responsibility to undertake an assessment of the institutional set-up and performance of the RFBs as well as facilitate their formal linkages with the Regional Economic Communities. The Executive Committee of the African Fisheries Reform Mechanism was recommended as discussion forum for all stakeholders for enhanced institutional coordination and collaboration.

2.3.0 FISHERIES AND AQUACULTURE BORDER TRADE IN AFRICA

2.3.1 Introduction of Fish Trade in Africa

Intra-regional fish trade in Africa has been growing significantly in recent years, driven by increasing human population and high demand for fish and fishery products (FAO, 2016). However, this Intra-regional fish trade in Africa has been challenged by

inadequate market and trade infrastructures, poor policy and institutional frameworks, poor quality of fish and fishery products, and inadequate capacity in human resources on fish and fishery products marketing/trade skills (AUC, 2013). Such challenges have led to high transport costs, complex trade rules and inadequate market information, hence resulted into African's fish processors and traders not getting full benefits from its fisheries resources. In response to these challenges, in the mid-1960s, the Economic Commission for Africa (ECA) recommended and supported African Member States to form Regional Economic Integration (REIs) blocs with the objective to promote trade by liberalizing regional trade. This step has seen EA MS joining several REIs blocs. To date, EA MS is a member of five REIs blocs namely:- Common Market for Eastern and Southern Africa (COMESA); East African Community (EAC); Southern African Development Community (SADC); Intergovernmental Authority on Development (IGAD); and Indian Ocean Rims-Association (IORA). Through these REIs, EA MS have adopted and implemented various Regional Trade Agreements/Policies (RTAs/Ps). The objective of this RTAs/Ps was geared towards increasing trade opportunities for improving livelihoods; strengthen marketing and trade infrastructures for better market access; and developing strong policy and institutional frameworks for easier access to intra-regional trade markets.

The implementation of the RTAs/Ps has resulted in a wide range of success stories and experiences in some EA MS that provided valuable lessons to other EA MS and the continent, and therefore facilitating the harnessing of the benefits of Africa's fisheries and aquaculture endowments through accelerated trade and marketing. Nevertheless, Fish trade has been successful in many countries in Africa. This has been implemented by the application of various methods such as Informal trade including cross-border trade which represents a significant proportion of regional intra-trade in Africa, sometimes with informal flows exceeding the formal trade flows. There is need therefore, for countries to pay more attention to this sector with a view of enhancing data and information collection and endeavoring to remove the impediments that encourage informal trade. The intra-regional fish trade, though very important, is thus not very well understood with respect to its comprehensive economic value of fish market chains; supply and demand trends for specific species, products and markets; main operators and their relationship along the market chains; policy and regulatory constraints and incentives; capacity development needs among SMEs; factors affecting the participation by women and the poor; and how to improve market participants' access to technologies and information to better enable them to respond to dynamic demand and market conditions. The key to achieving profitability, wealth generation and welfare is ensuring access to markets by fish-dependent communities. However, many fishers and fish farmers in Africa face numerous challenges to accessing markets. The sustainability of fisheries and the benefits accruing to communities may be

undermined unless information, policy and regulatory frameworks are properly developed and positioned to properly guide trade. The AU has made concerted efforts to promote trade as a means of addressing food security and economic growth in the continent by various policy guideline initiatives, such as the development of Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) to optimize trade benefits among others.

Studies were done for west, central, east and southern Africa regions. It is within this context that African Union- InterAfrican Bureau for Animal Resources (AU-IBAR), commissioned a consultant to review National and Regional Fish Trade Policies in EA MS to identify the best practices and lessons leant from the implementations of RTAs/Ps. Common policy issues identified as key to enhance intra-regional trade of fish and fisheries products in East African Member States (EA MS) were:- i) Harmonization of Trade Agreements/trade policy frameworks; ii) Mainstreaming fisheries sector into national development agendas and Poverty and Reduction Policies; iii) Formulation of national fish trade policies; iv) Accreditation of Fish quality control assessment laboratories; v) Capacity enhancement in fish quality assurance and marketing/trade aspects; vi) Establishment of Fish Marketing Authority; vii) Strengthening Fish Trade Information System (Fish Trade Portal) in EA MS; viii) Formulating regional certification policies and certification procedures; ix) Standards and regulations for promoting inter and intra-regional fish trade; and x) Support to improve fish post-harvest processing infrastructures.

Under the fish trade, the following reports were evaluated and these were: i) "*Comprehensive Mapping of Fish Trade Corridors in The Five Regions of Africa: Focusing Eastern African Corridor: Mombasa to Goma, Passing through Kenya, Uganda, Burundi, Rwanda and Democratic Republic of Congo; and the Horn of Africa, 2018". And other reports such as; ii) "Strengthening inter and intra-regional fish trade; iii) Expert Consultative Validation Workshop on Establishing Linkages' and Inter-Connectedness Between Regional Cross-Border Fish Trade Corridors in Africa; iv) Final Report on Comprehensive Mapping of Informal Fish Trade Corridors in West Africa; v) Final Report on Comprehensive Mapping of Informal Fish Trade Corridors in Southern Africa; vi) Comprehensive Mapping of Fish Trade Corridor for The Central Africa Region; vii) Final Technical Report on Comprehensive mapping of informal and formal cross boarder fish trade corridors of major fish and aquaculture products in North Africa; viii) Review of National and Regional Fish Trade Policies in East Africa,2019; ix) Framework for Harmonization and Implementation of Fish Trade Policies in East Africa, 2017; x) Lessons Learnt and Best Practices to enhance Intra Regional Trade of Fish and Fisheries Products in the EA MS; xi) Advocacy Paper on Fish Trade Flows in Africa: Value and Socio-economic Consequences of Fish Importation and Exportation into and out of Africa; xii) Impact of International Fish Trade Flows in Africa; xiii) Framework for Harmonization and Implementation of Fish Trade Policies in Southern Africa; xiv) Review of National and Regional*

Fish Trade Policies and Development of a Framework for their Harmonization in the Southern Africa Region'; xv) Best Practices, Lessons Learnt and Recommendations/Priority Policy Intervention Entry Points to Enhance Intra-regional Fish Trade in Southern Africa; xvi) Aquaculture think tank; xvii) African Women Fish Processors And Traders Network" (AWFishNET); xviii) *Consultative Workshop on Establishment of Continental Network For Women Fish Processors and Traders Associations 20-22 April 2017 Dar es Salaam, United Republic of Tanzania (Figure 2).*

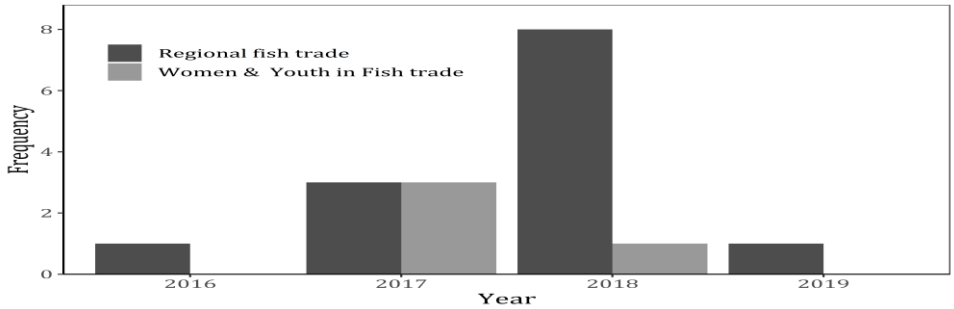

Figure 2: Reviewed information under Fish trade

From the above reports, the main outcomes indicated the following: i) the review from the East African region revealed that Mauritius and Seychelles were the highest exporters of fish and fishery products in the region; ii) It also concluded that all the Eastern Africa countries have substantive fisheries authorities. However, none of these countries have a fish trade policy. Regulations and policies on trade even in fisheries are guided by a general national trade policy; iii) There exists six regional blocks in the Eastern Africa area namely COMESA, SADC, EAC, IORA, IGAD and RIFF. These provide a very big market for fish and fisheries products. Some of these countries belong to more than one regional block; iv) There was a significant synergy among the RECs especially concerning their overall trade objectives, cooperation among member states, relationship with other regional and international organizations and development partners; v) Specific efforts should be made to make trade policies more gender sensitive. This is important because trade policies have discrete impacts on women in all economic roles they play namely as producers, consumers, taxpayers and users of public services; vi) Mainstream the fisheries sector into national development agendas, Poverty, and Reduction Policies; vii) Access to accredited Fish quality control assessment laboratories; vii) Establishment of Fish Marketing Authority; viii) Strengthen Fish Trade Information System (Fish Trade Portal) in EA MS; ix) Expanding Internal and External One Stop Border Post (OSBP); x) Harmonization of Trade Tariffs (Tariff Barriers, Non-Tariff Barriers and Common External Tariffs); xi) Preference on goods produced in the region i.e., Rule of Origin and Sanitary and Phytosanitary Standards (SPS); xii) Trade diversion and Trade linkage of the fisheries sector and related sectors; xiii) Trade Monitoring and Compliance plus support to improve fish

post-harvest processing infrastructures; xiv) Formulating regional certification policies, certification procedures, standards and regulations for promoting inter and intra-regional fish trade; xv) Map of each region (West, Central, East, Southern and North) with arrows superimposed showing trade routes/corridors for the identified fish species or species assemblage and product forms; xvi) Main identified fish species, product or assemblage of fish products, the product form, characteristics and trade patterns; xvii) Opportunities for sustainable market-led aquaculture development identified in addition to strategic Partnership developed and proposed at national level (Member State), Regional level (Regional Economic Community & Regional Fishery Body) and continental level (African Union Commission and technical & development partners); xiii) Development of Data and Information Systems; xix) Promotion of Institutional Collaboration and Inclusiveness; xx) Document existing provisions and gaps of the role of women and youths in national aquaculture plans and institutional frameworks, and also propose strategies for ensuring that gender equality is mainstreamed into aquaculture policies, planning, development, monitoring and evaluation; xxi) Development of 2-year priority action plans for enhancing role of women and youths in aquaculture enterprise; whereby propose strategies for political actions by MS, advocacy by NGOs and NSA or CSOs, as well as a possibility for "Gender Champion in Aquaculture" in addition to exploring mechanisms for creating linkages between ANAF, private sector, regional institutions and other existing networks; xxii) Establish a continental network of women fish processors and traders that would facilitate collaboration and cooperation between women fish processors and trader associations in the continent, and also sharing of best practices, experiences, technologies and learning together, in order to advocate for issues affecting their activities and facilitate enabling policy environment to enhance their role in the fisheries sector in the continent. This would help in the development and adoption of the rules of procedures for the network of women fish processors and traders in Africa; plus the development of a two-year priority action plan adopted; xxiii) Attract increased public and private sector investment in fish postharvest activities (fish processing and trading) and then strengthen their role as Small Medium and Enterprises (SMEs) and hence expand their market and marketing opportunities, resulting in improved intra-regional African fish trade. This would help in the development of a sustainability. xxiv) Through the Fish Trade Program, FCWC developed and tested and scaled up the Capacity Strengthening Module for Women Fish Trade Association. The module has led to enhanced market access and trade capacity for women fish processors and traders in the FCWC region (FCWC 2017). xxv) Strengthening of women's organizational and technical capacity as well as facilitating their participation in regional (COMHAFAT, NEPAD) and international networking meetings brought major benefits that changed the lives of women fish processors and traders in West and

Central Africa, because they were able to enhance their access to regional fish markets; xxvi) In Ghana, the Associations of Market Women were reported to improve women's capacity for processing and trading of fish. Furthermore, the Associations helped unify the voice of women to coordinate their relationships with government authorities in order to facilitate both domestic and cross-border fish trade (Abbey & Appiah 2016). With regard to cross-border fish trade, the Associations played a role in coordinating access to information and to advice traders to abide by required food safety standards in order to prevent members from suffering punishments in the form of trade refusals. Because of their strive to access cross-border markets, the quality of fish traded outside the borders of Ghana tended to have high quality than that left for domestic markets (Abbey & Appiah, 2016).

2.4.0 AQUACULTURE IN THE AFRICAN REGION

Two intervention areas were identified with regard to Aquaculture in the African region. They included: i) Aquaculture production and Extension practices in aquaculture systems and best practices; and ii) Ornamental fish exploitation and trade.

2.4.1 Production, Extension and Best practices in aquaculture production systems (Biosecurity and Environmental management in aquaculture production systems)

Biosecurity and environmental management in aquaculture production systems is key in Fisheries and Aquaculture in the African region. In Africa, aquatic ecosystems provide several goods and services including fisheries and aquaculture production. They are also the ultimate recipients of pollution from human activities, including from aquatic production practices. The productivity of aquatic production systems, aquaculture notwithstanding, depends on the status of aquatic resources. They need to be properly managed if their contribution to nutrition, economic and social well-being of the growing world's population is to be sustained. Irresponsible aquatic production practices can have significant adverse environmental and social impacts. Africa's continental Fisheries and Development Strategy, The Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) consequently advocates for the sustainable management of aquatic resources for sustainable fisheries and aquaculture development. This has also been stated in the FAO Code of Conduct for Responsible Fisheries which encompasses this approach, and the paradigm of this is enshrined in the Ecosystem Approach to fisheries and aquaculture. The Ecosystem Approach to Aquaculture (EAA) is a strategy for the integration of aquaculture within the wider ecosystem to ensure sustainable development, equity and resilience of interlinked social-ecological systems.

Under the regional and national context, sustainable aquaculture development at such a scale entail that the application of strategic sectoral environmental management approaches that do not just focus at the farm but also factor in the wider environment. In real practice, aquaculture is dependent upon the entire ecosystem. For example, at geographical level, clusters of farms that share a common waterbody or watershed need coordinated management to ensure sustainable utilization and biosecurity. Most of the cultured fish species are sensitive to water quality and are therefore extremely vulnerable to the damage inflicted by other users of the waterbody or watershed. In addition to that, disease incidences can be controlled at farm level, and their effects occur at the watershed level and often do require control, management and mitigation at the watershed level. This also happened to the exotic fishes that escape from fish farms often impact on biodiversity across the entire watershed. Observations like external drivers of aquaculture that include the population growth and development, trade and climate change also affect the entire ecosystem. Hence, Aquaculture production and Extension practices in aquaculture production systems has been entirely depended on environmental variables in the ecosystem.

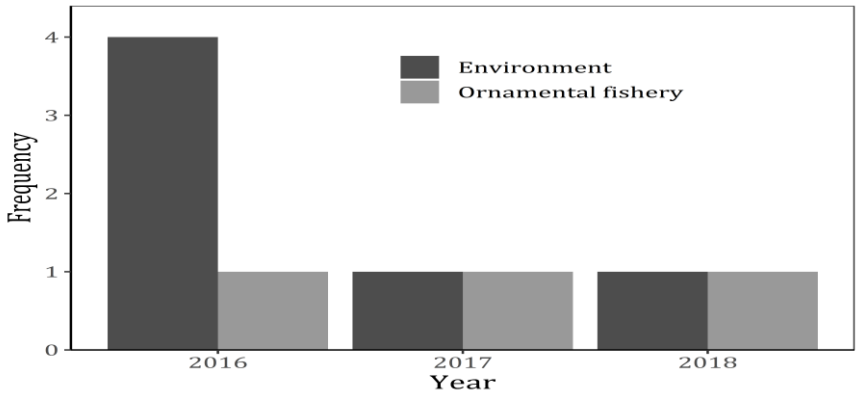

Figure 3: Reviewed information under aquaculture and Ornamental

Aquaculture and ornamental information (Figures 3) was reviewed as indicated above from different years and the reports were: i) *"Biosecurity and Environmental management in aquaculture production systems;" ii) "Best Practices and Guidelines to Support Commercial Aquaculture Enterprise Development in Africa: Guidelines for Developing Viable Aquaculture Business Models in Africa"; iii) "Regional Framework on Environmental Management for Sustainable Aquaculture Development in Africa -West Africa Region"; iv) "Provision of Extension Services to Support Commercial Aquaculture Enterprise Development in Africa (Guidelines to Support Development of Viable Aquaculture Extension Service Models in Africa)"; v) "Regional Framework on Environmental Management for Sustainable Aquaculture Development in Africa - Southern Africa Region"; vi) "Regional Framework on Environmental Management for Sustainable Aquaculture Development in Africa- Eastern Africa and the Great Lakes Region."; and vii) "Technical Report Think Tank Meeting on Sustainable Aquaculture Development in Africa."*

The Expected Outcomes were: i)The transformation and broadening of aquaculture value chains in Africa and improved robustness of aquaculture value chains in Africa; ii) Market led sector growth and increased output from African aquaculture – both in volume and value that would lead to establishment of improved business practices in the sector and streamlining of aquaculture governance; iii) The creation of an enabling environment for sector growth and improvement in institutional and human resource capacities of all stakeholders along the aquaculture value chain; iv) Formulation of an effective approach to crosscutting issues such as gender and youth an also participation, social advancement, environmental sustainability and climate change; v) Creation of awareness on environmental impact assessment in aquaculture systems; vi) Broadening participants' understanding of the EAA and its relevance to sectoral planning; vii) Identification of the main ecosystems and bio-security issues likely to arise as a result of undertaking commercial aquaculture; viii) Sector expansion within the Eastern Africa and the Great Lakes Region; ix) Identification of socio-economic issues (including policy and governance) relevant to aquaculture; x) Environmental management within Eastern Africa and the Great Lakes Region; xi) Development of draft guidelines for environmental management framework for suitable aquaculture development in the Eastern Africa and the Great Lakes Region; xii) Opportunities for sustainable market-led aquaculture development identified; xiii) Consolidated lessons and best practices on sustainable aquaculture sector growth in Africa; xiv) Priority actions identified to enhance aquaculture contribution to the agricultural transformation agenda of the African Union; and xv) Strategic Partnership developed and proposed at national level (Member State), Regional level (Regional Economic Community & Regional Fishery Body), and continental level (African Union Commission and Technical and Development Partners)

The ecosystem approach to aquaculture is one of the benchmark guidelines designed for sustainable development of aquaculture. It proposes three main considerations in aquaculture site selection: i) ecological; ii) socio-economic; and iii) governance. Adopting such an approach will help ensure that sites selected for aquaculture fall within the ecosystem's functional limits, are socially acceptable and are economically feasible. Four carrying capacity categories have also been proposed i.e.: i) the physical carrying capacity; ii) the production carrying capacity; iii) the ecological carrying capacity; and iv) the social carrying capacity (McKindsey *et al*. 2006).

Thus, i) the Physical Carrying Capacity is where the total area that is geographically available and physically adequate for a certain type of aquaculture. This is determined based on available natural conditions. ii) The Production Carrying Capacity describes the optimum level of production of the targeted species and is estimated based on modelling effort–e.g. TROPOMOD which is suited for tropical environments, but its development is still in progress. iii) The Ecological Carrying Capacity describes the

stocking or farm density which causes unacceptable ecological impacts. This is mostly driven by public perception of negative consequences of aquaculture (Stickney, 2003). It is determined by modelling efforts by determining the range of possible outcomes of production e.g. the mass balance approach model; iv) Finally, the Social Carrying Capacity describes the level of farm development that causes unacceptable social impacts.

A number of other SADC policies, strategies and guidelines also support sustainable aquaculture practices that were developed, examples of which are: i) The SADC Declaration on Poverty Eradication and Sustainable Development (2008); ii) The SADC Environment Mainstreaming Manual (2010); iii) The SADC Guidelines for Strengthening River Basin Organizations (2010); iv) SADC Policy Paper on Climate Change (2012); v) The SADC Regional Agricultural Policy (2013); vi) The SADC Regional Aquatic Biosecurity Strategy (2015); vii) The SADC Food and Nutrition Security Strategy (2015); and viii) The SADC Regional Aquaculture Strategy and Action Plan (2016). The desired outcomes from the implementation of these regional frameworks are sustainable commercial aquaculture development in the region characterized by ***(PEIWST)*** where: P = Increasing fisheries and aquaculture productivity; E = Improving profitability of fish enterprises; I = Enhancing inclusive sustainability; W = Wealth generation; S = Social welfare, nutrition and food security; and T = Trans-boundary collaborative management to sustain aquatic ecosystem health. The above issues make it imperative that for sustainability, aquaculture practice in the region should encompass resilience, be smart, productive and be all inclusive.

2.4.2 Ornamental fish exploitation and trade in the Africa region

A program on African Ornamental Fisheries was organized in Abuja, the Federal Republic of Nigeria by African Union Inter-African Bureau for Animal Resources (AU-IBAR) in collaboration with the AUDA-NEPAD Planning and Coordinating Agency (NPCA) and Government of the Federal Republic of Nigeria with support of the European Union (EU). This was geared at sharing experiences (success, failures and obstacles) on the past and ongoing interventions in the sector and develop strategies and action plans for improvement, governance and management of African ornamental fisheries in the context of the Malabo Declaration. It addressed issues such as: i) the draft regulation framework to be developed; ii) validate the monitoring mechanism i.e. exploitation and trade; iii) Critical assessment of the current status of the ornamental fisheries in Africa; iv) Discuss Institutional and policy issues in Governance and management of Ornamental fisheries; v) Discuss Critical Socio-economic issues; and vi) Establish Task Force on Ornamental Fisheries of Africa. The workshop involved sixteen (16) African Union Member States such as: Republics of Benin, Burkina Faso, Burundi, Cameroun, Chad, DR Congo, Ethiopia, Kenya, Malawi, Mozambique, Nigeria, Sao Tome et Principe, Senegal, Tanzania, Togo, Tunisia, and Zambia; in addition to Regional Economic Communities (RECs), Intergovernmental Authority on

Development (IGAD), Regional Fisheries Institutions i.e. Nile Basin Initiative/Nile Equatorial Lakes Subsidiary Action Program (NBI/NELSAP), Lake Tanganyika Authority (LTA), Lake Chad Basin Commission (LCBC); Non-State Actors (NSAs): Private sector and Non-Governmental Organizations; Research Institutions; Independent Experts; Development Partners: Food and Agriculture Organization (FAO): the AU-IBAR and NPCA.

The AU-IBAR in partnership with NEPAD Planning and Coordinating Agency (NPCA) also organized a technical program on ornamental fisheries in Kenya. The program was planned under the auspices of the Fisheries Governance project with the goal to enhance the contribution of fisheries resources to food security and economic growth in Africa. Ornamental fisheries were identified as the project that was core action target at enhancing the governance in ornamental fish trade and improving its contribution to poverty reduction and economic development. The project for assessment of ornamental fish trade in the continent focused mainly on: i) evaluating status of exploitation of species for ornamental fish trade; ii) creating awareness on ornamental fish species and supporting the establishment of monitoring mechanism for their exploitation, including species identification, documentation of volume and value of trade; and iii) developing regulatory framework for the exploitation and trade in ornamental fish species.

Discussions during the experts' meetings focused on overall value chain of ornamental fish such as status of the ornamental fisheries, exploitation, trade routes, trends, market etc. with a view of identifying key issues in the sector to address the development and sustainable management of the ornamental fish sub-sector. Specifics on this were: i) review of status of ornamental fisheries and trade including but not limited to the level of exploitation, markets, target species, challenges e.t.c.; and ii) propose strategic actions for the formulation of regulatory framework on Ornamental Fish Trade in the continent. The outcome of the program was the identification of key issues and priority actions for sustainable development and management of Ornamental Fisheries in Africa. The study addressed two intervention areas i.e.: i) Aquaculture production and extension practices in aquaculture systems-best practices including biosecurity and environmental management in aquaculture production systems; and ii) Ornament fish-exploitation and trade in the African region. The Aquaculture programs were reviewed from 2016 to 2018 (Figure 3) in order to come up with the best practices in cross border trade in the region.

Ornamental fish exploitation and trade in the African region was evaluated holistically through some of the reports that were written through the works done in Africa and

below are the following reports: i) *Report of the Think Tank Meeting on African Ornamental Fisheries; ii) Assessment of Ornamental Fisheries and the Development of Regulatory Framework for The Exploitation and Trade in Ornamental Fish Species - Draft Final Report; and iii) Report of the AU-IBAR Consultative meeting on ornamental fishery (The First Meeting of the Task Force on African Ornamental Fisheries to Formulate Regulatory Framework for the Exploitation of Trade in Ornamental Fisheries in Africa*. The meeting was attended by 46 participants representing sixteen (16) African Union Member States i.e.: Republics of Benin, Burkina Faso, Burundi, Cameroun, Chad, DR Congo, Ethiopia, Kenya, Malawi, Mozambique, Nigeria, Sao Tome et Principe, Senegal, Tanzania, Togo, Tunisia, and Zambia; Regional Economic Communities (RECs): Intergovernmental Authority on Development (IGAD), Regional Fisheries Institutions: Nile Basin Initiative/Nile Equatorial Lakes Subsidiary Action Program (NBI/NELSAP), Lake Tanganyika Authority (LTA); Lake Chad Basin Commission (LCBC); Non State Actors (NSAs): Private sector and Non-Governmental Organizations; Research institutions; Independent Experts; and Development Partners: Food and Agriculture Organization (FAO). In attendance were staff members from the AU-IBAR and NPCA.

The overall outcomes from the reports included: i) Key elements for inclusion in the continental regulatory framework and mechanisms for monitoring ornamental fisheries was agreed upon; ii) Rules of Procedures and Terms of Reference (ToRs) for the continental Task Force on Ornamental fisheries in Africa were adopted; iii) Continental Task Force on Ornamental Fisheries in Africa was established. There was a need to appoint a coordinator to work closely with AU-BAR to oversee the implementable action plan (short, medium and long-term; iii) Assessment of Ornamental fisheries in the National Fisheries Policies of AU MS and development of Guidelines on formulation of policies in the Ornamental fisheries. There was also a need to inform countries that would like to develop their policies to do so; iv) Map ornamental fish value chains analysis in the countries along the trade corridors and Associations were identified as vital in pushing the policy. There is also need to collect baseline information on the existing association for strengthening or establishment; v) Task force was to meet before the end of the year to assess the progress made after these workshops and also there was a need to organize a Think tank meeting on Ornamental fisheries of Africa; vi) Aquarium at Strategic location in the AU HQ at Addis Ababa was to be established. This was to sensitize and raise awareness to policy makers.

CHAPTER THREE

RELEVANT ISSUES THAT ARE CRUCIAL TO SUPPORT RATIONAL GOVERNANCE OF THE SECTOR BY AU MEMBER STATES AND REGIONAL INSTITUTIONS UNDER FISHERIES MANAGEMENT

Several reports were evaluated to come up with the relevant issues for the formulation of best practices and policy messages that are crucial to support rational governance of the sector by AU Member States and regional institutions. These were categorized based on the available reports, the theme, relevant issues observed, the status, lessons learnt, best practices, policy messages and recommendations. This followed the thematic areas such as Fisheries Management in areas such as Ecolabeling and Fisheries Improvement Projects (FIP); expert consultations in the African region; Performance review of RFBs in all the African regions; Fisheries management issues in shared lakes and rivers; Coordination and regional cooperation in fisheries management; Governance of LMEs, in addition to Fisheries management approaches and practices. Other aspects deemed crucial to supporting rational governance of the sector included the Fisheries and Aquaculture Border Trade in Africa notably Strengthening inter and intra-regional fish trade that included harmonizing regional fish trade policies, critical factors, fish trade corridors and one stop border for enhancing and strengthening effective engagement of women and youth along fisheries and aquaculture value chain. Additionally, other aspects reviewed included Aquaculture in the African Region with specific reference to Biosecurity and Environmental management in aquaculture production systems, in addition to exploitation and trade in Ornamental fisheries.

3.0 Relevant Issues that are Crucial to Support Rational Governance of the MCS Sector

The study came up with various relevant issues that could help in the proper governance under the MCS sector (Flewelling *et al*., 2002) in Africa. The following were some of the relevant issues as mentioned below:

a) IUU is one of the measures that has been put in place in the African region to help enhance aquatic biodiversity and increase aquatic productivity. Relevant issues were assessed in all the regions studied and came up with several areas of intervention. For example, it was noted that the bulk of IUU catch in Africa was taken by non-African foreign fleets from China, Spain, Russia, Japan and Poland i.e. the eastern parts of the world, and this was a clear indication that these countries' IUU fishing was taking place in the region. There was also an increasing link between IUU fishing and transnational organized crime that was attributed to weak governance as a strong factor promoting the IUU fishing in coastal states.

b) The Africa regional share of the global IUU catch was recently estimated at 4.7 million tons of fish at a conservatively estimated value of $10 billion which amounted to some 80% of reported catches. Hence eliminating IUU and realizing the benefits of IUU catches could make a significant contribution to GDP of AU Member States, increase job opportunities, support livelihoods, increase social protection, and reduce food insecurity and poverty in many of Africa's poorest countries.

c) The need for surveillance (MCS) in Eastern Africa in order to provide a baseline document of relevant information and knowledge that will enable the implementation of an effective system in the region. Here, the Draft Regulations on small scale fisheries are currently undergoing public consultations.

d) South Africa has the most comprehensive legal framework for fisheries, which even includes measures to address fisheries crime, and was supported by a full MCS operational unit. Madagascar, Mozambique, Mauritius and Seychelles had relatively updated legislation on fisheries but only with some specific regulations on MCS. Kenya and Tanzania have a more basic MCS framework in place and very little regulations and evidence of implementation, although one of the strengths of their legislation is the adoption of participatory approach to management, which may be developed to encourage self-compliance amongst fisheries in the absence of other MCS tools. Comoros had the weakest legal framework and level of MCS implementation. These East African States cooperate with each other bilaterally and multilaterally in implementing MCS measures through the various regional programs.

e) There were high discarded quantities estimated at 70% in industrial Shrimp fisheries resulting in economic loss and fish for the local fishers. The use of dynamite, poison and beach seine techniques to fish on coral reefs had devastating impacts on valuable marine habitats.

f) A flag State has the duty to issue licenses to fishing vessels conducting operations on the high seas, including areas managed by Regional Fisheries Management Organizations (RFMOs) to which the flag State is a member, and areas under the jurisdiction of a coastal State to the fishing vessels of a flag State are allowed to fish under an agreement or arrangement (Zwinge, 2012). INTERPOL established a Fisheries Crime Working Group under this initiative to develop the capacity, capability, and cooperation of member countries to effectively address fisheries crimes (Interpol Fisheries Crime Working Group, 2013). The Fisheries Crime Working Group aims to facilitate the exchange of information, intelligence, and technical expertise between countries for purposes

of fisheries law enforcement. Several countries have cooperated within the INTERPOL network and have called upon the international organization to issue 'Purple Notices' to illegal fishing vessels.

g) At the international level, it was realized that INTERPOL Fisheries Crime Working Group deals with many issues at the International MCS Network (Fisheries F., No R., 2007), which poses opportunities for collaboration; Develop and/or review national plans of action to prevent, deter and eliminate IUU fishing in order to ensure that identified priority issues are addressed (Only Namibia has finalized and officially adopted NPOA-IUU). Each NPOA-IUU should include a whole-of-government capacity building strategy to support its full implementation. The IPOA-IUU adopts the broad concept of MCS, together with all its components and tools, and provides the requirement for States to apply specific MCS-related measures from the commencement of the fishing activity to the final destination of caught fish. The issues observed indicated that IUU in the African region has done a great work in the curbing of the illegal fishing and conserve the fishery in the region.

3.1Policy messages identified under MCS.

Key policy messages were identified under the MCS in the African region such as: promote compliance with international instruments and agreements; Fast track adoption and implementation of Port State Measures; Develop and adopt a global registration of fishing vessels using a UVI (Unique Vessel Identifier) system via IMO; Address the problem of "Irresponsible" Flags of Convenience (FoCs); and Establish penalties for transgressions commensurate with the economic scale of the crime. There were also polices such as Development of Lacey Style Legislation to allow for compensation for IUU fishing; Nations to implement ongoing and comprehensive assessments of IUU fishing in their EEZ; Adopting policy measures to encourage cooperation against fisheries crime; and Draft national Fisheries Policy and strategies to facilitate common action and the policy for the use.

3.2 Best practices under MCS

This study was able to assess various best practices such as: Controls on fishing effort and fishing capacity commensurate with resource productivity and have a modern and comprehensive fisheries law consistent with rights and obligations under global and regional fisheries agreements and internationally recognized "best practice" models that would be expected to incorporate key principles of fisheries management such as ecosystem approach to fisheries, precautionary approach to fisheries, environmental impact assessment, effective data collection and management, and effective MCS. Thus, under the eastern region, East African States may develop a model fisheries legislation

based on international fisheries instruments, commitments and obligations under regional agreements and arrangements, and national best practices. Regionally, there was the implementation and management of FMCs, such as IT infrastructure, integration of data and sharing of information.

Other best practice assessed were: Review and/or amend fisheries sector legislation to ensure all elements of MCS addressed and based on best practice; Review and/or amend bilateral/multi-lateral agreements among Southern African countries to ensure improved coordination among multiple government agencies in countries that need to work together to address IUU fishing for fisheries protection and MCS activities; Support the development and implementation of NPOA-IUUs – MCS activities in the region will be based on the provisions of the NPOA-IUU; and National MCS frameworks should be based on best practice risk assessment.

3.3 The gaps under MCS

After reviewing what had been done under FISHGOV1, it was observed that the MCS in the region had the following gaps that needed to be addressed holistically such as: the lack of enforcement capabilities that sometimes hinder the monitoring of fishing operations. Additionally, the situation in the region is aggravated by ineffective observer programs for monitoring fishing activities of licensed vessels, poor logistics for offshore fisheries surveillance, and weak systems for vessel registration and licensing, and lack of regional collaboration for the MCS systems.

There were also gaps in domestic framework on MCS for fisheries, as well as institutional and practical challenges that raise a number of opportunities for cooperation amongst Southern African States, particularly in terms of utilizing existing regional arrangements and assistance provided by international organizations such as the FAO in developing a robust legal framework, sharing of fisheries enforcement data, and conducting joint patrols.

Some MCS regulations in some countries such as Mozambique and Namibia are not as detailed as provided in global and regional instruments and they have limited patrol and arrangement capability. When it comes to South Africa, there are requirements for consistent review of fisheries allocation measures to ensure equitable allocation of rights in a broad spectrum of commercial fisheries. There are also a few weaknesses in the legal framework compared to other Southern African States. Tanzania had no comprehensive regulations on MCS implementation, and not all MCS tools are in place such as observer programs and effective port State measures and catch Certification, and had no means to conduct at sea inspections.

3.1.6 Lesson learnt under MCS

There is need to adopt lessons learnt from successful fisheries programs such as FISH-i Africa and IOC's SmartFish at the sub-regional level. Other lessons are analyzing the results obtained in the context of other national or regional past or current projects in the fight against IUU fishing for the best practices, success stories and lessons learnt; and make proposals for effective and sustainable monitoring capacity of fisheries in all the African States under the fisheries and aquaculture systems.

3.2.0 Ecolabeling and Fisheries Improvement Projects (FIP): Expert Consultation in the African Region

Regionally in Africa, access to lucrative markets remains a challenge for most fish and fishery products. What has been observed is that a significant number of fish products produced from African waters are sold and consumed locally. Fisheries is therefore a source of livelihoods for most Africans. Ecolabelling certification by accredited sources has become a requirement in most fish importing countries and supermarket chains. Most of the fish from Africa is consumed by the European market in addition to other countries in the eastern parts of the world. Globally, most retailers accept eco-labelled fish and fishery products by recognised bodies such as MSC and Aquaculture Stewardship Council (ASC). As a result, African fisheries lag behind due to lack of capacity and resources in place. With the recently established African Eco-label Mechanism (AEM) and other mechanism, it is expected that African fish and fishery products would have a recognised certification, and African Union Inter-African Bureau for Animal Resources also improved sustainable practices in the fisheries sector.

3.2.1 Relevant Issues that are Crucial to Support Rational Governance of the Ecolabel sector

This study under took an evaluation of the various reports and critically the following were observed as the relevant issues i.e.: i) improving the environmental performance of a fishery; ii) involving partnerships (fishers, markets, government, NGOs, funders); iii) providing incentives for fisheries that do not currently meet the MSC standard; and iv) framework for management to address governance issues in fisheries. The FIPs is a mechanism developed by MSC to support fisheries that seek improvement toward sustainability and ultimately certification. In here the MSC has developed two standards for MSC certification and these are: fisheries standard for environmental sustainability, and Chain of custody standard for seafood traceability. In addition to these, the relevant issues observed were the contract with electrician - relevancy check required i.e. how relevant to certification; and Efficient biological filters i.e. How relevant is this indicator to the certification; and generally, certification issues are clearly enunciated as one of the key pillars.

3.2.2 Policy messages identified under Ecolabeling and Fisheries Improvement

Under the ecolabeling and fisheries improvements, it was indicated that the AU-IBAR, in collaboration with NEPAD Planning and Coordinating Agency (NPCA) is implementing a Fisheries Governance Project titled ***'Strengthening Institutional Capacity to Enhance Governance of the Fisheries Sector in Africa'***. This project is funded by the EU. The overall objective is to enhance the contribution of fisheries resources to food security and economic growth in Africa. One of the key activities includes 'to strengthen capacities for access to market' through strengthening capacity of AU-MS in fisheries improvement programmes for eco-labelling certification. This activity is also in support of the implementation of the policy pillar on fish trade and market development in the policy framework and reform strategy for fisheries and aquaculture in Africa.

3.2.3 Best practices under Ecolabeling and Fisheries improvements

Regionally, some of the best practices addressed various interventions at a holistic level such as management, trade, production and sustainability. For example, an important outcome of the PFRS is to enhance conservation and sustainable use of fisheries resources. One of the key activities under the AU-IBAR Fisheries Governance Project ('Strengthening Institutional Capacity to Enhance Governance of the Fisheries Sector in Africa) includes strengthening capacities for access to market through strengthening capacity of AU-MS in fisheries improvement programmes for eco-labelling certification. This activity directly supports the implementation of the policy pillar on fish trade and market development in the PFRS.

In addition, there is strengthening the capacity of member states in aquaculture best practices. This area of ecolabeling and fisheries improvements was a good opportunity to share the latest knowledge, expertise, experience and best practices of PPPs, Environment, FIP in Fisheries and Aquaculture production in Africa.

3.2.4 The gaps under Ecolabeling and Fisheries improvements

Bridging the gap of the stakeholder both at regional and continental fisheries management arena to ensure participation of key stakeholders driving the process; open access character in the African fisheries should be moved to other levels such as the quarter system to ensure sustainability and conservation of the fisheries.

3.2.5 Lesson learns under Ecolabeling and Fisheries improvements

Some of the lessons learned were: Eco-Labelling Certification towards sustainable Fisheries and Market access is a key in the African region to meet the demands and supply value chain in the international markets; A need to promote Regional Approach to Fisheries Improvement and Certification for the fisheries such as the Octopus

Fisheries in the South West Indian Ocean; And then there has always been a forum for fisheries in FIP/MSC certified to share lessons learnt and experiences.

3.3.0 Performance Review of Regional Fisheries Bodies RFBS in Africa

In order to come up with a holistic view of RFB in a report on *Institutional Assessment of Regional Fisheries Bodies and Water Basin Commissions in South-East Africa*, the following issues were observed i.e. a need for conducting institutional assessment of RBS and Water Basin Commissions (WBCs). Hence this led to a recommendation by the first conference of African Ministers for Fisheries and Aquaculture in Africa (CAMFA I) in 2010 and reiterated in by CAMFA II in 2014. The Regional Fisheries Bodies (RFBs) and Regional Economic Communities (RECs) in July 2014 requested AU-IBAR to undertake institutional assessment of existing RFBs and WBCs with the objective of strengthening their capacities and forging linkages at a regional level.

3.3.1 Relevant issues for formulation of best practices and policy messages

The relevant issues in the whole African region were: Scarcity of resources that are available for RFBs and WBCs in order for the institutions to carry their functions; irrational allocation of financial resources; Heavy reliance on external financial support; limited regional and international cooperation; Poor information sharing and exchange mechanisms; limited feasibility studies; and LVFO to have a regional outlook. Some of these issues were as a result of the overlap of institutional roles in fisheries and aquaculture related matters; slow rate of capacity building; AU and principles of subsidiarity; Effectiveness of RFBs, WBCs and RECs. Such issues needed clear attention by the countries in Africa in order to achieve the expected fisheries production in both fisheries and aquaculture.

3.3.2 Key policy messages for performance review of RFBS

Various key policy messages were realised during the study in the regions such as: Increase budgetary allocations; form partnerships and/or MoUs with development partners; support through and from AU; Prioritization of financial contributions from member states not to meet salaries and operation costs of the secretariats of institutions, but to support fisheries research and management; then need to expand and diversify the local revenue resource base; and adoption of FAO policy towards RFBs to establish a mechanism/process for these RFBs to meet a greater share of their operating costs. Also observed were policies such as: RFBs to establish mechanisms and/or processes for generating financial resources to meet a greater share of their operating costs; AU through the Heads of States; Establish, expand and strengthen regional and international cooperation; and having in place MoUs among RFBs and WBCs. To these, the AU is to strengthen ANAF as a continental Network to support aquaculture development.

3.3.3 Best practices for performance review of RFBS

Regional Fisheries Bodies (RFBs) in the region have made sure that fisheries and aquaculture are sustained through various approaches such as MCS, in addition to supporting national governments on the rules and laws governing the fisheries. In order to achieve some of these interventions, best practices have been put in place such as: ensuring that enough resources are made available; and a bigger percentage of financial contributions from Member States to be allocated to fisheries research and management Institutions should devise ways of generating their own financial resources and therefore reduce the heavy reliance on external financial support; Institutions to devise mechanisms for meeting their financial requirements other than relying mainly on FAO budget. Additionally, regional and international cooperation is required for long-term sustainability of fisheries and responsible aquaculture development at regional levels; and the need to establish, expand and strengthen regional and international cooperation for long-term sustainability of fisheries and responsible aquaculture development at regional levels. There is also the need for domestication of the AU PFRS on fisheries and aquaculture among AU MS; Need to create an African platform for RFBs and WBCs. There is also the need for a strong continental information sharing and exchange network to support aquaculture development Policy messages. Feasibility studies were critical in determining the fisheries and aquaculture potential among AU-MS. There is the need for some of the RFBS such as LVFO to have a regional outlook to ensure the Lake Victoria basin resources are adequately utilised and conserved by the riparian people in the region.

Further, AU ought to support streamlining of roles of existing institutions with overlap in fisheries and aquaculture related matters; Mandates of institutions especially in the same geographical location should not overlap since this may result into conflicts and duplication of effort e.g., SWIFC and the Indian Ocean Tuna Commission (IOTC).

3.3.4 Identified gaps under the performance review of RFBS

The following were the gaps identified under the performance review of the RFBS and these included: Data gaps analyses, data archiving and information technology (Kenya); Assessment and sustainable utilization of crustaceans (South Africa); The inconsistence in the assessment and sustainable utilization of demersal fishes (Tanzania); the assessment and sustainable utilization of pelagic fishes (Seychelles); Mainstreaming biodiversity in national and regional fisheries management (Mauritius); and Strengthening regional and national fisheries management (all countries).

3.3.5 Lessons learns under the performance review of RFBS

RFBs in regions provides us with many lessons in the Fisheries and Aquaculture and how these resources have been monitored for increased fisheries production. These

include having ample resources for RFBs and WBCs to carry out their functions effectively; financial contributions from member states to be prioritized to support research and management of the fisheries institutions; and Aquaculture development requires strong support from AU by having a continental network for information sharing and exchange. Also, as part of the effort to strengthen and reform RFBs and WBCs, the AU should support LVFO in the process of transforming LVFO into the East African Fisheries Organization (EAFO);

The RECs should also do the same by working with/through the regional bodies. Additionally, the roles of RFBs, WBCs and RECs should not only be advisory but have bigger components of enforcement in order to impose any obligation on its Member States e.g. Best Practices that involve advocating for change of statutes to give such regional institutions enforcement powers. Such changes, however, need to be examined further to ensure they do not contravene Article 56 of the 1982 UN Convention on the Law of the Sea (UNCLOS) (Ruzakova, 2022).

3.4.0 Fisheries Management Issues in Shared Lakes and Rivers

The fisheries of Lake Victoria are managed under unrestricted access regime, whereby everyone is free to enter into the fishery after paying the fishing licenses. The LVFO spearheaded the creation of Beach Management Units (BMUs) as a co-management structure, whereby fisheries communities take on some responsibilities in the management of the resources. However, while many performed well, the majority struggled due to wrong choice of BMU leaders and inadequate operational funds (Nunan, 2020), while some were banned as the case was in Uganda (Kantel, 2019).

3.4.1 Relevant key issues identified.

Under the shared resources such as the lakes and rivers, the following were the key relevant issues identified:

Absence of harmonized laws, regulations and standards: The EAC members states through LVFO have developed the East African Community Fisheries and Aquaculture Policy which is aligned to the PFRS (LVFO, 2015c) as a vehicle to promote coherence and coordination in the fisheries and aquaculture sector; promote sustainable fisheries and aquaculture development, and contribute to food security, nutrition, and wealth creation in the EAC Partner States (Abila, 2014).

Low compliance to fisheries laws, regulations, and inadequate enforcement: This is mainly because of shortage of manpower, financial constraints, logistical constraints, lack of awareness by the fisheries communities, inadequacy in the dissemination of relevant information, inadequate capacity and laxity on the part of the enforcement agencies, non-deterrent penalties that do not discourage the offender and would be offenders,

varied levels of penalties applied in the four countries, and high poverty levels. These issues could be addressed through awareness campaigns, improvement in information exchange, and greater involvement of the community in management by ensuring properly functional co-management structures such as BMUs, promoting participatory MCS, and capacity building through training and logistical support. There is need to reflect the gravity of each offence, set deterrent penalties, and harmonize them across member States.

Non- effective involvement of all stakeholders in the management process: The challenges to fisheries can better be solved through involvement of local communities, CSOs and the private sector in all functions and responsibilities of fisheries management. Such partnerships allow the formulation of appropriate regulations that are consistent, harmonized and applicable.

Limited scientific and other knowledge to guide resource management: Through collaborative work between the fisheries research institutes and the Universities of the three member States of LVFO, joint and harmonized fisheries assessments such as hydro-acoustic surveys, catch assessment surveys and biennial frame surveys have been conducted periodically to generate scientific information required to inform management decisions for the transboundary fisheries resources. Scientists in charge of stock assessments, including economists and sociologists must work with managers and other users of fishery resources, to develop appropriate methods for data collection, analysis and reporting.

Excessive Pressure on fisheries resources and other basin resources resulting in decline of fish stocks: The key drivers of excessive fishing pressure are poverty, growing human population in the lake basin, lack of alternative livelihoods, low employment opportunities, high demand for fish, and the non-selective nature of markets that accept all sizes of fish. The proposed intervention measures include stakeholders' involvement in the management processes, enforcement and compliance to existing fisheries regulations, putting in place conflict resolution mechanisms, identifying and promoting alternative sources of livelihoods, and introducing rights-based management.

Fragmented data and information to guide management: This arises from inadequate funding to resource monitoring, limited research agenda setting, and weak linkages between research and management intuitions. Addressing such challenges require improved dialogue, better collaboration, increased transparency, accountability, and effective implementation of the Fish Levy Trust Fund. Reliability of the data from data collectors using manual entry of the data several days after collection is another area of concern. Introduction of electronic data collection mechanism using Tablets that permits

the input of the data virtually and instantly could go a long way to solving this challenge.

Inadequate human and institutional capacities: This arises from inadequate budget allocation to fisheries offices and poor staffing and equipping, which hinder the provision of technical services, to build capacity at local community level and to monitor fisheries activities in the lake. This targets capacity strengthening enhancement and development preferably through collaborating with CSOs.

Destruction of critical habitats and ecosystems: Destruction of critical habitats such as fringing wetland vegetation and fish breeding and nursery grounds has adversely affected the sustainability of the fisheries, with impacts on the economy and livelihoods of fisheries communities. There is need to map and gazette critical ecosystems and habitats and effectively protect them from anthropogenic activities that render them vulnerable to degradation and loss of ecosystem services.

Climate change (Adaptation to climate variability and climate change): Declining wind speeds and rising temperatures, which have reduced the mixing of nutrient-deep rich waters with the surface waters that support fish production, have been attributed to the declining fish yields from the lake.

3.4.3 Key policy messages from Fisheries Management Issues in Shared Lakes and Rivers

In the East African region, LVFO Secretariat developed a Framework Fisheries Management Plan (FFMP) for the transboundary fishery resources of Lake Victoria that addresses the shortcomings of FMP III. The whole aim was to ensure that limitations on catches, protection of spawning areas, zoning by fleet type, harmonization of size at first capture, regulation of mesh size for harvest of Nile perch, use of VMS, and better control of landings, reduction of fishing mortality and adoption of regional cooperative management approach. Countries in the East African region have made their best to ensure that they follow these regulations for sustainable harvest.

3.4.4 Lessons learnt from Fisheries Management Issues in Shared Lakes and Rivers

Fisheries is a dynamic sector and presently it is recognized that to ensure the proper management of the sector, three concepts – sustainable fisheries, responsible fisheries and ecosystem-based approach, should be adopted in tandem. The LVFO has developed three fisheries management plans. The first two plans were implemented in collaboration with Research institutes and fisheries management agencies in the three Partner States. The countries have demonstrated in several ways their commitment to the declarations of the Rio World Earth Summit of 1992 and the Code of Conduct for responsible Fisheries adopted by the FAO Conference in 1995.

Experience has shown that an effective manner of incorporating ecosystem-based management in other transboundary fisheries such as are found in the Benguela Current Large Marine Ecosystem (BCLME), or the Sardinella stocks in the Canary Current Large Marine Ecosystem (CCLME), the Black Sea, etc., where transboundary diagnostic assessments had been carried out.

3.5.0 Negotiating Fisheries Access Arrangements-Regional Approach

In a "*review of previous and current Fisheries Agreements concluded by some African Union Member States in West and Central Africa* ", there was need to come up with best practices in safeguarding the fisheries stocks at both regional and international levels. In addition, the only way to do that was to have international agreements that could help countries with shared fisheries resources be able to exploit them in a proper manner, putting in mind the conservation measures. Issues such as charter agreements of vessels, code of conduct of responsible fisheries, and fisheries governance in addition to MCS of the fishing vessels could be accorded to all the countries with shared resources to ensure sustainability. What was observed was that for some countries in West Africa, the obligation of landings as well as the signing of national seamen on foreign vessels, was a source of permanent conflicts in the public and private agreements. Despite the fact that Coastal States are somehow trying to impose a landing clause, in reality, it has never been satisfactorily applied since in most cases, a landing consists of making a transshipment. The commitment of the coastal State on this aspect is to ensure that the port sector benefits as well as those upstream working on packaging, processing and marketing. However, in the absence of strong incentives, foreign vessels continue to operate on the principle of transshipment, which is financially more profitable (AU, 2015).

In such a circumstance, what was observed is that the opportunity of negotiating regional agreements falls directly in line with AU's current vision vis-à-vis fisheries management, which consists of applying 'I Principle of Subsidiarity'. Key policy massages were observed in the study that would provide the understanding of this approach.

3.5.1 Key policy messages towards Negotiating fisheries access arrangements-regional Approach.

In negotiating for fisheries access arrangements, a regional approach was incurred on the establishment of Exclusive Economic Zones (EEZs) in the region. The main aim of these zones was to ensure sustainable utilization of the fisheries resources in conjunction with the conservation measures of the fisheries.

Various agreements were done by European Union (EU) in the fisheries agreements like Senegal and other African countries towards negotiating fisheries resources. In such fisheries agreements, fishing holds an important place in the economies of most African countries, and particularly those that border the Atlantic Ocean, namely Mauritania, Senegal and Ghana, and to a lesser extent Gabon, which are the four key countries that are the subject of this study. It is for this reason that the African Union, in a recent document that defines the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa, is committed to promoting the sustainable development of national fisheries and the drafting of fisheries agreements that are equally beneficial for all parties.

3.5.2 Best practice under fisheries access arrangements-regional approach

a) Public bilateral agreements between States or political entities are arrangements negotiated between two States or political entities (e.g. the EU) that define the terms of access by vessels to the coastal State's fishery resources. Fisheries Partnership Agreements (FPAs) developed by the EU fall in this category. This model of an agreement may involve the financial contribution of vessel owners (case of European FPAs) or otherwise (case of some Chinese agreements including the one with Mauritania).

b) Private agreements between a Producers' Organisation (PO) or a vessel owner and a State are founded on the principle of the payment of an access fee that is determined either on the basis of the vessel's fishing capacity or the catch volume. The EU's PO tuna vessels access the EEZs of West African coastal countries that do not have an FPA with the EU through this type of arrangement.

c) Private agreements between two companies comprise two main forms: a joint venture created using foreign and national capital in a fishing nation to guarantee the same conditions of access as those granted to national vessels, and a vessel charter agreement that enables national fisheries companies to use foreign vessels to exploit domestic resources in exchange for remuneration (fixed or variable depending on the contract).

3.5.3 Gaps under fisheries access arrangements-regional approach

Unlike the so-called incomplete contracts or quotas for which there are gaps regarding states of nature, these contracts do not list, a priori, every possible eventuality that may arise during the implementation of the contract, and ensuing consequences.

3.6.5 Key Lessons Learnt and Good Practices under fisheries access arrangements-regional approach

Some of the lessons we see is that on the Atlantic border, the first category of agreements essentially concerns the EU fleet, particularly within the context of tuna FPAs. Practically all countries whose EEZ is crossed by shoals of tuna and tuna-like species have signed a fisheries agreement with the EU. And also, despite the existence of other public agreements, there is very scanty documentation on them

The second category was found in virtually all coastal countries. Fishing licences issued to POs or vessels mainly relate to tuna fisheries. Long liners and tuna vessels operate in a large area as compared to demersal trawlers and should be able to follow the movement of stocks from one EEZ to another, hence the need for multiple free licences.

The third category of agreements first manifested itself in the form of joint ventures. At the time when many African countries gained their independence, many European foreign fishing companies feared for their future and therefore decided to 'nationalise' their companies based in coastal countries, transforming them into joint enterprises.

Other lessons that African coastal countries have learnt over time is that fishing agreements are, despite their similarities, all differ from each other and the effects on both marine ecosystems as well as the development of the domestic sector or the contribution to the national economy depend on how fishermen operate in the EEZ, including their compliance with good fishing practices.

The fourth lesson that countries are assimilating is that gone are the days of individually negotiated agreements in the face of the gradual imposition of the concept that the issues of management of fishery resources are at the level of their ecosystems (be it the conventional way, non-species or multi-species within the ecosystem approach). The reluctance of countries to go ahead is still very high for major straddling stocks of small pelagics. However, the reluctance is less for stocks of secondary interest or specific interest to artisanal fishing. This is an encouraging sign and this marks the advent of a regional strategy for the management of all resources relating to fisheries agreements.

Others lessons were: the obligation of landings as well as the signing on of national seamen on foreign vessels, and this has been a source of permanent conflicts in the public and private agreements. Coastal States are somehow trying to impose a landing clause. In reality, it has never been satisfactorily applied since in most cases, a landing consists of making a transhipment. The commitment of the coastal State on this aspect is to ensure that the port sector benefits as well as those upstream working on packaging, processing and marketing. However, in the absence of strong incentives, foreign vessels continue to operate on the principle of transhipment, which is financially more

profitable. Only Cape Verde has succeeded in recent years to develop the landing of tuna and tuna-like species (especially sharks) through the modernisation of its infrastructure, improved conditions for landing and increased international maritime routes.

3.7.0 Governance of Large Marine Ecosystem (LME) and Fisheries Management Approaches and Practices

Generally due to lack of cooperation among nations sharing marine ecosystems, uncoordinated intervention by international donor agencies, incoherent and weak national and regional policies and legislations, declining states of fisheries resources, degradation of habitats and environmental pollution, there arise the need for a new imperative for adopting ecosystem-based approaches to managing human activities in these systems in order to avoid serious social and economic disruption. In response to these challenges, not least in Africa, the global environment facility (GEF) supported various initiatives (in the form of projects) that tended towards improved management of Large Marine Ecosystem (LMEs) by providing assistance to various countries and regions on the African continent with the prime objective of securing the futures of their shared large marine ecosystems (LMEs).

3.7.1 The Relevant issues with the LME in the region

The Large Marine Ecosystem (LME) has been facing a lot of issues such as: governance issues; Conservation and Sustainable Resource Use; Institutional and policy issues in management of LMEs; Challenges in fish stock restoration efforts; Socio-economic issues in African LMEs; Regional and Sub-Regional Cooperation; Awareness and human capacity development; Institutional capacity and regulatory frameworks; the issue of Small-scale fisheries; Advocacy and Lessons Learning in addition to Fisheries investments in Africa and Ecosystem Based Management and Fisheries sustainability. Despite the fact that there has been Fisheries policy reforms and Investment Fund towards Ecosystem Based Management for the Management of LME, there have been issues of human resources and Coordination between national institutions with shared vision and proper visibility towards the Fish stocks and avoid Illegalities and Resource exploitation, and also putting in mind the environmental degradation.

3.7.2. Key policy messages for the Governance of LME and Fisheries Management Approaches and Practices

Key policy massages were: Strong political support is very essential for commitment of the Project; Institutional instability at national levels is one of the difficulties in the implementation of projects.

A strong political support and will culminate into fast-tracking of policy and management actions; Improved LME governance offer a legacy for political leaders.

There was also need for a communication module for LME to local populations. The issue of closed season fishing areas; Implementation of research results in management; Limiting access to MPA; Developing alternative livelihoods (aquaculture); Artificial reefs in coastal zones to reduce overexploitation were so pertinent in all the regions. The LME in the fisheries management approach also observed that involvement of fishing communities and stakeholders in planning and implementation of management plans and policy making is critical.

3.7.3 Best practices for the Governance of LME and Fisheries Management Approaches and Practices

Best practices for the Governance of LME and Fisheries Management Approaches and Practices were assessed in all the regions such as East, North and western Africa. These were both at regional and national levels. These look at areas such as: established national and sub-national governance and institutional arrangements that ensure that the societal contribution generated by Africa's sectors have the greatest impacts at the most appropriate level; Enhanced awareness as well as human capacity development; Enhanced coordination in the fisheries sector for expeditious development of the sector; Strong institutional capacity and systems for effective MCS to combating IUU fishing; Coherent and harmonized fisheries policies and regulatory frameworks; Strong capacities for stock assessment, ecosystem-based surveys and fisheries statistical data collection; Strong capacities and promote regional arrangements for improved negotiation of fisheries access; Arrangements for Promotion of fisheries policy reforms in the region; Early collaboration and cooperation with UN agencies to allow access to technical assistance and support for specialized trainings required for implementation of a SAP and the NAPs; Trans boundary Diagnostic Analysis (TDA) to be completed and endorsed by all participating countries; A Strategic Action Programme (SAP) to be completed and endorsed by all the countries, as well as National Action Plans (NAPs) to be implemented at the national levels.

Additionally, there is need for the formation of: LME Caucus; Establishment of Regional Project Activity Centres; Establishment of Inter-ministerial Committees and focal points at the national levels for visibility and to build support for the LME approach; Establishment of a Commission to move forward to the ultimate goal of sustainable CCLME producing goods and services for the region's citizens; and also Regular evaluation of the impacts of any initiative against the expected projects such as "Strategic partnership for fisheries investment fund" (SPFIF) of the regional and country-level Investment Fund projects and dissemination and lessons learned. Additionally, there is need for: Development of international instruments to enhance

collaboration; and lastly, Attachment of the framework of the LMEs has a hierarchical student level and a provision of a consequent budget.

3.7.4 Lessons learn for the Governance of LME and Fisheries Management Approaches and Practices

a) Strong political support was very essential for commitment to the Project.
b) Institutional instability at national levels was one of the difficulties in the implementation of the project
c) Governance: a regional coordination unit that stops the broad guidelines of the project, identifies the monitoring requirements and meets every three months
d) Cooperation arrangement activities and efficient networking
e) Information sharing: regional database
f) Regional VMS: a regional vision-plan of fishing activities
g) Strengthening national capacities
h) Sustainable Management

3.8.0 Coordination and Regional Cooperation in Fisheries Management

3.8.1 Relevant issues under the coordination and regional cooperation in fisheries management

There were various relevant issues that were observed in the area of Coordination and Regional Cooperation in Fisheries Management. These included: Lack of common positions/strategies to govern the sectors; Uncoordinated regional actions; Absence of formal channels of communication between the RFBs on trans boundary fisheries and aquaculture; Restricted mandates (their roles limited to advisory functions) for RFBs in fisheries regulatory or management functions; Absence of coordination mechanisms or institutional structures and a higher authority to provide leadership or coordinator role for a platform for collaboration/dialogue between RFBs; Lack of or limited consultations amongst RFBs; Limited exchange of experiences and sharing of information on Best Practices between RFBs policy inconsistency; Absence of fisheries and aquaculture experts in most of the RECs; Lack of technical, political and financial support from RECs to RFBs in most cases. Additionally, there was limited operationalization of the existing agreements between RECs and RFB; Lack of knowledge, mandate or existence of the RFBs in some RECs. In the region, some RFB member states also belong to multiple RECs most likely for effective management of the fisheries resources and people's loverhood. Some of the RBS in the region were CIFAA; the role played by CIFAA in the establishment of RFBs like LVFO then Lake Tanganyika Authority (LTA) in here is that LTA was established through CFAA sub-committee for Lake Tanganyika; LVFO this was established through CIFAA as a FMO and is an institution of the EAC. LVBC is an institution of EAC; ZAMCOM was

established by SADC in 2011; and then FAO's global mandate to promote national and international actions on fisheries research.

3.8.2 Policy message for the Coordination and Regional Cooperation in Fisheries Management

To encourage the establishment of the development of fisheries and aquaculture development fund at national and regional level.

3.8.3 Best practices for the Coordination and Regional and continental Cooperation in Fisheries Management

Practices under the coordination and regional cooperation in fisheries management were: Harmonization of national measures for the sustainable utilization, conservation and management of the living resources; Build synergy between local ecological knowledge and scientific knowledge to enhance the sharing of stewardship vision across the fisheries sector and sufficiently plough back into the sectors from the revenue generated from them; and Establishment of regional and continental platforms to enhance coordination and institutional collaboration.

3.8.4 Lessons learnt from the Coordination and Regional and continental Cooperation in Fisheries Management

During the coordination and regional cooperation in the fisheries management, the lessons learnt that could contribute to the developments of the fisheries and aquaculture were: Ratified RECS, RFBs RFMOs, WBMAs agreements and subscriptions by MS were met; Case studies of best practice, and pilot activities undertaken for validate; and Policy pathways were put in place for the Reform Strategy.

CHAPTER FOUR

FISH TRADE IN FISHERIES AND AQUACULTURE BASED ON IDENTIFIED ISSUES FOR POLICY REFORM IN AU-MEMBER STATES AND REGIONAL INSTITUTIONS

4.0. The key issues identified in Fish Trade in Fisheries and Aquaculture based on identified issues for policy reform in AU member states and regional institutions

This study looked at two areas:
i) Strengthening inter and intra-regional fish trade including harmonizing regional fish trade policies, critical factors, fish trade corridor, and one stop border enhancement; and
ii) Strengthening effective engagements of women and youths along the fisheries and aquaculture value chains. The following areas were critically looked at:

4.1. The Relevant issues identified in Fish Trade in Fisheries and Aquaculture based on identified issues for policy reform in AU - Member States and Regional Institutions

Under Strengthening inter and intra-regional fish trade including harmonizing regional fish trade policies, the relevant issues are: critical factors, fish trade corridor, one stop border, and enhancing some relevant issues raised were: i) Low responses in providing information as requested; and ii) Reduced post-harvest losses and triple intra-regional fish trade. The study observed the issue of gender insensitive policies that were not favourable to all carders in the fish trade. The entire Africa region realised the element of post-harvest losses in the fisheries, yet documentation of fish trade and data in fish trade was inadequate. In the North African Region, illegal border crossings facilitated inter-tribal connectivity which is very strong and needed immediate attention.

Un-inspected consignments, over taxation and bureaucracy in obtaining import and export permits in the informal trade were a big problem to enhance fish trade. In addition, the following limiting factors were noted: i) inadequately established common and harmonized product standards and procedures to promote intra trade in Africa; ii) lack of good mechanisms for collection of data and information on the quantities, and value of fish and fishery products; and; iii) dynamics encouraging importation/exportation, poor understanding of the associated impacts of the fish trade flows on local fish production and trade, consumption pattern and food security.

Regionally insufficient data and information on the consequences and influence of imported fish and fishery products on inter- and intra-regional trade were a concern. Also of concern was growth of a vibrant informal trade across the continent evidenced by established fish trade flow corridors, with huge losses in terms of revenue to the government, and little plough-back of the proceeds from this trade into development of the local fisheries; increasing unauthorized shipment or transfer of non-compliance

with fish import and export licensing; and WTO conditions hence weak states' monitoring, control and surveillance systems, thus unverified/unreported fish catch at AU-MS ports from Distant Water Fishing Nations (DWFNs) exploiting these waters. Other bottlenecks included lack of/incoherent policies on the fish trade, harmonization of regional and national enforcement of signed treaties, and good infrastructure to motivate the formal fish trade sector.

In addition to fish trade in Africa, it has been observed that in the whole continent, a large proportion of fish trade is undertaken on an informal basis by small-scale fishers and traders, further compounding the lack of data. Without a more detailed understanding of informal trade, the challenge of quantifying the contribution of fish trade in terms of national development is still more complicated.

In order to have a detailed understanding of the extent of intra-regional fish trade on the continent, it is important that a comprehensive mapping of fish trade corridors be conducted in the entire continent. This program has been ongoing using the digital forms like in e-CAS (Electronic Catch Assessment Surveys) and Cage App in Uganda on the fisheries and aquaculture.

Most of the products within the intra and inter-regional fish trade are of low quality compared to the export market. The Nile Perch fish maws from Africa are increasingly becoming an important trade commodity especially to the Asian countries, while other locally processed fish products are destined for regional markets in DR Congo and the South Sudan. This shows the significant role DR Congo and South Sudan play in the regional market. Then few countries are putting in place electronic information marketing systems. To this, AU-IBAR was experiencing some challenges with regards to monitoring and reporting the progress on the implementation of AU Ministerial Decisions from AU-MS, RECs/RFBs/RFMO and other relevant partners. The on-going work of producing Africa Fisheries Report is in progress.

4.2. Policy message for Fish Trade in fisheries and Aquaculture based on identified issues for policy reform in AU Member States and Regional Institutions

The key policy messages in the fish trade at holistic levels had issues such as integration of gender roles in fish trade, guidance on the acquisition of standard processing facilities and management to improve quality of fish products, mapping all routes and markets, use of comparative advantage to establish gazetted areas for trade, harmonized trade tariffs within the respective countries, Common Trade Tariff (CTT), and One Stop Border Post (OSBP) as the one in EA.

There is need to have simplified procedures for obtaining permits and one stop centre for sanitary certificates, export and import permits, processing and stamp duty fees. In order to strengthen aquaculture development technologies, holistic inclusive fisheries

policies would be of use to tighten regulations to improve trade and quality. Harmonized policies across the region would help in the promotion of fish farming, regulation and implementation of fair-trade practices, as well as implementation and enforcement of regional trade policy instruments such as STR adopted by EAC and COMESA. One of the key policies that could be applied in the fish trade in Africa is the "User right fisheries laws" in the fish trade by following the model laws, legislative guidelines and hybrid laws to provide for uniformity in laws, and assurance in terms of commitments to follow the harmonized signatories and laws among the ratifying states.

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4.3. Best practices for Fish Trade in Fisheries and Aquaculture based on identified issues for policy reform in AU - Member States and Regional Institutions

The key areas of intervention under best practices looked at issues such as enhancing policy coherence that proved to be a persistent challenge for international development as well as for effective governance (OECD, 2016). Governments sought to meet the challenge by setting up institutional mechanisms and processes in order to harmonise and manage the ever-competing policy objectives and interests. Through the Addis Ababa Action Agenda (United Nations, 2015), African countries (including all UN Members and OECD countries) committed to "pursue policy coherence and an enabling environment for sustainable development at all levels and by all actors", when they adopted the 2030 Agenda for Sustainable Development. The Sustainable Development Goals (SDGs) included a new implementation framework called Policy Coherence for Sustainable Development (PCSD). The PCSD Framework provides general guidance as well as a screening tool to: i) conduct analysis to identify policy coherence issues and improve understanding of the interactions among policies and their implications (Analytical framework); ii) align existing institutional mechanisms for policy coherence (institutional framework); and iii) consider key elements for tracking progress on policies (monitoring framework). The framework can be adopted and adapted to provide guidance as an analytical, institutional and monitoring framework for SADC intra-regional fish trade.

Other best practises that came into force were the recognition and support of women to access services in fish trade and good processing facilities, improved economic returns and reduced post-harvest losses. Additionally, good data collection is needed to guide planning and estimate economic contribution of fish trade and known trade markets to facilitate quality processing and trade in addition to regular and full inspection to track intra-regional trade.

There is also need: i) for strong and fair regulatory practices that operate on standardized products and procedures to promote intra-regional trade; ii) to actively engage and enhance capacities, especially of the RECs to support the AU-MS to better

integrate the intra-regional and international fish trade into development and food security policy agendas; iii) for approximation or co-ordination of different legal provisions or systems by eliminating major differences and creating minimum requirements or standards; iv) for management of the legal risks that involve international commerce and trade, improving the laws governing international trade and the development of intermediaries for international trade; v) for Policy coherence and institutional coordination for One-Stop-Border-Point (OSBP) system for tariffs, market information and related processes to reduce time spent at borders due to the perishability of the commodity; therefore, vi) there is a need for a policy re-think to cut down on imports that can be produced locally to avert possible suffocation of local fisheries sector markets and development.

4.4. Gaps in the Fish Trade in Fisheries and Aquaculture based on identified issues for policy reform in AU - Member States and Regional Institutions

Gaps in the Fish Trade in fisheries and Aquaculture based on identified issues for policy reform in AU - Member States and regional institutions were in areas such as: i) majority of the women and youths in the fish trade sector had little knowledge of the fish trade laws governing the system thus this affected them in their transactions; ii) Others included the less technical personnel at the border posts of most countries, hence inefficiency in cross-border trade management.

4.5. Lessons learnt for Fish Trade in Fisheries and Aquaculture based on identified scenarios for policy reform in AU- Member States and Regional Institutions

There is a need to develop quality standards for fish and fish products in the regional trade; hence a need for some specific study e.g. on fish maws trade with a view to developing adequate legal and policy framework. There is also need to conduct a comprehensive study to understand the fish trade dynamics in the country. The fish maw trade is a very lucrative business in the East African region and in the entire African continent especially around Lake Victoria where the Nile perch exists. Today, the fish maw fetches more money as compared to the fresh fish itself. Hence understanding its dynamics is a key issue that requires adherence to, and proper management of the fisheries and Aquaculture sector.

In the fish trade, there are limits for gainful participation of women, which accounts for high economic losses. This situation has relatively improved in the Northern corridor due to good processing facilities. Without a more detailed understanding of the informal trade, quantifying the contribution of fish trade in terms of national development is a big challenge. There are a number of challenges including tax evasions, thus, the region has the highest levels of fish trade deficits. The small-scale fisheries contribute to the national economies and provide food and protein security.

The main export markets for the Southern Africa AU-MS include the Southern Africa Development Community (SADC) and the Southern Africa Customs Union (SACU). The fish trade, if harnessed, can be a dependable source of revenue or an effective tool for the achievement of rapid and sustainable economic growth and development for the majority of the AU-Member States, where the majority of these states stand to benefit a lot from the formalization of the intra-trade.

4.6.0. Strengthening effective engagement of Women and youths along fisheries and aquaculture value chain under Fish Trade in the region

4.6.1. Relevant key issues under strengthening effective engagement of Women and Youth along the fisheries and aquaculture value chain under Fish Trade in the region

According to the message from Kofi Anan, 1999, his word on Africa was, "Africa's profitability is one of the best kept secrets in today's world economy," In Africa, fish trade involves all stakeholders such as the men, the youths and the women in the fish value chain. Currently with lack of job opportunities even graduates from universities are seriously involved in the fisheries sector at all levels, even as fishermen and women on development. The role of women is crucial in maintaining fish supplies in African Union-Member States. The fisheries and aquaculture sector employs about 12.3 million people, with women constituting 27% of the total employed [AU-IBAR, 2023]. Fisheries and aquaculture production activities around the world provide direct employment and revenue to an estimated 155 million people of which, half of them are women [AU-IBAR, 2023]. Data for Africa indicates a total employment of 19.2 million people with 34% being women and 96% of female employment is in post-harvest activities. 3.1% are employed as fishers and 0.7% are employed in the aquaculture sector. Details by region show important differences and a much higher participation of women in West and Central African fisheries [AU-IBAR, 2023]. The total contribution of fisheries and aquaculture to Agriculture Gross Domestic Product (GDP) is estimated at 9.2% (26.6 billion USD), of which an important share is generated by women. The sector contributes 1.39% to the GDP with 0.63% from fishing and 0.61% from processing, highlighting the importance of the post-harvest sector in which women are the major workforce [AU-IBAR, 2023].

Africa is the 'youngest' continent, with approximately 60% of its human population being 35 years of age or younger. Uganda is one of the countries with the youngest population in the world, and most of the youths are jobless, some of whom have been involved in the fisheries in the entire fisheries value chain. Information indicates that the youth account for 60% of all unemployed Africans [AU-IBAR, 2023].

The European Union (EU) funded Fisheries Governance projects, implemented by AU-IBAR, with support from AUDA-NEPAD, which facilitated the establishment of the

African Women Fish Processors and Traders Network (AWFishNet), with the objective to contribute to the improvement of the welfare, working conditions and income of women in the fisheries sector (especially women in the post-harvest sector) within the AU-MS. The idea is to ensure that the women are fully involved in the fisheries and favourably compete with other gender groups effectively.

The study on the Consultative Workshop on Establishment of Continental Network for Women Fish Processors and Traders Associations was geared at improving the women and youth in the fish trade by providing skills to reduce post-harvest losses. This was done through: i) collaboration and cooperation between women fish processor and traders associations in the continent; ii) sharing of best practices, experiences, technologies and learning together; iii) advocating for issues affecting their activities and facilitate enabling policy environment to enhance their role in the fisheries sector in the continent; iv) attracting increased public and private investment in fish post-harvest sector (fish processing and trading); v) strengthening their role as SMEs and hence expand their market and marketing opportunities, resulting in improved intra-regional African fish trade. The aim was to see those improvements done in areas of fish processing, post-harvest utilization of fish, hygienic fishing practices, fish selling, fish processing methods, equipment needs, food safety and hygiene, value addition, and value-added fish products. Traditional fish processing involves smoking, salting, drying, freezing, icing and cold storage. Then the Trade Enhancement, Facilitation and Information Sharing Among Women and Youth in The Fisheries and Aquaculture Development focused on the AU Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa, and committed themselves to "accelerate trade by developing fish value chains, promoting responsible and equitable fish trade and marketing in order to significantly harness the benefits of Africa's fisheries and aquaculture endowments [AU-IBAR, 2023

Some other key issues highlighted included the PPP, which is the cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs for services or infrastructure through the transfer between partners of resources, risks and rewards. In this definition, two essential elements can be highlighted i.e. the arrangement to provide public service, and that partners share risk.

In summary, the relevant issues were: low bargaining power due to weak organization, access to marketing information, fish processing infrastructure, lack of credit facilities, regional trade rules and regulations, legal recognition (ATLAFICO-bordering Atlantic), and also low literacy levels among the women and youths involved in fish trade. This greatly affects them in record keeping and capital investments.

Special Programme for Aquaculture Development in Africa (SPADA) is designed to contribute to the Millennium Development Goals in Africa. It is intended to cover all African countries and is directly linked to AUDA-NEPAD through its Action Plan. SPADA activities take place at national, sub regional and regional levels. At national level, the programme works with public and private institutions, service providers, NGOs/CSOs and the private sector to establish sustainable and responsible aqua-businesses, which in turn increase employment, fish supply and investment opportunities. At sub-regional level, SPADA works with Regional Economic Communities (RECs) to develop protocols for managing shared resources, trans-boundary movement of aquatic products as well as intraregional trade and markets. At regional level, the programme assists AUDA-NEPAD in implementing its Action Plan including assistance to the nascent ANAF, as well as relevant aquaculture bodies including the Committee on Inland Fisheries and Aquaculture for Africa. In order for more women and youth to get involved in fisheries and aquaculture value chains, there is need for African governments to sensitize their populations on the existence of credit facilities apart from capacitating them on business plan development and management. There is need for both public and private sector to work together by mobilizing women and youth to form cooperatives or associations as they may enable them to easily access loans from money lending institutions.

4.6.2. Best practices under strengthening effective engagement of Women and Youths along the Fisheries and Aquaculture value chain under Fish Trade in the region

There is need to empower women and youths to participate in gainful processing and trade, by enhancing their literacy levels, a basis for continuous capacity building and growth in the trade. Adoption and use of EFMIS and good infrastructure that is gender sensitive, and easily facilitates value addition, processing and fish trade can be a very big initiative. Regular Access to credit to facilitate fish processing and trade for both the women and the youths will help them to improve their fish trade activities, income and in turn, their livelihoods. The women and youths need to be sensitised on the legal framework concerned with fish trade, and the fisheries industry in general, and there is need for government to support credit access for women and youths for business operations in fisheries. Advocacy and awareness creation, emphasizing the operationalization of the legal instruments, and inclusion of how the government can support utilisation of the trade laws in national policies is one of the best practices. There is also need to promote regionally acceptable policies supported at both national and regional levels.

4.6.3. Policy message under strengthening effective engagement of Women and Youths along the Fisheries and Aquaculture value chain under the Fish Trade in the region

Some of the policy messages from this study were: i) deliberate policy provisions targeting supporting women in processing trade (not in many countries); and ii) need to determine how many countries have such policies. Introduction of adult education to help women and the youths to manage record keeping during the fish trade and incorporation in policies related to fish trade (lacking in many policies), can improve funding and sustainability strategies. Also, the need for inclusion of use of quality processing facilities in fish trade that are sensitive to the needs of women and youths, and provision of credit access strategies in policy reforms.

4.6.4. The Lessons learnt under strengthening effective engagement of Women and Youths along the Fisheries and Aquaculture value chain under Fish Trade in the region

Some of the lessons learnt from this study are that: i) No strong advocacy in the fish trade which led to low participation in processing and trade, thus limited access to other services; ii) compromises towards the ability to facilitate formal trade and acquisition of skills in processing and trade is high regionally, which encourages informal trade, leading to tax evasions. EFMIS is critical in facilitating trade and is good in providing real time trade information. It is also a key to improved trade and incomes; iii) limited facilities for women with children; iv) good sanitation and clean water; v) good health facilities; and vi) good facilities to reduce post-harvest losses. Additionally, Collateral to access credit limits women's participation in business, and also, knowledge improves transparency in trade.

CHAPTER FIVE

PRODUCTION AND EXTENSION PRACTICES IN AQUACULTURE SYSTEMS IN AFRICA

5.0 Introduction under Aquaculture Production and Extension Practices

The declining capture fishery yields due to high demand as a consequence of rapid human demographic growth have contributed significantly to Africa's drop in fish supply and per capita consumption rates. Today on average, the per capita fish consumption in Africa is relatively low i.e. 10 kg per annum compared to the global average of 20 kg (FAO 2022; Adeleke *et al* 2021). Currently, the capture fisheries production and productivity have levelled with a continued human demographic growth, suggesting that the fish demand cannot be addressed. Further, the rapid urbanization in Africa, coupled with the fast-growing population has inadvertently opened new market and job opportunities for the youth that continue to strain the fishery resources. Several actions aimed at improving sustainable management and utilization of Africa's fishery resources have been continuously reiterated by the African leaders with some relative achievements. For instance, for the last three years (2017-2019), there have been some improvement in the production of the African inland capture fisheries from 3.01 to 3.24 million tones live weight, respectively, despite a setback in the year 2020 (3.21 million tons) (FAO 2022). Despite this, the capture fisheries resources continue to be threatened. The primary threats are a consequence of ineffective governance, coupled with policies that are poorly conceived and implemented in the African states. Similarly, the policies are inadequately implemented and rarely harmonized between/among the neighboring countries and regions. The end result from this are the negative impacts on the fish stocks and economies of the AU Member States. While the AU Member States are endowed with a rich fisheries resource, the potential of the sector to eradicate poverty and improve socio-economic benefits to populations has not been met. It is reported that the African fisheries sector loses between 2 to 5 USD billion annually due to mismanagement of the aquatic resources. The need to enhance sustainable sources for fish production, improve the supply and access to fish for the surging urban and rural communities should be key for creating employment and food security. In the African region, the Policy Framework and Reform Strategy for Fisheries and Aquaculture (PFRS) provides the framework to guide the transformation of the sector in lieu of the Comprehensive Africa Agriculture Development Program (CAADP). The policy framework offers Africa the opportunity to transform its fisheries to enhanced productivity, sustainability and profitability with the options for enhanced collaborative management, particularly for the shared/transboundary aquatic resources. The PFRS guides the AU Member States to develop appropriate fisheries and aquaculture exploitation arrangements based on

reforms focusing on sustainable generation of benefits to the populations. The need to have in place parameters and actions to help guide the re-orientation of Africa's aquaculture from a largely subsistence farm-based activity into a commercial sector likewise, has been emphasized by PFRS. Aquaculture has the great potential to feed and nourish the world's growing population (FAO, 2022).

In 2020, the global aquaculture production reached 122.6 mt, with a total value of USD 281.5 billion (FAO, 2022). Despite this record, the aquaculture growth in Africa reduced in the major producing countries of Egypt and Nigeria (FAO, 2022). Globally, the contribution of aquaculture to capture fisheries reached 49.2% in 2020. However, if Egypt is excluded, the contribution of Africa aquaculture to the global fisheries is 6.6%, suggesting generally low production in the continent (FAO, 2022). In the low-income countries, particularly the sub-Saharan region, aquaculture development has shown limited progress in terms of its contribution to the total capture fisheries, and world aquaculture is still insignificant (Adeleke *et al*., 2021). However, due to continuous investments in the sector, countries such as Egypt, Nigeria and Uganda as well as Ghana, have witnessed some relatively improved aquaculture production levels compared to other African countries (Cai *et al*., 2017). The top aquaculture producers in Africa are Egypt, Nigeria, Uganda, Ghana, Tunisia, Kenya, Zambia, Madagascar, Malawi and South Africa, with the production capacity in metric tons of 1,561,457; 291,23; 103,737; 76,630; 24,300; 21,756; 15,124; 9014; 7421; and 6181 respectively (Adeleke *et al*., 2021). As aquaculture grows in Africa, the sector is still constrained by various challenges including capital, inadequate and low-quality feeds and seed, resource (water/land) competition, management and overall governance of the sector, among others.

In this report, various documents were reviewed in order to come up with the best practises in aquaculture, including biosecurity and environmental management in the African Union Member States. Here, various intervention areas were critically observed such as key issues, best practices, challenges, gaps, and the recommendations as well as lessons.



Plate 5: Cage aquaculture in Napoleon Gulf on Lake Victoria, Uganda (Photo Credits Mr.Jesse Lugya)

5.1 Relevant issues under Aquaculture Production and Extension Practices

Like any other industry such as the livestock, there are a number of risks that can impact negatively the viability of aquaculture initiatives. This, in most cases affect the planning initiatives, but greater understanding of the aquaculture risks and how they can be mitigated, elucidates why the sector may attract investment.

Table 1: Risks associated with aquaculture and potential interventions/mitigation measures.

Risks	**Potential impacts**	**Intervention/mitigation measures**
Environmental: habitat damage, eutrophication, pollution	Wild fish habitat damage and biodiversity loss, poor water quality for both human aquatic organisms	Use of robust spatial planning e.g., ESIA; these ensure good siting, farm design such as integrated aquaculture systems
Climate change	Changes in water volumes (drought and floods) may risk the production systems	Mapping of vulnerable areas using satellite images/data. Breeding of species resistant to temperature and oxygen stress, breeding fast growth fish strains
Impacts on wild stocks and land	Requirement of fish meal can lead to depletion of other important wild fish species. Utilising of large chunks of land for aquaculture	Utilisation of other sources of fish feeds other than fish meal e.g., plant sources such as cotton meal, soya meal, microalgae (e.g. *Spirulina*)

Risks	Potential impacts	Intervention/mitigation measures
	might risk other vulnerable dependants	
Genetics and biodiversity threats	Genetic pollution (admixture and hybridisation) from introduced species, competition with wild stocks can lead to profound negative impacts on biodiversity	Research and development should play pivotal roles to support viable and sustainable aquaculture. Strong policies on introduced fish species should be implemented. Hatcheries should be certified to aid traceability of fish seed
Biosecurity	Introduction of diseases and pathogens arising from imported or poor management of fish may decimate production. Irresponsible use of antibiotics may increase local resistance and also threaten health.	Capacity needs should be established by governments to ensure minimized risks. Good disease diagnostics labs and robust inspections should be implemented. Applied research aimed at minimizing antibiotics should be prioritized
Conflicts with other water uses	Interference with the sea routes; thus, cause of accidents on water by the water users	Proper demarcation and GIS mapping to avoid such incidences.

5.3 Policy message issues under Aquaculture Production and Extension Practices

This area provides policy messages under the *Aquaculture Production and Extension Practices* such as: i) Adherence to standards and code of practice for fish handling, processing and distribution across the continent; ii) Adherence to use of fish movement permits

and Law enforcement since policies exist; iii) Regulatory frameworks for establishing small scale fish farms; iv) Incorporation of proper aquaculture waste management in the regulatory framework hence adherence to environmental laws; v) Emphasizing adoption of available policies and guidelines; vi) Adopt improved technology to enhance market information sharing access and trade; vii) all Member States to adopt environmental action plans including bio-security issues in the policy frameworks; viii) Put emphasis on specialised centres for fisheries and aquaculture training and establish unified environmental laws and legal framework and policies governing shared water bodies; and ix) establish policies that protect the local aquaculture producers.

5.4 Best practices under Aquaculture Production and Extension Practices

The best practices in aquaculture production and extension in the region show that: i) Collectively manage the aquatic resource to ensure sustainable growth in the sector in the region; ii) Adopt standards and code of practice for fish handling, processing and distribution for use across the continent; iii) Government should monitor and regulate the issuance and use of fish movement permits; iv) Develop climate change adaptation measures for fish farmers; v) Adopt guidelines for aquaculture waste disposal and ensure implementation or adoption of the governing policies for sustainable aquaculture production; and vi) Adoption of improved technologies to enhance market information sharing, access and trade.

Additionally: i) Governments should identify, legalize and zone suitable areas for various aquaculture production systems and ensure equitable availability to all; ii) All AU MS should adopt environmental action Plans; iii) Establish and implement bio-security policy and regulatory framework in all AU MS; iv) Support capacity development and information sharing for both private and public sectors; v) Have adequate capacity of aquaculture technical personnel in the region; vi) Establish unified environmental laws, legal framework and policies governing shared water bodies; vii) Need to establish government policies that protect the local aquaculture producers from other competitors; viii) Establish a database of all stakeholders in the aquaculture industry; ix) All national and fisheries institutions should have dedicated and active websites for information sharing; x) Perform strategic environmental assessment; xi) Mapping of suitability areas for aquaculture production; xi) Develop regulations for establishing fish farms; xii) Strategic Environmental Impact Assessment for large commercial Aquaculture projects; xiii) A health and safety plan for fisheries governance through participatory management (co-management); xiv) Share lessons, best practices and innovations relating to ecologically sustainable commercial aquaculture; xv) There is need to have great opportunity to learn lessons from Egypt's experiences as well as other African countries in order to improve aquaculture in Africa since Egyptian aquaculture contributes to 70% to the Continent's total aquaculture production.

Some of the best practices and lessons that have been learnt in the development of aquaculture in Malawi indicate that key issues that should be put into considerations are: i) Increase number of fingerlings stocked per area (3 to 6 fish/m^2); ii) Increase in pond depth to 1 to 2 meters; iii) Feed fish with formulated diets; iv)The importance of predation control by fencing of ponds; v) The importance of quality feed, fingerlings and management; vi) The involvement of the commercial private-sector in aquaculture increases national production; and vii) The use of community action research programs (CARP) improves adoption.

5.5 The gaps in Aquaculture Production and Extension Practices

There are still gaps and much more has to be done on market development, increase the adoption of BMP, genetics improvement of farmed strains, in addition to improved feed.

5.6 Lesson learn in Aquaculture Production and Extension Practices

The use of science to accelerate aquaculture growth and transformation where the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa emphasizes the urgent need to strengthen the knowledge base of the sector and increase the capacity of key stakeholders to develop and implement a strategic perspective on its future. In this vein, the African Network of Fisheries Scientists (AfriFishNet) was launched with the aim of enhancing the role of science in increasing the profile of fish issues in the country (CAADP Expert Pool on Fisheries).

There is also harnessing markets and trade opportunities where it was realised that Africa has become a net importer of fish and fishery products, with imports outstripping exports in terms of volume. To reverse this, the capacity to reduce fish wastage and diversify products and incomes through fish trade need be strengthened. The harmonization of regional fish trade policies and legal frameworks would greatly enhance intra-regional fish trade and help strengthen trade capacities at country level.

There is need for harnessing investment financing for Small and Medium Enterprises in aquaculture in Africa by looking at the small and medium enterprises and how these struggles to obtain financing for their fisheries and aquaculture businesses from the African Union–Inter-African Bureau for Animal Resources because banks are less inclined to fund business with small capital requirements. This requires a deeper understanding of the aquaculture value chain and its auxiliary industries and services, bearing in mind the needs of disadvantaged groups including youths and women.

Resilience and risk management, including Climate Change has been a key issue thus the impact of climate change on aquaculture might be manifested through weakening supply and delivery of such inputs as feed and seed, and falls in pond productivity. The

needs of aquaculture should be factored into existing Climate Change and Agriculture (CCA), and Disaster and Risk Management (DRM) policy and strategy processes notwithstanding the CAADP compacts, CAADP National Adaptation Programmes of Action (NAPA), in national communications strategies and Poverty Reduction Strategy Papers (PRSPs). Research in this area needs to be strengthened by African Union – Inter-African Bureau for Animal Resources, with partnerships being built between the different relevant institutions to facilitate the development and adoption of appropriate resilient technologies that fulfil the requirements of EAA and other international environmental and climate-change best practices and standards.

Data collection, analysis and dissemination was also one of the key lessons on the African continent in the fisheries and aquaculture sector. It indicated that African fisheries and aquaculture data-collection systems are not performing satisfactorily and do not deliver all the information required for assessing the appropriateness of fisheries and aquaculture policy and management decisions, for tracking the status of exploitation of fishery resources and the overall performance of existing fishery management measures. Data collection, management and analysis needs to be strengthened to factoring in the biological, economic, social and governance dimensions of aquaculture. The capacity of personnel at all levels in this area needs to be built.

It is also expected of each SADC Member State to provide for its own internal funds as required for the adoption and incorporation of the framework principles into sovereign policies and strategies related to aquaculture. Moreover, each Member State's aquaculture focal point should be based within the existing State machinery.

CHAPTER SIX

ORNAMENTAL FISH-EXPLOITATION AND TRADE ON THE AFRICAN CONTINENT

6.0 Introduction of the Ornamental Fish-Exploitation and Trade

The ornamental fisheries trade plays a pivotal role as a highly valued source of employment and income for both coastal and inland communities in developing nations (Lunn & Moreau, 2004). Responsible management of ornamental fisheries holds the potential to serve as a compelling incentive for the conservation of freshwater and marine ecosystems, as well as coral reefs, ensuring their sustainable contribution to community livelihoods (Plate 6). The escalating demand for ornamental fish at national, regional, continental, and international markets is driven by factors such as aesthetics, cultural beliefs, and the perceived well-being it brings, including stress alleviation. However, the economic potential of this sector remains underexplored and lacks technological advancement (Monticini, 2015). While the majority of freshwater fish are farm-raised, some species are still harvested from the wild. The majority of ornamental marine fish, on the other hand, are obtained through wild capture. Farmers are diversifying brood stock for breeding, contributing to the growing demand. Despite the lucrative returns for fishers of ornamental species, there are profound environmental concerns related to habitat destruction, pollution, introduction of non-native species, and direct depletion of wild stocks.

Ornamental fish farming holds significant potential across all 54 African states, offering employment opportunities and serving as a lucrative source of foreign exchange. The global significance of coral reefs and ornamental fish stocks in Africa is highlighted by their role in providing subsistence and commercial food supplies globally, supporting over 350 million people in Asia alone. Comparative data from the Maldives reveals that aquarium fish command a selling price of US$ 248 per pound, while food fish only earns US$ 4.5 per kilogram. Similarly, in Indonesia, aquarium coral fetches US$ 7,000 per ton, in contrast to the US$ 60 per ton paid for coral harvested for construction lime. This study, encompassing key regions, elucidates crucial issues, best practices, and challenges in Ornamental Fish Exploitation and Trade within the African context. Key issues, policy messages and best practices for sustainable ornamental fish exploitation and trade in Africa are summarised in Table 2.



Plate 6: Ornamental fishes in the aquarium tanks at NaFIRRI, Jinja, Uganda. (Photo credit: Turyashemererwa Martin)

Table 2: Summary of key issues, policy messages and best practices for sustainable ornamental fish exploitation and trade in Africa

S. No.	Issues	Policy Messages	Best Practices
1	General lack of policy and regulatory framework for ornamental fisheries	Formulate comprehensive policy and regulatory frameworks for sustainable management of ornamental fisheries	Establish a clear and comprehensive policy and regulatory framework that includes guidelines for sustainable exploitation
2	Insufficient information and knowledge of ornamental fish by law enforcement agencies	Implement a robust monitoring plan for the ornamental fishery to enhance law eenforcement's understanding and control	Develop and implement a comprehensive monitoring plan, incorporating technological solutions for data collection and analysis
3	Lack of awareness of the impact of ornamental fish exploitation on the ecosystem.	Promote responsible aquaculture of ornamental fishes to reduce pressure on natural ecosystems	Establish guidelines for responsible aquaculture, emphasizing sustainable practices and minimizing the impact on natural ecosystems
4	Competition for ornamental fish for food and recreational purposes	Enforce standards for ornamental fish quality assurance to prevent overharvesting	Implement and monitor standards for quality assurance, ensuring that the trade balances demand with sustainable practices to avoid overharvesting
5	Absence of specific standards for ornamental fish quality	Establish and enforce specific standards for the quality of ornamental fish in trade	Develop and implement clear quality standards, including certification processes, to ensure that only healthy and sustainable fish enter the market
6	Inadequate bio-security measures for controlling live fish species export and import	Enhance bio-security measures to control the export and import of live fish species effectively	Invest in accredited quarantine facilities, implement stringent bio-security protocols, and collaborate internationally to prevent the spread of ornamental and other fish diseases
7	Gender inequality in participation in the ornamental fishery trade	Promote gender equality by implementing policies that encourage active participation of marginalized groups e.g. women, in the ornamental fish exploitation and trade	Develop initiatives, training programs, and support mechanisms to increase the involvement of marginalized groups e.g. women in all aspects of the ornamental fish exploitation and trade
8	Threat of environmental pollution to the development of ornamental fish exploitation and trade	Emphasize research and adopt eco-friendly practices to mitigate environmental pollution risks.	Conduct environmental impact assessments, promote eco-friendly practices, and invest in research to develop sustainable and environmentally conscious methods in the ornamental fishery.

S. No.	Issues	Policy Messages	Best Practices
9	Insufficient research and knowledge sharing; Lack of ornamental fisheries database	Establish comprehensive databases for ornamental fisheries at national and continental levels	Invest in research initiatives, create and maintain databases, and foster knowledge-sharing platforms to enhance information accessibility and promote informed decision-making
10	Inadequate monitoring of ornamental fish under aquaculture and capture fisheries	Strengthen monitoring mechanisms for both aquaculture and capture fisheries in the ornamental fishery	Implement robust monitoring systems for both aquaculture and capture fisheries, incorporating advanced technologies and involving local communities in data collection efforts
11	Limited capacity (human, infrastructure, and financial resources) for monitoring	Invest in building capacity, including human, infrastructure, and financial resources, to enhance monitoring capabilities	Develop training programs, allocate ample resources, and establish partnerships to build the capacity of individuals and institutions involved in monitoring ornamental fisheries
12	Limited information on the value and condition of ornamental fisheries	Encourage the development and dissemination of information on the value and condition of ornamental fisheries	Implement strategies to collect, analyse, and disseminate data and information on the economic and ecological value of ornamental fisheries to enhance decision-making and public awareness
16	Ornamental fisheries not covered in academic curricula	Integrate ornamental fisheries into academic curricula to enhance education and awareness	Collaborate with educational institutions to incorporate ornamental fisheries topics into relevant academic curricula, fostering a generation of professionals with a comprehensive understanding of the field
17	Weaknesses in border point inspections	Strengthen border point inspections to prevent illegal trade and ensure compliance with regulations	Invest in training and resources for border point inspections, collaborate with international agencies, and implement technology-driven solutions to enhance the efficiency of inspections and prevent illegal trade

CHAPTER SEVEN

CHALLENGES FOR ALL THE STUDIES: FISHERIES MANAGEMENT, FISH TRADE, AQUACULTURE EXPLOITATION AND ORNAMENTAL FISH TRADE IN AFRICA AT BOTH NATIONAL AND REGIONAL LEVELS

From the various reviews on fisheries management, fish trade, aquaculture exploitation and ornamental trade In Africa, several challenges arose from the reviews. These challenges could form the basis for future improvement.

The following challenges were observed in the areas of FISHGOV1, fish trade, ornamental fisheries and Aquaculture.

7.1 Challenges under MCS in the African region at national and regional levels

a) Current authorized vessels are too small to accommodate observers in the system.

b) The observer scheme has not been developed because the fishing fleet is artisanal and of overall length of less than 24 meters.

c) Lack of capacities in MCS as well as the request of technical assistance and training to GFCM is a main threat underlined during the regional workshops by all the AU MS;

d) There is no National Plan of Action for Small-scale Fisheries (NPOA-SSF) and adherence to FAO IPOA that can be registered at country level. Due to the lack of permission of foreign fishing vessels and of control capacity, the cases reported of infringements by the Member States were local and penalties differentiated by country. The lack of participation and co-management with small-scale fisheries affected the fight against IUU fishing in fisheries characterized by a great presence of small-scale fishing.

e) Managing ecosystems along the length of the Southern African coastline and within many more kilometers of estuarine and freshwater environments presents considerable challenges to the individual Southern African countries.

f) In recent decades, the challenges of managing fisheries resulted in fisheries suffering seriously from overexploitation and ecological stress, endangering the livelihoods of some of the poorest segments of society, putting pressure on public finances, and also threatening the overall health of the oceans. These challenges have mainly been attributed to institutional failures. One such crucial institutional aspect was systems of monitoring, control, and surveillance.

Consequently, international organizations had supported developing countries in their efforts to install MCS systems. In Southern Africa, the EU and FAO had supported South African Development Cooperation, (SADC) in its efforts to install MCS systems and a regional commitment to combat IUU fishing activities.

g) The existing VMS capacity in its current form cannot address the regional monitoring challenges. Effective MCS requires a comprehensive legislative framework that supports all relevant MCS components by taking into account each of the elements of monitoring, control and surveillance. Countries such as Angola have low enforcement capacity compared to other Southern African States. The focus of fishing e.g. in DRC is mainly in inland lakes, hence marine fisheries have not been given priority.

7.2 Main challenges for the Coordination and Regional and continental Cooperation in Fisheries Management (RFBs)

a) Lack of synergy and action among the two bodies hance the need for implementation of the Conference of African Ministers of Fisheries and Aquaculture (CAMFA) recommendations relating to the RECs and operationalizing existing agreements between RECs and RFBs. There is also the need to clarify on the mandates and streamline the activities of the RECs and RFBs.

b) Inadequate resources for fisheries development at regional levels: Fisheries has not yet been highly prioritized in some RECs and thus absences of fisheries experts in some of these RECs, let at alone lack of knowledge, mandate or existence of the RFBs in some RECs, while some RFB Member States belong to multiple RECs.

c) Institutions such as South Western Indian Ocean Fisheries Commission (SWIOFC) were facing some challenges e.g. SWIOFC is an advisory Commission but lately, members of this commission have expressed the wish to transform it into a Management Organization.

d) Challenges facing Lake Tanganyika Authority (LTA) indicated that the Authority is already constrained by funding problems from contracting parties, and therefore depends on donor support for most of its activities.

e) Expansion of the mandate of LVFO was so crucial in spite of any irregularities in the region e.g. Rwanda and Burundi became members of EAC only in 2005 but could not automatically become members of LVFO. Currently the convention of LVFO is being revised to allow any member of EAC to automatically become members of LVFO. Burundi has joined LVFO while Rwanda is still not yet a

member. The two states stand to gain from the vast expertise of LVFO especially in aquaculture development. LVFO being an institution of EAC, discussions are underway to expand its scope so that it has an East African outlook. It is being proposed that the institution be transformed into East African Fisheries Organization (EAFO). The same institution, LVFO suffers from perennial financial problems because member states are always in arrears in the remittance of the country contributions. The EAC secretariat in Arusha has opened up and is now supporting some LVFO activities from the Donors Partnership Fund. In spite of the challenges above, LVFO as a pioneer RFBs in the region has played a crucial role in the sustainable management of the largest freshwater fishery in Africa.

a) Other RFBS such as Aquaculture Network for Africa (ANAF) has low membership and lack of funding mechanisms is of great concern.

b) A lack of political commitment by members of some RFMOs and unyielding positions incompatible with sound regional fisheries management have thwarted, if not stalled, efforts undertaken within some RFMOs to meet and address conservation and management challenges. This situation hinders RFMO performance, while criticism is directed at the organizations rather than at their members.

c) The challenges facing the fisheries of Lake Tanganyika could be similar to those of Lake Victoria e.g. Lake Tanganyika Authority (LTA) could benefit from sharing of information and data;

d) Challenges facing CIFAA: Whereas the role played by CIFAA in the establishment of RFBs like LVFO and LTA is highly acknowledged, lately some members have also expressed the need to restructure CIFAA to effectively address the challenges facing inland fisheries of Africa.

7.3 Challenges under fisheries access arrangements – A regional approach

a) The main challenges facing African countries bordering the Atlantic Ocean is in terms of the formulation and management of fisheries agreements, specifically Tuna agreements. Other than the challenges in defining the surplus for each species they have, there is absence of scientific evaluation and fisheries development plans for the majority of West African States. This notion cannot be applied at country-level to pelagic fisheries, in particular tuna and tuna-like species, and oceanic migratory fish that are independent of an Exclusive Economic Zone (EEZ).

b) Bilateral agreements between West African States and various countries lack transparency: It is a challenge getting details and especially those relating to fishing opportunities and catches.

c) Despite progress in communication equipment acquisition and the gradual adoption in the use of electronic logbooks, data transmission challenges still remain. Until recently, countries such as Ghana were regularly singled out by ICCAT because of the lack of data transmission. The EU example shows that this is still a matter of contention and the current lack of political will to entrust the management of fisheries agreements to a sub-regional organization. Meanwhile, no country can claim any property rights over migratory and transboundary resources, whatsoever. There are two reasons for this: First, the coastal countries believe that they enjoy many more advantages in negotiating individually rather than collectively, through the intermediary of a supra national organization. Secondly, they are convinced that in this manner, they have control over what is happening in their EEZs, even if the MCS resources of virtually all countries are insufficient for such coverage. Some of the key significant challenges stem from the absence of a binding legal framework. It was realized that the selling price of landed tuna was defined by a Price Committee since 2013 based on the average price FOB from Abidjan (Côte d'Ivoire) and Tema (Ghana) less an amount equivalent to 90 Euros handling costs (Drury O'Neill, 2013).

7.4 Challenges under Ecolabeling and Fisheries improvements

a) One of the main problems in the regional and continental fisheries management arena is the non-participation of key stakeholders in driving the process.

b) The open access character for capture fisheries, inadequate or weak governance at national level and for management of trans-boundary resources and ecosystems, institutional weaknesses and insufficient financial investments opportunities, have led to increase in fishing pressure intensity, overfished stocks, illegal, unreported and unregulated (IUU) fishing, and inadequate benefits from trade in fish and fish products.

7.5 Challenges for the Governance of LME and Fisheries Management Approaches and Practices

a) Better operational coordination of the monitoring and control actions. Pooling of resources and know-how for more effective and less costly monitoring;

b) Build on the strengths and complementary resources of each Member State; Use of new control technologies against illegal fishing; increased national capacity; and information exchange and know-how.

7.6 The challenges under strengthening effective engagement of Women and youths along fisheries and aquaculture value chain under Fish Trade in the region

a) Lack of limited access to fish marketing information and limited guidelines on best practices and procedures for trade facilitation.

b) Lack of organized institutions in the small-scale fisheries sector and service providers to disseminate information on cross border trade requirements, rights and responsibilities of small-scale traders.

c) Weak communication strategies that will promote robust policy responses to fish trade issues and challenges at both Regional Economic Communities (RECs) and Partners States levels; and also, policies dissemination, agreements and protocols to users.

d) Studies initiated on the fish trade mainly from artisanal fisheries in Africa, reveal that the value chain of smoked fish contributes significantly to the food and nutritional security of local populations. However, smoking as a fish processing technique poses many problems such as degradation through cutting mangroves and other forests for firewood; important CO_2 emissions (greenhouse gases) and climate impacts; and respiratory disorders for smokers

e) Most women and youths in fisheries and aquaculture ventures operate informally, individually, incoherent, self-financing, inadequate record keeping, and the situation not only denies them opportunities but also prevents African governments to capture their contribution in national and regional economies. This results in a situation where there is limited assistance from governments and development agencies.

The African Union developed a Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) and identified among others, policy arenas on strengthening the role of women and youths in fisheries and aquaculture. This led to the establishment of The African Women Fish Processors and Traders Network (AWFISHNET) in 2017 in Tanzania, facilitated by AU-IBAR, with the objective to contribute to improving the welfare, working conditions and income of women in the fisheries sector (and especially women in the post-harvest sector) within the Member States of the African Union. Despite this network and various combined efforts, women and youths continue to face some challenges along the fisheries and aquaculture value chain. These included:

a) Poor level of structure and organization of women into formal, legally recognized entities such as SMEs;

b) Difficulty to access credit for financing their activities;

c) Poor fish processing techniques leading to hazardous, unhealthy and unfair working conditions;

d) Low level of literacy;

e) The multiplication of barriers (taxes, taxes etc.) to the marketing;

f) In the fishing industry, women are poorly represented in decision making spaces and management positions;

g) Poor road infrastructures linking production sites to markets since this does not favour the distribution of national production;

h) Poor landing and storage infrastructure;

i) Poor data on women and youths involved in the fisheries and aquaculture value chain;

j) Non-popularization of new processing techniques such as FAO-Thiaroye Processing Technique (FTT); gas and solar energy;

k) Lack of capacity building in training on networking, lobbying, new information and communication techniques to reinvigorate the network and cooperative societies.

l) Barriers to trade is a major constraint to the growth of trade throughout all Regional Economic Communities (RECs) in Africa; and the level of informal cross-border fish trade is one of the manifestations or measures of the extent to which traders are aware or lack of provisions of Free Trade Area, to which African Union and all regions have committed themselves

m) There is a lack of awareness of requirements to trade both at national and regional level, and un-harmonized trade policies within the region and as a result, women and youths are not aware and not fully benefiting from the regional trade protocols and treaties. Some markets within the country are un-accessible and there is a lack of awareness of market requirements especially on issues of safety and quality of the products, poor market infrastructure, poor technological equipment, pricing, lack of approved processing facilities and trading instruments such as the EU number. The cost of compliance remains high and has resulted in lack of/or limited compliance.

Globally, the African fisheries and aquaculture sector has been faced with numerous challenges due to lack of manpower development which has resulted in the low level of productivity being recorded in the subsector in the recent past (FAO, 2022). Weak human and institutional capacity continue to be a key constraint for positive reform of

the fisheries and aquaculture sector. Evidently, this is hampers policy making, fisheries administration and research (African Union, 2014). Majority of the continent's women and youths lack necessary technical skills and are deficient in business aspects of the fisheries and aquaculture sector. The youth in Africa constitute 60% of the total population and as said in the African Development Report of 2015 that they are a valuable resource if equipped with necessary skills. The fisheries sector employs 12.3 million people as full-time fishers or full-time and part-time processors, accounting for 2.1% of Africa's population of between 15 and 64 years old; of these, women accounted for about 27.3% of the total workforce, and they were directly involved in fishing (3.6 %), processing (58%), and aquaculture (4%).

Under the GIS and ICT in fisheries and aquaculture value chain and business development, some of the challenges that were observed were:

a) Youth unemployment remains a barrier to Africa's development.
b) Majority of youth and women do not have practical experience in fish farming practices.
c) In spite of the importance of Geographic Information System (GIS) technology, very little has been done to understand its role in fisheries research and communicating of such information to policymakers. Consequently, its functionality and application of the technique to research on information systems, marketing, transport, logistics and trade can assist women and youth to take advantage of the opportunities in the fisheries and aquaculture value chain.
d) Low integration of ICT and GIS in fisheries and aquaculture in Africa.
e) Inadequate tools and equipment for GIS and ICT.
f) Poor focus on Participatory Geographical Information Systems (P-GIS), where there is full involvement of individual women/youth traders and associations who can help in the mapping and validating the movement of fish and fish products in the various regions.
g) Using information generated through GIS and other ICT approaches, governments and non-state actors can support the development of a geo-coded, interactive database to facilitate access to markets as well as dialogue and interaction between and among the formal and informal trade associations (World Fish *et al*., 2013).
h) Poor collaboration and partnership with national, regional and global data centres.
i) Low literacy among women and some youth with young women accounting for 59 per cent of the total illiterate youth population.
j) Aquaculture is unattractive to youth due to complications in setting up, initial capital requirement and low earnings.

k) Poor monitoring and management of water and environmental resources in fisheries and aquaculture.
l) Pollution of water bodies and destruction of wild fish stocks.
m) Poor production outputs in aquaculture.
n) Lack of long-term data to aid management.
o) Packaging and short shelf life of processed products.
p) Underutilisation and poor awareness in use of ICT by women and youth in marketing of fish products.
q) Gender and youth insensitive online platforms.
r) Low involvement of women and youth in training programmes and international meetings relating to fisheries and aquaculture.
s) Poor resourcing for training of trainers at national and regional levels.

7.8 Challenges under Aquaculture Production and Extension Practices

a) The following are the major challenges affecting aquaculture productivity and profitability, hence the overall performance and sustainability of aquaculture enterprises.: i) Access to quality fingerlings and feed; ii) Climate change-water shortage due to inadequate rainfall; iii) Technology transfer from research to farmers, African Union – Inter-African Bureau for Animal Resources, (AU-IBAR); iv) Weak human and institutional Capacity.

b) The inadequate availability and distribution systems for quality fish seed and fish feeds that are key inputs is a major challenge. High feed cost is another factor. There is also a poor understanding by aquaculture producers of market dynamics for fish and their produce.

c) The above is augmented by lack of access to appropriate information, hence poor understanding of regulations and guidelines governing production methods, post-harvest handling, safety and quality of fishery products in the market. The latter affects producer's access to certain potential market outlets.

d) The regulations for aquaculture are inadequate.

e) There are also weak linkages between research, extension and producers resulting in low adoption rates of recommended management practices. The poor understanding of general pond management for increased production is a concern. Greater attention needs to be placed on the economics of fish production to improve economic viability of enterprises. Furthermore, aquaculture is not a priority in most countries. It is the countries that determine whether budgets are allocated for aquaculture implementation and extension.

f) Then in the Zambian Aquaculture, major challenges affecting aquaculture development were bureaucratic procedures in Environmental Assessments; Inadequate supply of inputs notably seed, feed and other materials; A weak aquaculture extension and research system; Some of Zambia's regions are too cold; Insufficient skills in fish farming; The weak implementation of aquaculture policy and strategy; Lack of strong local aquaculture tradition in some parts of the country; Limited access to credit and finance; Poor and/or hardly any strategies are integrated into development projects to ensure sustainability after project lifespans.

g) For the case of Mali, there were challenges such as: Limited knowledge and unfavorable perception of bank officials in fish farming business; Presentation of aqua businesses as attractive bankable projects; Demonstration of strong technical and managerial abilities in aqua-business; Poor performing loans of fish farmers; Profiling of successful fish farm businesses to enhance insights on key success factors in the business; Develop or track industry indicators and benchmarks to guide Bank personnel; Absence of identifiable fish farming value chain; Provide assurance of market for links in the aqua culture chain; Limited development funding for training and for direct technical support; Governments and institutions should invest in fish farmers; Limited know-how in fish farming e.g. i) Fish farmers must pursue knowledge and skills in the science and business of the industry; ii) Access to training inputs and extension must be available through public and private centres of training and knowledgeable individuals; iii) There must be investment in public and private operators who are providing training to middle level personnel in fish farming; The others are market, undeveloped value chain side-lining processing and distribution thus absence of marketing infrastructure; storage facilities for aquaculture produce and products, and market information; and Investors and investment in marketing infrastructure and systems is also a big challenge that needs to be addressed.

h) Climate change has become a global phenomenon, which is increasingly impacting human activities such as agriculture, and which has specific impacts on the natural resource base (particularly water) and ecological services that aquaculture depends on. Environmental Matters indicate that given the close-knit between aquaculture and environmental resources (land, water, feed and stock), environmental challenges often have a direct impact on the performance and sustainability of aquaculture. Well-planned mitigation strategies against environmental fluctuations such as water

shortages, pollution and flooding must be accounted for and articulated within extension packages.

i) Good governance is a far-reaching concept that describes how public institutions conduct and decide over public affairs, and manage public resources. Without good national and regional governance, the development of aquaculture business in Africa will remain constrained, as this affects all elements of the value chain such as: i) Accountability, ii) Transparency, iii) Good governance follows the rule of law, Responsiveness, v) Equitability and inclusivity, vi) Effectivity and efficiency and vii) Participatory and consensus driven.

7.9 Challenges of the Ornamental Fish-Exploitation and Trade

Ornamental fish exploitation and trade challenges in AU Member States

The ornamental fish-exploitation and trade sector in Africa face numerous challenges, with specific issues observed in several countries:

Ornamental fish-exploitation and trade in Benin faces challenges including absence of a comprehensive system for tracking species-level import/export data, hampering effective management. Additionally, the sector struggles with overreliance on exotic ornamental fish species due to insufficient research on indigenous species. Standardization issues in data recording and record-keeping further contribute to the sector's complexities. In Malawi, the ornamental fish industry encounters challenges such as reduced demand for Malawian Cichlids due to international breeding practices. The use of localized fishing crafts contributes to high production costs, coupled with inadequate monitoring, control, and enforcement of the trade. These challenges are not unique to Malawi but are reflective of broader issues in Africa. Rwanda's ornamental fish trade is characterized by a marginalized industry lacking clear policies. Investments remain predominantly focused on fish for food production, with a notable lack of awareness regarding the significance of ornamental fisheries. The challenges in Rwanda highlight the need for strategic development and awareness campaigns within the ornamental fish sector. Kenya's ornamental fish industry faces diverse challenges, including a lack of quality ornamental fish broodstock, inadequate technical knowledge in production, and an uncoordinated market structure. These challenges, coupled with competitive disadvantages in the global market, underscore the need for comprehensive reforms and strategic interventions.

General challenges and common issues across countries:

Across African countries, the ornamental fish trade shares common challenges. For example, the absence of a comprehensive policy and regulatory framework, coupled

with insufficient measures for sustainable exploitation, poses significant hurdles. High production and freight costs, limited capacity in fish handling practices, and issues in packaging contribute to the overall complexities of the ornamental fish sector. Several shared challenges also persist in the ornamental fish trade across African nations e.g. Imbalanced sex ratios, high post-harvest mortalities due to quality control issues, legal complexities, and inadequate regulations collectively impact the industry. Limited information management, poor law enforcement, and low local investor participation further contribute to the sector's challenges.

Emerging Concern:

An emerging concern is the genetic conservation of wild and farmed relatives of ornamental fish, emphasizing the importance of preserving African biodiversity within the industry. Despite existing regulations, concerted efforts are essential to enhance sustainability and economic viability in the ornamental fish trade across the continent.

Recommendations:

Despite existing regulations, challenges persist, indicating the need for concerted efforts to enhance sustainability and economic viability in the ornamental fish trade across the African continent. To address these challenges, there is a collective need for strategies to protect ornamental fish resources, recognition of the international potential of the trade, and the implementation of measures for sustainable exploitation. Additionally, resolving packaging and quality control issues to reduce air freight rejections emerges as a crucial aspect of ensuring the sector's viability.

7.8 General recommendations in the whole study.

In general, operationalization of the knowledge generated from the fish trade questionnaires to the stakeholders has been a challenge thus less respondents thus less applications as expected. This may require future studies to devise other means like providing a token to the respondents to quicken the process.

The finalization of the consultant went beyond the required time as had been agreed in the agreements due to the load hence a need to revise these terms in the near future.

CHAPTER EIGHT

FACILITATE REGIONAL STAKEHOLDERS' VALIDATION WORKSHOPS IN FIVE REGIONS (WEST, CENTRAL, EASTERN, SOUTHERN AND NORTHERN AFRICA) FOR THE CONSOLIDATED BEST PRACTICES AND KEY MESSAGES ON ISSUES FROM REVIEW OF OUTCOMES OF THE FISHGOV1 AND FISH TRADE PROJECTS

Three regional stakeholders' workshops were held in Dakar, Senegal; Antananarivo, Madagascar; and Cairo, Egypt. These workshops were aimed at validating the best practices and key messages derived from the review of outcomes of the FISHGOV1 and Fish Trade Projects. The workshops covered diverse topics such as Monitoring, Control, and Surveillance (MCS), and Eco-labeling, fisheries improvements, performance reviews of RFBs, shared lakes and rivers management, and aquaculture production and extension practices. Recommendations encompassing the diverse challenges and the identified opportunities by stakeholders across the regions were proposed, emphasizing the need for comprehensive and collaborative approaches to fisheries management and aquaculture development in Africa.

Key Outcomes from the Regional Stakeholders' workshops on Fisheries Management and Aquaculture Development in Africa

1. Dakar, Senegal Workshop (24th -26th April 2023)

i) Monitoring, Control, and Surveillance (MCS) and Eco-labeling

a) Address the sale of fish at sea and enforce rules,
b) Include observers on fishing vessels, irrespective of size,
c) Collaborate to address IUU cases related to Chinese boats in other countries' waters,
d) Form joint forces on MCS programs for marine and freshwater bodies,
e) Advocate for MCS programs' support by AU-IBAR,
f) Include freshwater and estuarine ecosystems in MCS programs,
g) Transition from open access to the quota system for effective fisheries resources protection/management,
h) Establish common nautical miles of operation in MCS for each country,
i) Develop tools to monitor fishing operations,
j) Enforce certification of products, including small-scale fisheries.

ii) Performance Review of RFBs

AU-IBAR to facilitate RECs and strengthen bodies like ECOWAS in fisheries approaches.

iii) Fisheries Management in shared Lakes and Rivers

Consider a quota system for sustainability in open-access areas.

iv) Aquaculture Production and Extension Practices

a) Address issues like mapping, fingerlings, feeding inputs, and training for aquaculture,
b) Focus on biosecurity,
c) Integrate (1) and (3) in presentations.

2. Antananarivo, Madagascar Workshop (15th -17th May 2023)

i) Monitoring, Control, and Surveillance (MCS)

Address governance comprehensively under MCS

ii) Technology in Fisheries and Aquaculture

a) Use technology to facilitate women and youth investments in aquaculture,
b) b) Include ICT in the fisheries value chain,
c) Introduce artificial intelligence in Aquaculture and Capture fisheries,
d) Explore E-DNA in aquaculture,
e) Include MCS in the aquaculture sector.

iii) Feeds and Traceability in Aquaculture

a) Explore alternative feeds (black soldier, soya bean) to reduce costs,
b) Apply traceability in eco-labeling.

iv) Policy and Legislative Reforms

a) Develop appropriate technology for African fisheries and aquaculture,
b) Address post-harvest losses,
c) Integrate the tax base for continental development,
d) Harmonize fish trade taxes,
e) Set standards, especially for SMEs,
f) Implement legislative reforms in fish trade.

3. Cairo, Egypt Workshop (29th -31st May 2023)

i) Feeds in Aquaculture

a) Focus on alternative feeds like black soldier fly and soya bean,
b) Improve local feeds to reduce importation costs.

ii) Financial Support and Certification

a) Provide credit facilities to women in fisheries
b) Ensure eco-labeling and certification are environmentally friendly and supportive of small-scale fisheries.

iii) Capacity Building and Collaboration

a) Skill women in the aquaculture sector,
b) Encourage collaboration with countries advanced in aquaculture,
c) Emphasize traceability in aquaculture.

iv) General Recommendations

a) Restrict live fish transfers to protect indigenous stocks,
b) Encourage women to form associations for collective development,
c) Control aquaculture in Mauritania, learning from other countries,
d) Use water wisely, especially in cage aquaculture,
e) Collaborate to improve aquaculture across the continent,
f) Implement traceability seriously in both large and small-scale aquaculture.

CHAPTER NINE

STAKE HOLDERS' VIEWS FOR ALL THE STUDIES: FISHERIES MANAGEMENT, FISH TRADE, AQUACULTURE EXPLOITATION AND ORNAMENTAL FISH TRADE IN AFRICA AT BOTH NATIONAL AND REGIONAL LEVELS

9.0 Introduction

A questionnaire was designed to seek stakeholders' views on how best to promote uptake and implementation of knowledge and best practices to inform policy change in Fisheries Management and Aquaculture Development and Fish Trade at National and Regional levels in Africa. The study was commissioned by the African Union Inter-African Bureau for Animal Resources (AU-IBAR). The emphasis was on how best to promote uptake and implementation of knowledge and best practices generated during AU-IBAR Fisheries Governance Project 1 (Fish Gov 1) and Fish trade projects among other projects. The findings were to be used to develop a mechanism for facilitating AU Member States (AU MS) to utilize the documented best practices from the FishGov 1 and Fish trade projects for evidence-based fisheries reforms. The target respondents were the AU Member States, Regional Economic Communities (RECs), Regional Fisheries Bodies (RFBs), Regional Seas Conventions (RSC), Water Basin Commissions, Partners, and Non-State Actors in the fisheries and aquaculture sector.

Under this area of study, we obtained information from Ministry of Agriculture, Fisheries and Aquaculture Development of Ethiopia/Addis Ababa, and Policy Research Network for Fisheries and Aquaculture in Africa, AU-IBAR Network, Malawi/Lilongwe despite of the high number of countries that are under the AU-Member States.

The study critically looked at four intervention areas:

9.1 Main outcomes from Implementation of FISHGOV 1 and Fish Trade Projects.

Stakeholder engagement provided information on these two projects (i.e. FISHGOV1 and Fish Trade) and the following were the outcomes from the implementations of these studies:

a) In the areas of FISHGOV1, it was recommended that Institutional capacity of the fisheries and aquaculture sector in the Member States of African Union be enhanced for increased benefits. Whereas for FISH TRADE areas, Capacity of Member States of the African Union to integrate intra-regional fish trade into development and food security policy agendas be enhanced for improved food and nutritional security and reduced poverty. Additionally, the institutional capacity of the fisheries and aquaculture sector is to be strengthened for effective governance;

b) There was also a list of outcomes that were relevant to their institution or area of operation and these were:

i) FishGov 1: Evidence-based decision making had improved, notably through research; and

ii) Fish Trade: Information on the structure, products and value of intra-regional fish trade in food security was generated and was made available to stakeholders. Although recommendations on policies, certification procedures, standards and regulations were well embedded in national and regional fisheries, agricultural, trade and food security policy frameworks, these key intervention areas need to be handled by AU-IBAR.

c) The following were some of the recommendations for the two areas (i.e. FISHGOV1 and Fish Trade) based on the outcomes:

i)FishGov 1

Ensure that the findings and experiences of FishGov1 are summarized into knowledge products (e.g. Policy Briefs), and these are to be actively promoted in countries where they may be relevant.

ii) Fish Trade Member States should be supported to domesticate the harmonized regional fish product standards that were developed by the Fish Trade project. Additionally, the regional fish trade flow information should be incorporated into national fish trade policies and strategies. In addition to that, stakeholders recommended that AU-IBAR should draw lessons from COMESA who have continued to support Cross-border Fish Traders Associations using the knowledge from the Fish Trade project.

Through in the areas of **sustainable** fisheries and responsible aquaculture governance in Africa, FISHGOV1 was highly recognized for the Women network hence was supposed to enhance **A Network of Women Fish Processors and Traders.** This was established and continues to advocate for women fish value chain actors. Thus, the standard of living of the women has improved through capacity of fish-dependent communities that has been enhanced in order to take advantage of the fish as a source of income. It was noted that a majority of fishers were of age 35 years and below, therefore, they are significantly benefiting from the sector, and applied mainly to the youths in the fisheries sector.

9.2 identification, evaluation and assessment of relevant issues for the formulation of best practices and policy messages that are crucial to support rational governance of the fisheries and aquaculture sector by AU Member States and regional institutions

a) Lessons learnt by the stakeholders from the FISHGOV 1 and Fish Trade projects whose aim was to enhance sustainable fisheries, responsible governance, and strengthen fish trade in Africa were:
i) In order to establish stronger Networks, it is necessary to conduct stakeholder analysis early in the project to determine their needs, roles and mechanisms for involvement.
i) Institutional collaboration and coordination are necessary in order to achieve strong linkages with regional fisheries and aquaculture bodies.

b) Based on the lessons learnt in FISHGOV 1 and Fish Trade projects, the best practices recommended for sustainable fisheries and improved fish trade in Africa were:
i) Ensure meaningful involvement of stakeholders in the entire project development and implementation process including policy formulation.
ii) Strengthen the capacity of RECs in fisheries and aquaculture.
iii) Enhance knowledge management through effective communication to drive implementation of policy reforms.

c) The following were the prevailing/potential challenges limiting implementation of the best practices as was suggested above:
i) Lack of knowledge about the AU Policy Framework and Reform Strategy
ii) Lack of technical capacity at country levels.
iii) Poor funding levels
d) Strategies and/or approaches recommended by the stakeholders for effective utilization and/or application of the best practices were:
i) Raise awareness about the Policy Framework and Reform Strategy.
ii) Expand the scope of the Networks to ensure that young scientists are involved so that they improve their knowledge about continental frameworks.
iii) AU-IBAR should support Networks to mobilize funding to enable them to operate effectively.

e) Policy reforms suggested for sustainable fisheries and responsible aquaculture governance and enhanced Fish Trade at national, regional and continental level in Africa included:
i) Adoption of wealth-based fisheries management approaches;
ii) Incorporate fisheries into national trade policies;
iii) Simplify regional trade protocols to enable informal fish traders to take advantage of cross-border trade;
iv) Community participatory approaches;
v) Environmentally integrated approaches;

vi) Strong data management systems;
vii) Bilateral trade systems;
viii) Fairly managed fisheries and aquaculture input supplying systems; and
ix) Real value-chain and infrastructure development.

f) Some of the existing issues that hinder the implementation of best practices in the Fisheries and Aquaculture sector were:
i) Policy environment that is not favorable to aquaculture, including taxes and interest rates on credit;
ii) Poor capacity of aquaculture experts;
iii) Lack of evidence on the economic benefits of aquaculture such as shortages of supporting project inputs notably feed, seed and gear, in addition to bilateral trans-border Issues.

g) Below were the regional organizations that support rational governance of the Fisheries and Aquaculture sector under each of the two projects:

i) FishGov1:
Ministries responsible for fisheries were the State Actors, while National Fisheries and Aquaculture Associations were the NSAs.

ii) Fish Trade Project:
Ministries responsible for fisheries and Trade were the State Actors, while National Fish Traders Associations, including Cross-Border Fish Traders Associations, were the NSAs

h) Lessons learnt that can support best practices in the Fisheries and Aquaculture sector under each project were:

i) FishGov1:
Regional Economic Communities (RECs), Regional Fisheries Bodies (RFBs) as well as Large Marine Ecosystems (LMEs)

ii) Fish Trade Project:

iii) Regional Economic Communities (RECs) and Regional Fisheries Bodies (RFBs)

9.3 Formulation of best practices and key policy messages based on issues identified for policy reform in AU member states and regional institutions

Efforts made to build capacity of key players in the Fisheries and Aquaculture sector were:
i) Giving continues on-site training and on-site demonstration programs for fisheries experts, fishermen, fish traders, and other actors of the sector
ii) The mechanisms that exist for enhancing uptake of knowledge, innovations and best practices to inform policy changes at national and regional levels of the continent were

theoretical, on job practical demonstrations, and participatory trainings.

9.4 Recommendations to facilitate the utilization of Lessons Learnt in FISHGOV1 and best practices in AU Member States and regional institutions to effect policy reforms.

The following were the recommendations on the best practices to effect policy reforms among the AU-MS and regional Institutions to boost Fisheries and Aquaculture:

a) FishGOV1:

i). Provide technical support to Member States to design and implement reforms.

ii) Support Member States in mobilising financial resources to implement reforms.

b) Fish Trade:

h) Provide technical support to Member States to design and implement reforms.

iii) Support Member States in mobilising financial resources to implement reforms.

CHAPTER TEN

OVERALL RECOMMENDATIONS FOR ALL THE STUDIES: FISHERIES MANAGEMENT, FISH TRADE, AQUACULTURE EXPLOITATION AND ORNAMENTAL FISH TRADE IN AFRICA AT BOTH NATIONAL AND REGIONAL LEVELS

This study addressed FISHGOV1, Fish Trade, Aquaculture exploitation and Ornamental trade in Africa. The following are the policy recommendations based on the outcomes of the studies.

Table 3: Summary of Recommendations for Sustainable Fisheries Management and Aquaculture Development in Africa generated from the study.

Thematic Area	Recommendations
Monitoring, Control, and Surveillance (MCS)	a) Strengthen MCS capacity and resourcing through training and innovation.
	b) Enhance regional and international cooperation in fisheries management.
	c) Design and implement awareness campaigns against IUU fishing.
	d) Develop specialization and professionalization for combating IUU fishing.
	e) Organize regional training programs and mentorship initiatives.
	f) Address issues related to vessel size and management of ecosystems.
Ecolabeling and FIP	a) Support pilot projects for both small-scale and large-scale fisheries.
	b) Emphasize traceability under ecolabeling and consider national-level tracking.
	c) Focus on commodity species with export importance, including key species like Bonga, Nile perch, Grouper and Shrimp
	d) Advocate for government engagement and support.
	e) Ensure additional partner commitment and regional support.
	f) Foster cooperation among RFBs and WBCs through joint organization and participation.
	g) Consider national and regional levels for FIPs and pilot projects.
	h) Ensure government engagement, partner commitment and regional support.
RFBs Performance Review	a) Urge Member States to increase budget allocations for fisheries and aquaculture development.
	b) Secure more funding for regional projects and capacity building and - increase funding support for RFBs in the region.
	c) Address challenges in transforming advisory commissions into management organizations.
	d) Revise LVFO for better regional fisheries management.
Fisheries access arrangements	a) Focus on capacity building for negotiation and management of agreements.
	b) Develop a supranational framework for negotiations.

Thematic Area	Recommendations
	c) Create an AU Group of Experts for advice during negotiations.
	d) Emphasize total transparency in fisheries agreements.
	e) Strengthen data transmission and sharing capabilities.
Fisheries management in shared lakes and rivers	a) Promote participatory processes with stakeholder involvement.
	b) Implement regional cooperative management approaches.
	c) Set limits on catches, protect spawning areas, and harmonize size at first capture.
	d) Use vessel monitoring systems (VMS) and improve control of landings.
	e) Address illegal fishing impacts and strengthen control systems.
Governance of LME and Fisheries Management Approaches	a) Strengthen South-South cooperation and coordinate mechanisms among RECs, RFBs, and LME-based commissions.
	b) Increase awareness and capacity in the African fishery sector.
	c) Enhance African voice in the governance of high seas fisheries.
	d) Promote coherence and harmonization in fisheries policies.
	e) Strengthen capacities for stock assessment and data collection.
Coordination and Regional Cooperation in Fisheries Management	a) AU to lead RFBs and conduct a comprehensive study for mandate clarification between RECs.
	b) Encourage comprehensive study on legal measures to enhance collaboration.
	c) Ensure fisheries and aquaculture experts in each REC.
	d) Support RFBS involvement in the CAADP process.
Cross-Border Fish Trade	a) Improve documentation of fish trade and data collection.
	b) Increase manpower at borders for inspection and efficiency.
	c) Integrate the tax base for continental trade.
	d) Remove tariff barriers hindering cross border fish trade.
	e) Develop an ecosystem for post-harvest losses and sensitization.
	f) Support women and youth inclusion in fish trade.
Effective Engagement of Women and Youth	a) Utilize GIS technology for fisheries research and communication.
	b) Monitor and manage water and environmental resources.
	c) Collaborate with data centres and provide skill training for women and youth.
	d) Propose gender-responsive technologies and support advocacy for fisheries reforms.
Aquaculture Production and Extension Practices	a) Develop holistic policies for environmental management in aquaculture.
	b) Establish standards and a code of practice for fish handling and processing.
	c) Monitor and regulate fish movement permits.
	d) Analyze climate change impacts and implement adaptation measures.
	e) Develop guidelines for waste disposal and support regulations for fish farms.

Thematic Area	Recommendations
Aquaculture and Environment in Africa	a) Consider alternative sources of feeds and address MCS in the aquaculture sector.
	b) Implement artificial intelligence in aquaculture and fisheries.
	c) Mitigate environmental challenges and articulate within extension packages.
	d) Develop policies encompassing environmental management.
	e) Include biosecurity in aquaculture sector.
	f) Adhere to continental developmental challenges outlined in high-level platforms.
Ornamental Exploitation in Africa	a) Formulate a regulatory framework for ornamental fisheries.
	b) Provide financial support for human and infrastructure development in monitoring ornamental fisheries.
	c) Generate and disseminate information on ornamental fisheries.
	d) Develop standards for certification and domestication of ornamental fish.
	e) Improve capacity for aquatic animal health staff at inspection points.
	f) Conduct gender analysis and advocate for environmental impact assessments in ornamental fishery.
General Recommendations	a) Roll out training on the Africa fisheries and aquaculture database beyond pilot countries.
	b) Replicate the Lake Victoria Fisheries and Aquaculture Information Management System to other water bodies.
	c) Provide technical assistance to Member States for specific databases.
	d) Include local trade in the AFA Database.
	e) Address root causes of data management problems.
	f) Consider domestication of the AFA database at the country level.
	g) Understand the structure of fisheries and aquaculture in different AU-MS.
	h) Provide technical assistance to AU-MS and include the private sector.
	i) Identify other Centres of Excellence and adopt a bottom-up approach.
	j) Avoid duplication and data overlaps at the national and regional levels.

In conclusion, the implementation of these recommendations across the specified thematic areas is essential for promoting sustainable practices, governance, and conservation efforts in the fisheries and aquaculture sector at both national and regional levels.

APPENDICES

APPENDIX 1: SOME OF THE RELEVANT POLICY INSTRUMENTS, STRATEGIES, GUIDELINES, DOCUMENTS AND PUBLICATIONS IN FISHERIES AND AQUACULTURE RELEVANT TO THE CONSULTANCY INCLUDE:

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4. ASSESSMENT OF ORNAMENTAL FISHERIES AND THE DEVELOPMENT OF REGULATORY FRAMEWORK FOR THE EXPLOITATION AND TRADE IN ORNAMENTAL FISH SPECIES

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8. AU-IBAR (2016). Economic, Social and Environmental impacts of Illegal, Unreported and Unregulated Fishing (IUU) in Africa. A Plan of Action; Advocacy Paper. AU-IBAR Reports.
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16. COMPREHENSIVE MAPPING OF FISH TRADE CORRIDOR FOR THE CENTRAL AFRICA REGION
17. Comprehensive mapping of informal and formal cross boarder fish trade corridors of major fish and aquaculture products in North Africa.
18. COMPREHENSIVE MAPPING OF FISH TRADE CORRIDORS IN THE FIVE REGIONS OF AFRICA: FOCUSING EASTERN AFRICAN CORRIDOR: MOMBASA TO GOMA, PASSING THROUGH KENYA, UGANDA, BURUNDI, RWANDA AND DEMOCRATIC REPUBLIC OF CONGO; AND THE HORN OF AFRICA.
19. CONSULTATIVE WORKSHOP ON ESTABLISHMENT OF CONTINENTAL NETWORK FOR WOMEN FISH PROCESSORS AND TRADERS' ASSOCIATIONS 20-22 APRIL (2017) DAR ES SALAAM, UNITED REPUBLIC OF TANZANIA.
20. Consultancy on Case studies, Lessons and best practices for effective engagement of women and Youth in Fisheries and Aquaculture value chains; policy orientation paper on enhancing PPP in fisheries and Aquaculture value chains.
21. Drury O'Neill, E. (2013). A Value Chain Analysis of Tuna Industry in Ghana.
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39. LINKAGES AND INTER-CONNECTEDNESS BETWEEN CROSS-BORDER FISH TRADE CORRIDORS IN AFRICA
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    a) TRADE ENHANCEMENT, FACILITATION AND INFORMATION SHARING AMONG WOMEN AND YOUTH IN THE FISHERIES AND AQUACULTURE DEVELOPMENT

b) ENHANCE CAPACITY BUILDING, TRAINING AND SKILL ACQUISITION OF WOMEN AND YOUTH IN FISHERIES AND AQUACULTURE VENTURES
c) ENHANCING SMEs ORGANIZATION FOR WOMEN AND YOUTH AS A TOOL FOR FISHERIES AND AQUACULTURE BUSINESS DEVELOPMENT
d) CREATING AWARENESS AND EDUCATION OPPORTUNITIES FOR WOMEN AND YOUTH (GENDER MAINSTREAMING) AND CAPACITY BUILDING IN FISHERIES AND AQUACULTURE TRADE
e) Essential use of GIS and ICT in fisheries and aquaculture value chain and business development
f) Enhance integration of women and youth in the aquaculture and fisheries value chain
g) Development of funding structures and packages to support access to financial institutions for women and youth in fisheries and aquaculture ventures.

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54. REPORT OF THE MEETING ON ENHANCING INSTITUTIONAL COLLABORATION IN FISHERIES AND AQUACULTURE, 10-12 JULY 2014, Accra Ghana.
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